

LanAdapter

Ethernet-WiFi/serial converter for supervision and control systems



Summary

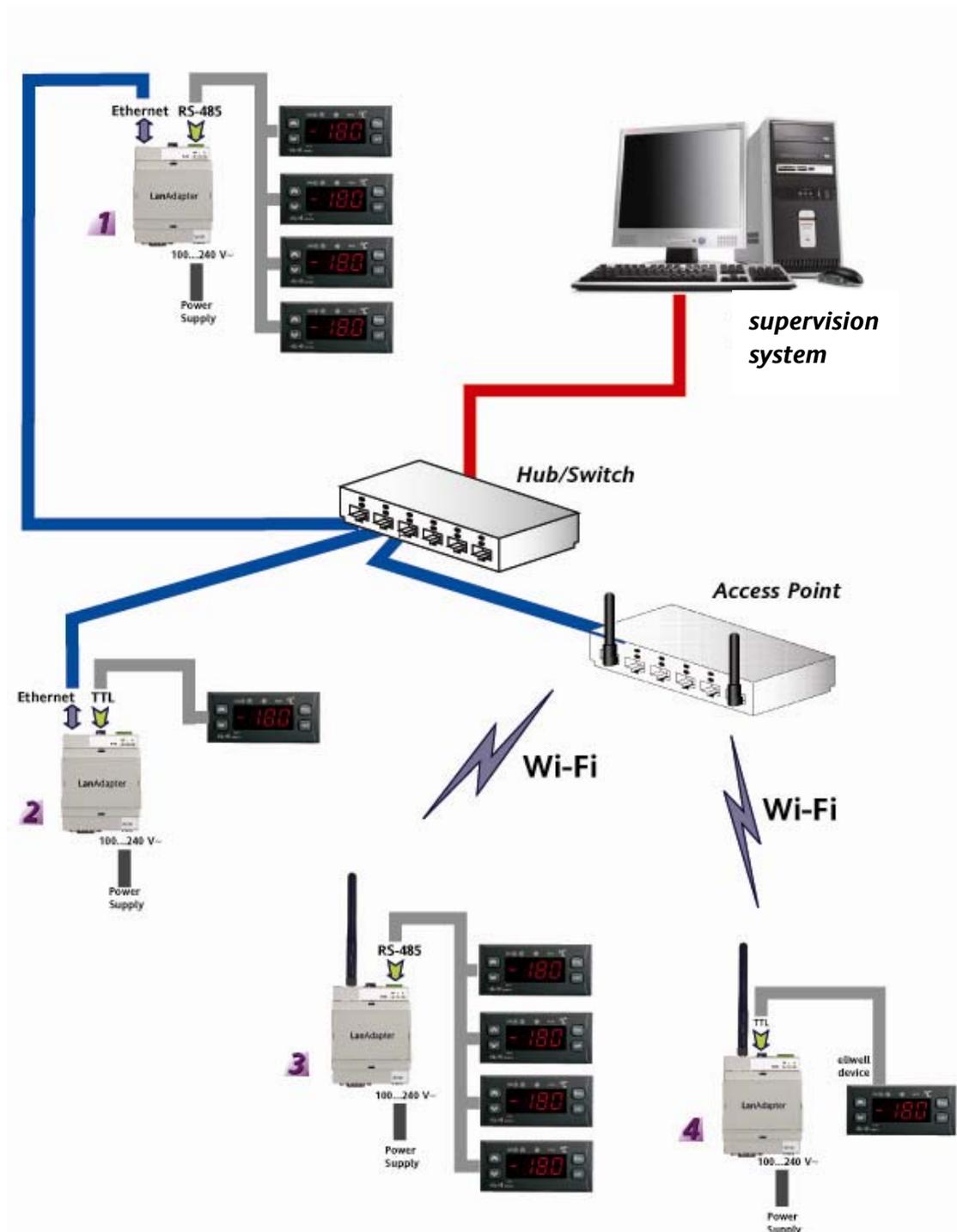
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1. Introduction

The **LanAdapter** is an Ethernet/RS-485 (or TTL) interface module that allows communications between a LAN network and a network of devices, using Micronet/Televis protocol and allowing a supervision system within the LAN network to manage the data, alarms and functions of the instruments within the network. The **LanAdapter** can be configured using web pages that are accessed from any PC in the LAN network to which the **LanAdapter** is connected.

2. Connection

The various methods that can be used to install the **LanAdapter** are described below, according to the type of **LanAdapter** used (Ethernet or WiFi) and its position within the network.



The network comprises a supervision system installed on a PC located within a LAN network. The following is a description of the 4 different installation methods used in the example network.

2.1. Example 1 – LanAdapter Ethernet RS-485

Connection between the LanAdapter and the network uses an Ethernet cable. There is an RS-485 serial port for connection of devices, using Televis/Modbus communication protocols.

NOTE: The RS-485 network must be adequately terminated, by inserting a 120 Ohm termination resistor between the - and + terminals of the interface module and the last instrument.

2.2. Example 2 – LanAdapter Ethernet TTL

Connection between the LanAdapter and the network uses an Ethernet cable. There is a TTL serial port allowing connection of a single device, using Televis/Modbus communication protocols.

2.3. Example 3 – LanAdapter Wi-Fi RS-485

Connection between the LanAdapter and the network is via Wi-Fi wireless connection with an Access Point installed within the LAN network. There is an RS-485 serial port for connection of devices, using Televis/Modbus communication protocols.

NOTE: The RS-485 network must be adequately terminated, by inserting a 120 Ohm termination resistor between the - and + terminals of the interface module and the last instrument.

2.4. Example 4 – LanAdapter Wi-Fi TTL

Connection between the LanAdapter and the network is via Wi-Fi wireless connection with an Access Point installed within the LAN network. There is a TTL serial port allowing connection of a single device, using Televis/Modbus communication protocols.

3. Start Up

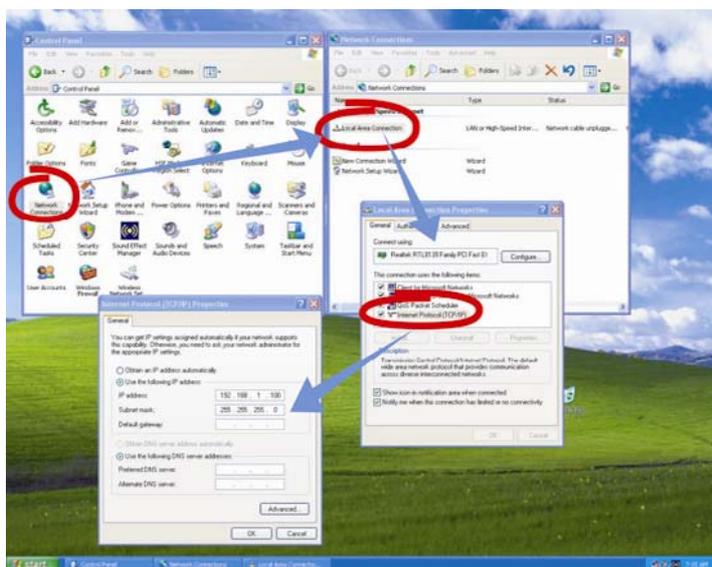
3.1. Connection via Ethernet cable

When installing a LanAdapter in Ethernet mode it is necessary to carry out a procedure to configure communication between the LanAdapter itself and the LAN network to which it must be connected.

LanAdapter has a static IP address and the relevant settings must be modified (see par 4.5 IP Page) to assign a dynamic IP. It is therefore recommended that when you start up the LanAdapter you connect it to a PC with a static IP, and then subsequently change the settings to connect it to the LAN network.

3.1.1. Setting the static IP address

Direct connection of PC to LanAdapter (with crossed cable or WiFi):



For the Web application to start correctly, the PC to which the LanAdapter is connected must have a static IP address. To set this address, go to the TCP/IP settings on the PC. Follow the path shown in the following screenshot:

- Open the Control Panel from the **Startup Menu**→ **Settings**→ **Control Panel**
- Open **Network Connections**
- Open the **Properties** of the **Local Area connection**
- Select **Internet Protocol (TCP/IP)**, then click on the **Properties** button
- In the box that appears, select "Use the following IP address" and type in the following values: **IP address:** 192.168.1.100 and **Subnet Mask** 255.255.0.0

Now open the browser installed on the PC, enter the preset Static IP 198.168.1.1 in the address bar and then load the corresponding page. The login page for the web application will be displayed, allowing you to configure the **LanAdapter** tool.

3.1.2. **Setting the dynamic IP address**

PC-LanAdapter connection through a Hub in a corporate network:

If connecting to a corporate Ethernet or WiFi network, contact the network administrator.

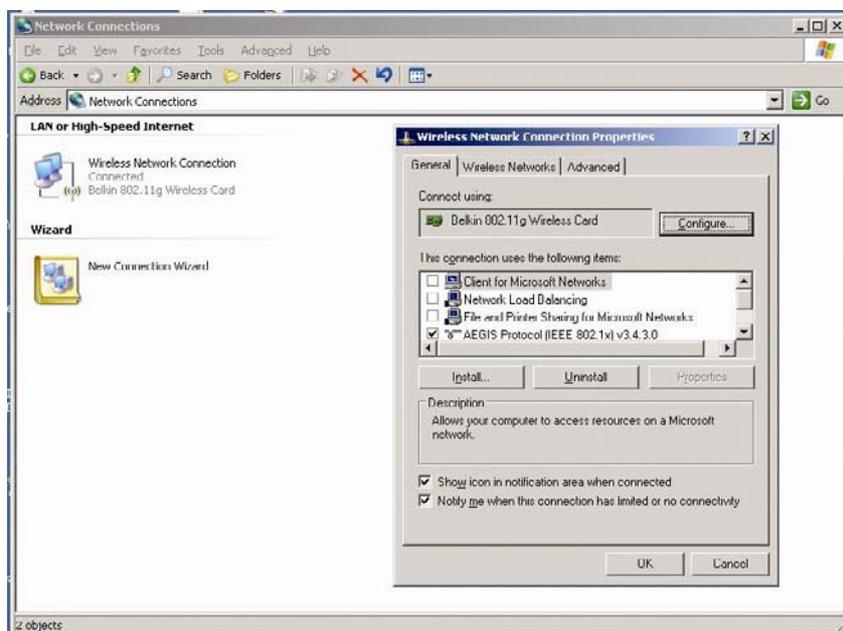
NOTE: In all cases, any proxy that is active must be disabled on the PC where the Web application is to be started.

3.2. **Wi-Fi connection**

When installing a **LanAdapter** in WiFi mode it is necessary to carry out a procedure to configure communication between the **LanAdapter** itself and the system to which it must be connected.

The **LanAdapter** configuration parameters must be the same as the Access Point to which it is to be connected.

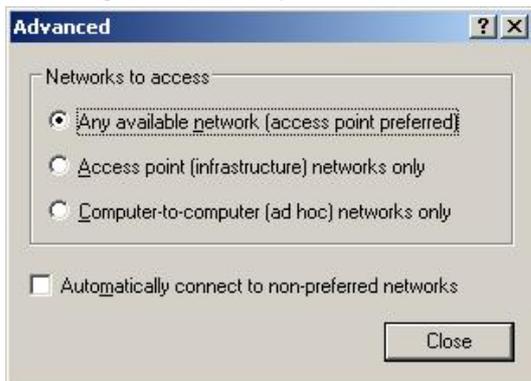
It is therefore recommended that you create a Wireless network with a PC fitted with WiFi card.



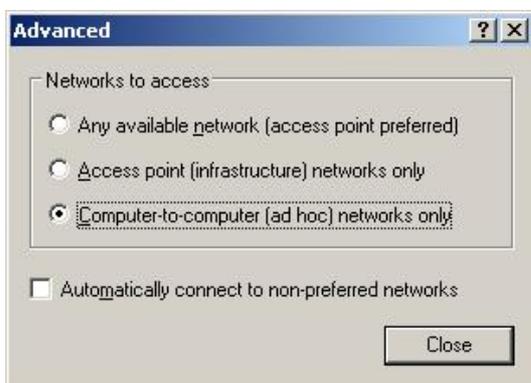
- 1- Open the Control Panel from the **Startup Menu**→ **Control Panel**
- 2- Open **Network Connections**
- 3- Open the **Properties** of the **Wireless network connection**

Change from the "General" page to "Wireless network"

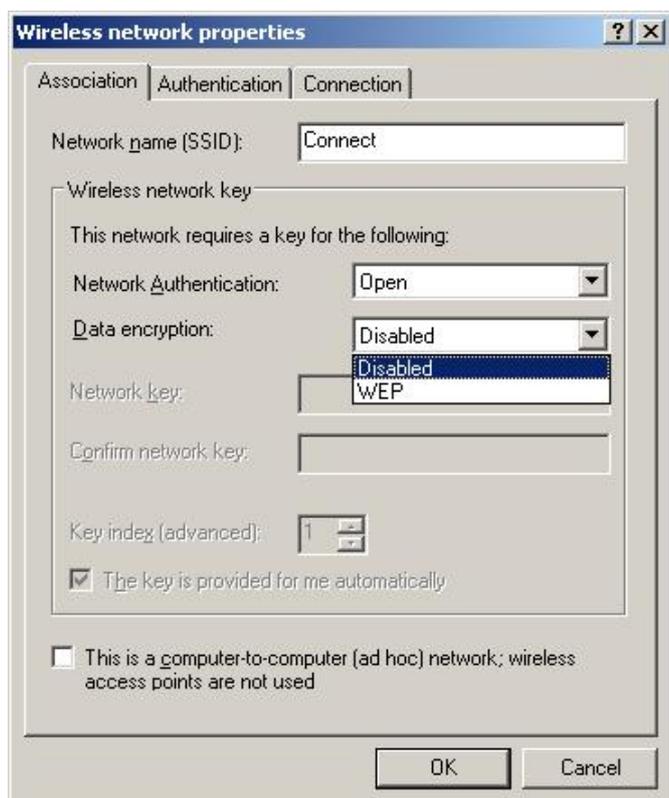
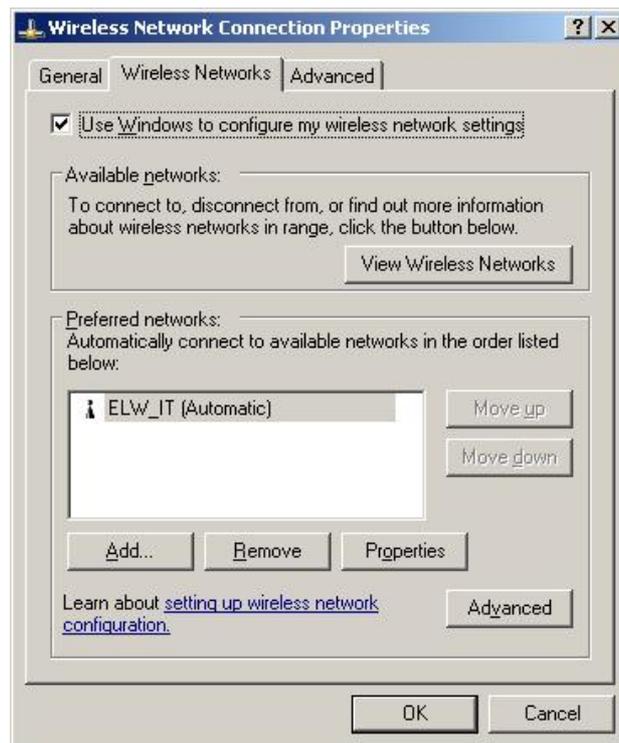
- 4- Click on the "Advanced" button at the bottom right.
- 5- The following window will open:



- 6- Set "Networks to access" to the option "PC to PC networks only (ad hoc)" (see figure below) and click on "Close"



- 7- The "Wireless network connection" window will be displayed once again. It is now necessary to create a new connection. To do this, click on "Add"



- 8- Type the LanAdapter SSID into the field "Network name (SSID)" "Connect".
- 9- Make sure that the drop-down menu "Network authentication" is set to "Open"
- 10- Set the drop-down menu "Data encrypting" to "Disabled"
- 11- Save the settings by clicking on "OK"

At this point it is possible to run the connection between PC and **LanAdapter** from the “Network connections” window, by clicking on the “Wireless network connection” icon.

Once this procedure has been completed, point-to-point WiFi connection will be made. At this point it is possible to run the web application to manage the **LanAdapter**. This means it is possible to connect the **LanAdapter** to the Access Point (see page 3):

- set the WiFi configuration parameters as defined by the settings for the Access Point itself.
 - See par. 4.5 IP Page to complete connection with an Access Point.
- NOTE:** If connecting to a corporate WiFi network, set the connection with the access point according to the specifications of the access point itself and the state of the network. It is recommended that you contact the network administrator before carrying out this type of installation.

4. User interface

4.1. Login

Open the browser installed on the PC, enter the preset Static IP 198.168.1.1 in the address bar and then load the corresponding page. The login page for the web application will be displayed, allowing you to configure the LanAdapter tool.

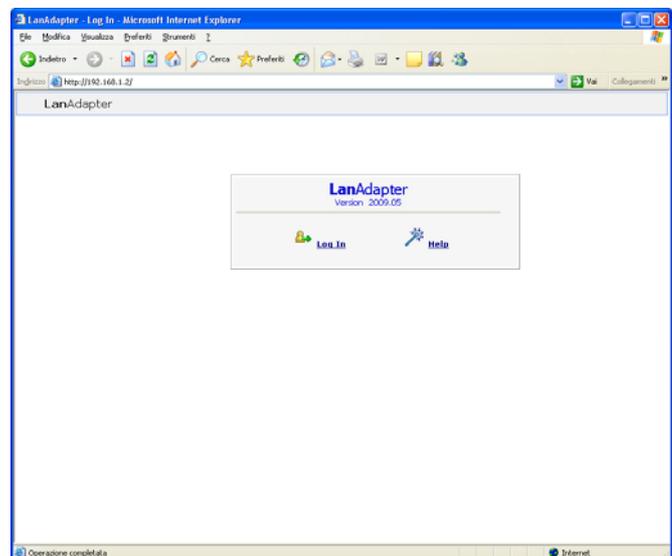
Access to the Web application requires authentication of the user by entering User Name and Password. When accessing the application for the first time, enter the preset UserName and Password:

User Name = admin

Password = admin

Once the correct User Name and Password have been entered, the **LanAdapter** Identification page will be displayed.

It is not possible to modify the User Name, but it is possible to change your personal password (see par 4.6 Password)



4.2. Navigation bar

The top part of each page in the application shows the navigation bar, which contains links to the other sections of the application:

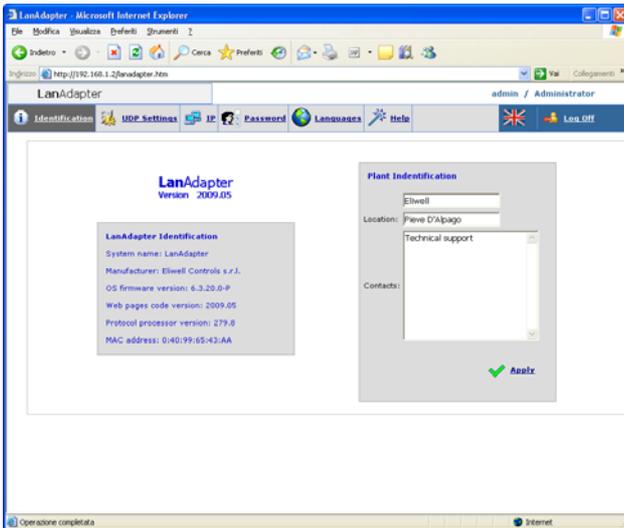
- Identification
- UDP Settings
- IP Settings
- Password
- Languages
- Help



To assist navigation, it also contains a link to the current section. The name of the user appears at the top right

The navigation bar also contains two further links :

- Log off (to return to the login page: in this case, the login procedure will need to be repeated in order to reconnect)
- UK flag (to return to the default language - English -)



4.3. Identification

The Identification page shows all the system characteristics, divided into 2 windows:

- LanAdapter Identification
- System identification (editable section in which the system name and location are entered, with a description of the system if desired)

4.4. UDP Settings

Communication between the supervision system and the LanAdapter takes place using UDP protocol. This means it is necessary to configure the parameters required to establish communication between the LanAdapter and the remote management system present in the LAN network.

There are 2 possible configurations, according to whether the supervision system uses a Televis or Modbus protocol.

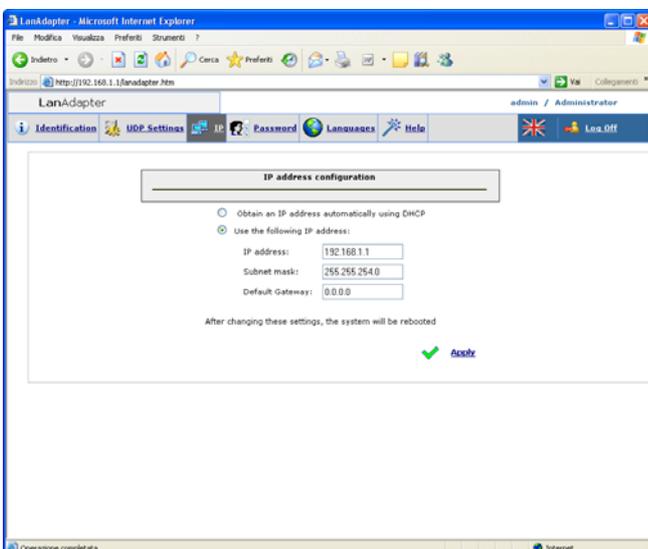
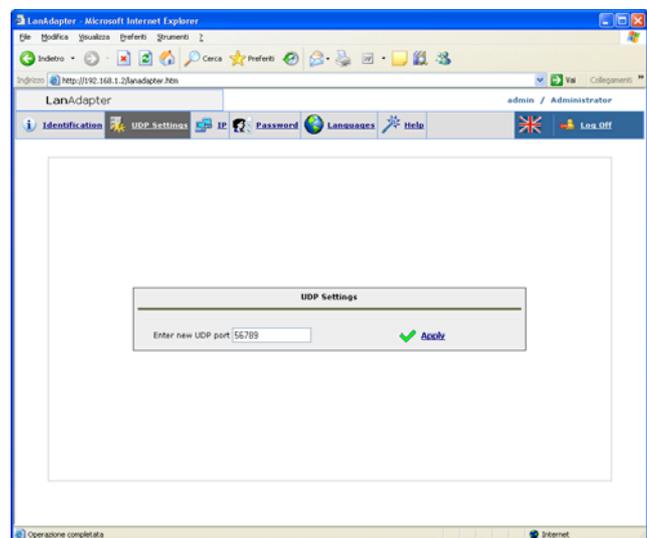
Set the parameters indicated in the section that corresponds to your own remote management system.

UDP Port: this is the value of the IP port through which the supervision system will communicate with the LanAdapter. It is initially set to 56789 for Televis (for Modbus it is 45678), but the value can be changed. It can have a value of from 0 to 65535, but it is recommended that you use values of between 0 and 1024.

Timeout: Set a timeout value for dispatch of data packages. The default value is 300 msec.

Along with the 2 parameters mentioned above, it is also necessary to set Bit Rate, Parity and Stop Bit when using a Modbus protocol.

Click on "Apply" to reboot the system and implement the changes.



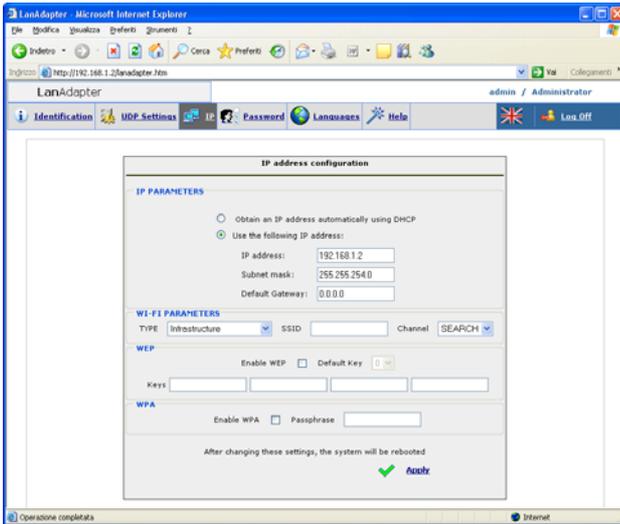
4.5. IP page

This page shows the LanAdapter settings for IP Address and Subnet Mask.

LanAdapter is assigned a default IP address : **192.168.1.1** and Subnet Mask: **255.255.254.0**

The IP address for LanAdapter can be modified manually by typing in a new IP address, or automatically if a DHCP server is available (in this case the system will require confirmation of DHCP use)

If the IP Address or Subnet Mask values are not consistent, the system will display an error message: "The new values cannot be applied as they are out of range".



For **Wi-Fi** versions only, along with the IP settings section, there is also a section for configuration of the Wi-Fi parameters and the WEP and WPA type encrypting codes, with passphrase:

Wi-Fi Parameters:

Type: Using this drop-down menu, set the type of connection selected from the options Infrastructure, Ad hoc (join and create), Ad hoc (join only) and Any Type. Infrastructure indicates that the type of connection involves the presence of an Access point.

On the other hand, if you set Ad hoc (both) connection will be point-to-point (i.e. searching for individual PCs with active Wi-Fi connections).

Finally, setting Any Type enables the connection to be set in any active mode, both to infrastructure (access point) and ad hoc (point-to-point)

SSID: represents the name of the Wi-Fi connection. When first accessing the page this field has the same SSID set during initial configuration (see par 3.1.2 Wireless). To keep the connection between PC (or Access Point) and LanAdapter open, the SSID value found on the PC (or Access Point) must be the same as the one on this configuration page.

NOTE: If the SSID field is empty, the LanAdapter will consider all the active SSIDs to be compatible.

Channel: The following field is used to select the transmission channel on which the LanAdapter can communicate. Naturally, this must coincide with the channel set on the PC (or Access Point) to which the LanAdapter is connected.

The default setting for this field is SEARCH, which means that the LanAdapter will search the possible channels to find one that is available, but the SSID and Type parameters are not ignored. Channels with SSID and/or connection types and/or WPA/WEP parameters different from the ones in the LanAdapter memory will not be identified.

Certain countries within the European Economic Area have more restrictive regulations on the use of ISM frequencies:

Spain: Channels available, 10 and 11

France: Channels available, from 10 to 13

Other EEA countries: Channels available, from 1 to 13

NOTE: The WEP codes must be 10 or 26 characters in length, but they must all be the same length. Only hexadecimal characters are to be used for WEP codes.

4.6. Password

This page enables you to change the access password (which is initially set as admin). To do this, enter the old password and then type the new password twice in the relevant fields. To enable the new password, click on the link "Click here to reboot the system".

4.7. Languages

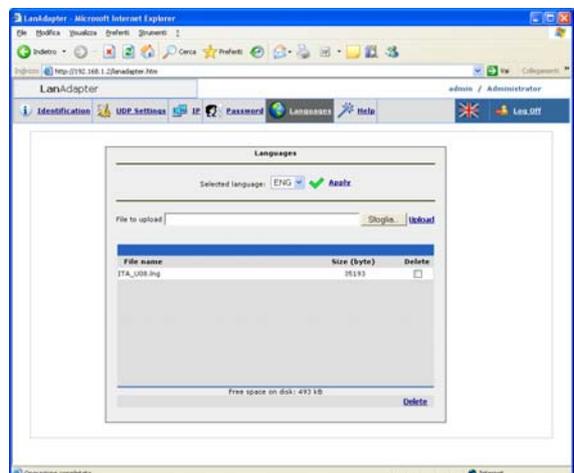
The "Languages" configuration page can be used to select the national language used by the Web application of the LanAdapter.

The default language is English. To change the language of the application, find the corresponding file (for example, Italiano.ing) and load it by clicking on the Upload button.

All the language files currently loaded in the application are listed on this page, and can be deleted by selecting the corresponding checkboxes.

Each time the application is started, the language used during the previous operation is loaded automatically.

NOTE: The default language (English) can be restored at any time by clicking on the UK flag on the status bar at the top right of the screen.



4.8. Help

The Help page shows the telephone numbers to contact at Eliwell's Technical Customer Support.

4.9. JavaScript

A large number of functions in the Web application use JavaScript components.

Important! If a high security level has been set in the Explorer "Internet Options", this may prevent some of the JavaScript components from running.

5. Technical Data

Container: 4 plastic DIN modules.

Mounting: on DIN rail.

Ambient temperature: 0...55°C

Storage temperature: -20...85 °C

Ambient/storage humidity: 10...90% non condensing.

Serial connections: RS- 485 and TTL ports for connection to Eliwell instruments.

Power supply: 100/240 ±10%, 50/60 Hz.

Removable screw terminal strip for 2.5 mm² wires (one wire per terminal).

Consumption : 4W max.

Insulation: class II.

Ethernet port (only for Ethernet **LanAdapter**): 10/100T data rate up to 100Mbit, RJ-45 connector.

Maximum Modbus message size: 248 bytes

WiFi LanAdapter models:

Standard: IEEE 802.15.4

Frequency band: ISM 2.400 GHz...2.485 GHz (<100mW e.i.r.p.)

Channel selection: manual/automatic

Antenna: external

RS-485 port: max data rate 57600 kbps, opto-insulated (500V). Removable screw terminal strip for 2.5 mm² wires (one wire per terminal).

TTL port: 5-way Molex connector

REGULATIONS

Electromagnetic compatibility:

Directive 89/336/EC and subsequent modifications

Low voltage:

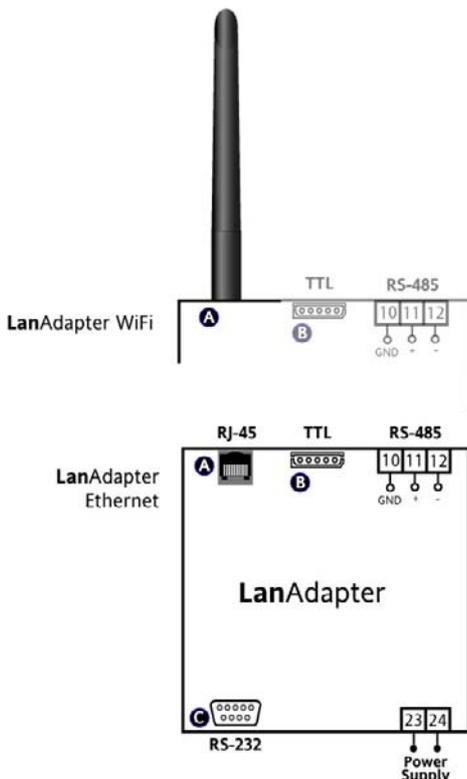
Directive 73/23/EC and subsequent modifications

Radio and telecommunications appliances: Directive 95/23/EC

Only to be used in countries within the European Economic Area (EEA)

Certain countries within the EEA have different regulations on the use of ISM frequencies:

<u>Country</u>	<u>Channels allowed</u>
Spain	10-11
France	10-13
Other EEA countries	1-13



TERMINALS

A	Antenna (only for WiFi LanAdapter) RJ-45 connector for connection to Ethernet network (only for LanAdapter Ethernet)
B	TTL serial port
10-11-12	RS-485 serial port
C	RS-232 serial port
23-24	Mains power supply 100...240V~

IMPORTANT! IT IS NOT POSSIBLE TO USE AN ANTENNA DIFFERENT FROM THE ONE SUPPLIED BY ELIWELL. SHOULD IT BE NECESSARY TO CONNECT THE ANTENNA TO THE LanAdapter USING AN EXTENSION CABLE, USE A CABLE THAT HAS BEEN APPROVED BY ELIWELL. CONTACT THE TECHNICAL SUPPORT TO CHECK WHICH ACCESSORIES ARE AVAILABLE

MECHANICAL MOUNTING

This device is designed to be mounted on a DIN rail or on a wall. The ambient temperature range for correct operation is 0 to 55°C, and the allowed humidity range is 10 to 90% (non-condensing).

Sufficient ventilation should be provided if the device is installed inside an electrical panel or switchboard.

Avoid installing the device in damp or dirt-laden areas.

ELECTRICAL CONNECTIONS

Warning! Switch off the device before working on the power terminals. The device is equipped with screw terminals for connecting electric cables of 2.5 mm² maximum cross-section (one wire per terminal in the case of power connections). Make sure that power supply is the correct voltage for the device. The TTL serial cable and the RS-485 serial cables should be kept separate from the power cables.

The RS-485 network must be adequately terminated, by inserting a 120 Ohm termination resistor between the - and + terminals of the interface module and the last instrument.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell Controls srl will not be liable for damage resulting from:

- installation/uses other than those specified and, in particular, which do not comply with the safety requirements set out in the regulations and/or stated herein;

- use on panels that do not provide adequate protection against electric shock, water or dust when assembled;
- use on panels that allow access to dangerous parts without having to use tools;
- tampering and/or modification of the product;
- installation/use on panels that do not comply with the current standards and regulations.

USE

Approved use

For safety reasons, the device must be installed and used according to the instructions provided. In particular, parts carrying dangerous voltages must not be accessible in normal conditions.

The device must be adequately protected from water and dust according to the application, and must also only be accessible using tools (with the exception of the front panel).

Unauthorised use

The device must not be used for applications other than those described.

Note that the relay contacts provided are of a functional type and therefore subject to malfunction: Any protection devices required by product standards, or suggested by common sense, must be installed externally to the instrument for obvious safety reasons.



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