GB

CLOSE CONTROL

TELECOM UNIT

CLIMAVENETA

INDEX

The following symbols are used in this publication and inside the unit:

U **User**

I **Installer**

A **Assistance**

⚠ **WARNING =** for actions that require special care and suitable preparation

⊖ **PROHIBITED =** for actions that absolutely MUST NOT be performed

Specialist personnel (electrician)
Person with in-depth knowledge and experience such as to be able to recognise risks and avoid dangers that may derive from electricity (IEV 826-09-01).

The necessity to garantee the functionality of the system and the communication with different equipment for exchanging information in order to level the management and optimizing consumption, they are the targets that CLIMAVENETA has in order to search the better connectivity solution for his conditioning units:

ENERGY OBJECTIVES:
reduction in energy consumption and energy waste; optimum management of comfort in the controlled environment; improved operating efficiency of the systems.

MANAGEMENT OBJECTIVES:
optimisation of preventive maintenance; management of faults and alarms in real time; reduction in physical intervention times; possibility to reduce the number of personnel physically supervising the systems; improvement in the quality of service provided.

BMS U I A

BMSs are management systems that incorporate all the technological functions of a building, including the access control systems, security, fire detection, lighting, intelligent elevators and air-conditioning.
Consequently there are important benefits due to the simple and efficient management of the single control station, a reduction in running costs, the possibility to perform global statistical analysis on the data, and the identification of and immediate reaction to faults and alarms.

The development of these systems has meant that control systems made by different companies often need to be connected together, and consequently not only is a common electrical standard required, but also a common language, or communication protocol.

The connection of the conditioning units into networks means that one single supervisory station can manage the parameters and information required to identify the status of the devices present and the parameters corresponding to the applications or the processes being controlled. The data collected (temperature graphs, fault signals, service requests), which can be displayed by the user simply and quickly, are saved and can be made available to other functions. They can consequently modify the control parameters, modify or force the operating modes. When required, it is the system itself that alerts the appropriate service centre.

MEANS OF COMMUNICATION U I A

The remote control gives the possibility to access the installation from a location other than that where the supervised system is situated.
Normally, telephone lines are used, as they represent a stable and economic means of communication, above all when combined with the use of the Internet (TCP/IP protocol).
The use of the Internet with control and supervisory systems allows the user to access the information relating to the control system from any place with an Internet connection.
In addition, as one remote station can connect to different

sites, the operating costs of the remote control service can be shared between the different systems controlled.
A private digital line can be used to connect directly to the installation where the supervised system is located: this guarantees a more stable connection, however it requires a dedicated line and therefore higher operating costs.

MONITORING U I A

A monitoring system allows to monitor a series of parameters and significant values for the operation of the entire system, as well as the operating status.
For each possible critical situation, the user can decide if the

monitoring system should signal the event by buzzer, send a FAX or SMS message to a GSM mobile phone, simply save the event, print it or call the service centre with PlantVisor installed.

SUPERVISION U I A

More complex and evolved control systems can also provide for the system itself to make decisions, when certain situations arise, so as to ensure correct operation, resolve problems and optimise energy consumption.

Supervision system PlantVisor allows the whole control (management of alarms, commissioning, monitoring and energy saving) of middle and big installation up to 200 units connected.

The monitoring and supervision system proposed by CLI-MAVENETA for the ACCURATE units, answer at the demand:
• Monitoring unmanned remote installations
• Checks of the efficiency of the units
• Optimisation of Remote assistance:
  - Faster service response
  - Reduction of maintenance time risk
• Lower maintenance costs

And they are:
1. Local monitorino with PlantWatch;
2. Remote monitoring;
3. Local Supervision with PC PlantVisor;
4. Remote Supervision with PC PlantVisor.

PlantWatch is an electronic device used to monitor a network of CLIMAVENETA conditioning units up to 32 units connected.
• Logs and manages all alarms;
• Records the main settings;
• Can be used to transfer sampled values to a service centre via modem;
• Allows you to edit the units' parameters via computer;
• Can also report alarms by fax or SMS, and generate automatic reports on a printer.

Its main purpose is to supervise small and medium-sized installations.

⚠ **Teh remote connection, fax and SMS features are available only when Plantwatch is fitted with a amodem. The print report function is available when Plantwatch is fitted with suitable adapter**

PlantVisor, thanks to the embedded Web Server, can be used on a series of PCs connected to a TCP/IP network. In this way, the information can be shared by a number of users at the same time. Access to the data is protected by different levels of password.

PlantVisor functions include:
• centralised management on the PC of the control parameters of air-conditioners display and modification;
• scheduling of the actions to be performed in the event of alarms and according to set time bands;
• logging of the temperature, humidity and pressure values and any alarms;

PlantVisor manages traditional and GSM modems to send faxes, SMS messages and for remote access with PlantVisor Remote or Microsoft® Internet Explorer.
With PlantVisor is able to display and modify all parameters available as by Variable list.

The communication between the monitored devices and the systems that collect and analyse the data requires a common language, that is, a set of rules and commands recognised by both sides. This language is called a communication protocol.
The CLIMAVENETA air conditiong units are compatble with the most common BMS languages

	LonWorks With millions of devices installed all over the world, the LonWorks system, developed by Echelon, is one of the dominant solutions in the industrial, office, home and transport automation and control markets.
	Modbus Introduced in the 1970s, the Modbus protocol has become one of the most commonly used languages in BMSs (Building Management Systems).
	BACnet This is the protocol designated in 1995 by ASHRAE (America Society of Heating, Refrigerating and Air-Conditioning Engineers) as the organisation's official language.
	TREND TREND is a building automation system that is very widely used in English-speaking countries and in Europe in general. The ACCURATE units by means the suitable serial card, are TREND compatible.
	TCP/IP These are the communication protocols used for communication via the Internet. TCP (Transmission Control Protocol) divides and then reassembles each piece of information and message into elements (called packets), while IP (Internet Protocol) makes sure that the packets reach the correct destination. TCP/IP is used because the internet is a packet switching network: as there is no single continuous connection between the sender and receiver, the information, when sent, is divided into a number of packets, which are sent at the same time via many different paths, and then reassembled at the receiver's end. **SNMP** SNMP (Simple Network Management Protocol) is a protocol used in Ethernet networks for controlling and setting the parameters for the network devices, for example switches and network printers.

LAYOUT

SYSTEM FUNCTIONALITY

View temperature and humidity values	YES	
View complete unit status		NO
View all parameters		NO
Alarm signalling with description	YES	
Temperature and humidity graphic trend		NO
ON/OFF unit and alarm reset		NO
Modify all parameters		NO
Alarm SMS option (with modem GSM)	YES	
FAX and e-mail alarm signalling (with external PSTN modem or PLANTWATCH with internal modem)	YES	
Print report (with printer adapter)	YES	
Ethernet/Internet access to PC and see units		NO

COMPONENTS LIST

Device	Description	Supplied by CLIMAVENETA
	Standard PlantWatch without internal modem	YES
	Serial card RS485 installed in each unit	YES
120 Ω	Serial cable RS485 and resitance 120Ω- 1/4W Max 1000mt.	NO
	Optional: external modem GSM	YES
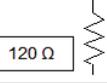
LAYOUT
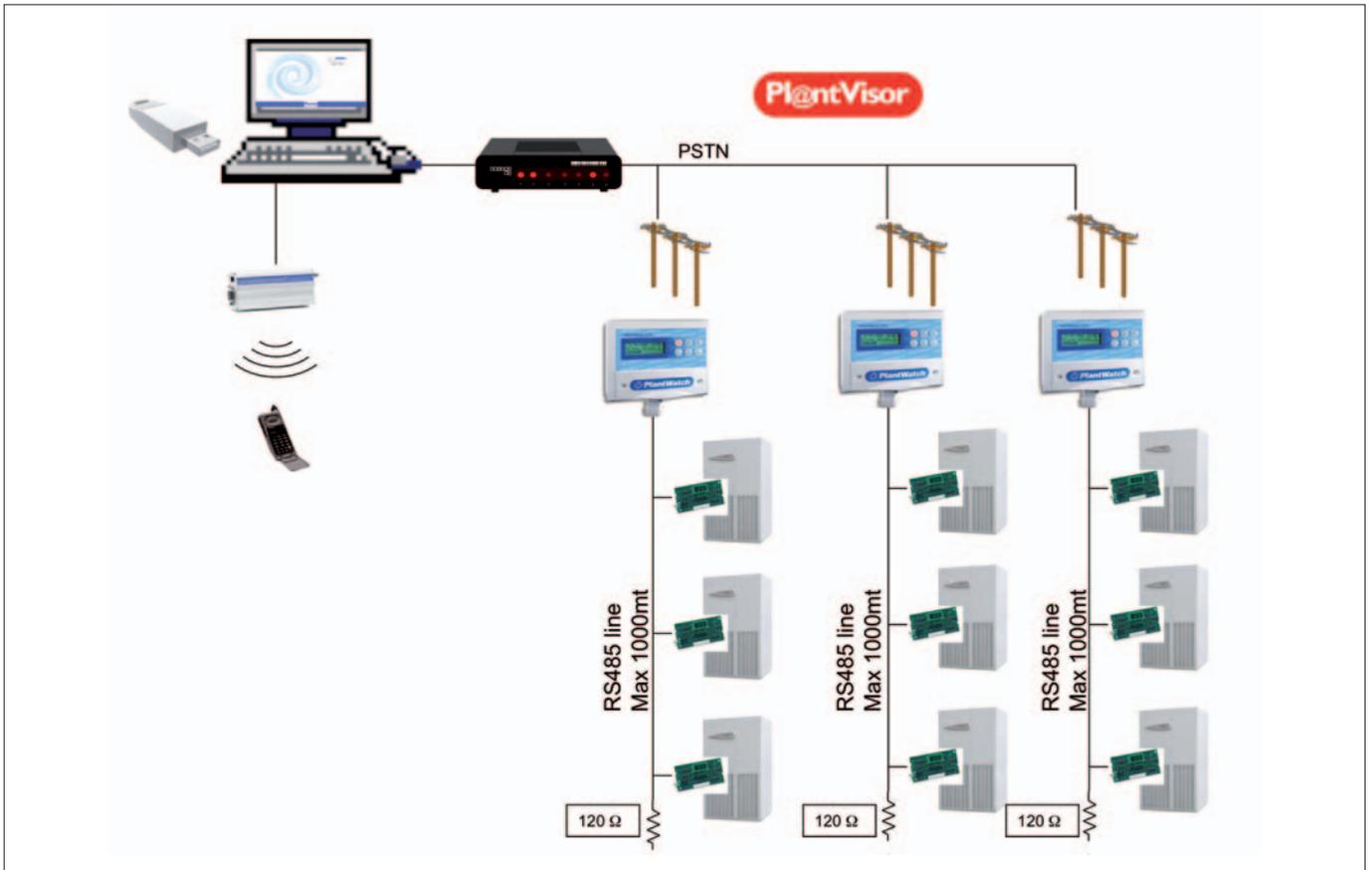
SYSTEM FUNCTIONALITY

Has the potentiality of the monitoring as Plantwatch and furthermore the possibility to have a remote control of site centralizing the parameters/alarms in a single PC where is installed PlantVisor.

	YES	NO
View temperature and humidity values	YES	
View complete unit status		NO
View all parameters		NO
Alarm signalling with description	YES	
Temperature and humidity graphic trend	YES	
ON/OFF unit and alarm reset		NO
Modify all parameters		NO
Alarm SMS option (with modem GSM)	YES	
FAX and e-mail alarm signalling(with external PSTN modem or PLANTWATCH with internal modem)	YES	
Print report (with printer adapter)	YES	
Ethernet/Internet access to PC and see units		NO

COMPONENTS LIST

Device	Description	Supplied by CLIMAVENETA
	Standard PlantWatch with internal modem for each node	YES
	Serial card RS485 installed in each ACCURATE	YES
	Serial cable RS485 and resitance 120Ω- 1/4W Max 1000mt.	NO
	modem PSTN	NO
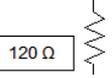
Device	Description	Supplied by CLIMAVENETA
	Remote PC REQUIREMENTS: Processor: Pentium 4 2.0 GHz (or equivalent) Ram: 512 MB Disc: 20 GB, (200 MB for installation and almost 1 MB for each variable sampled/ displayed by graph) Communication ports: one USB port available for the key and, in the local installations, at least one serial port available for the 232/485 converter Windows 2000 Professional SP4, Windows XP Professional SP1 Internet browser Explorer 6.0 (o higher)	NO
Pl@ntVisor	Supervision Software PlantVisor configured for "Remote Supervision"	YES
	Hardware USB key	YES
	Optional: external modem GSM	YES

⚠ **The PC where the supervision software is installed, has to be dedicated only for supervision**

LAYOUT

SYSTEM FUNCTIONALITY

View temperature and humidity values	YES	
View complete unit status	YES	
View all parameters	YES	
Alarm signalling with description	YES	
Temperature and humidity graphic trend	YES	
ON/OFF unit and alarm reset	YES	
Modify all parameters	YES	
Alarm SMS option (with modem GSM)	YES	
FAX and e-mail alarm signalling	YES	
Print report	YES	
Ethernet/Internet access to PC and see units	YES	

COMPONENTS LIST

Device	Description	Supplied by CLIMAVENETA
	Serial card RS485 installed in each ACCURATE unit	YES
120 Ω	Serial cable RS485 and resitance 120Ω- 1/4W Max 1000mt.	NO
	USB / RS485 converter with cable	YES

Device	Description	Supplied by CLIMAVENETA
	PC remoto REQUIREMENTS: Processor: Pentium 4 2.0 GHz (or equivalent) Ram: 512 MB Disc: 20 GB, (200 MB for installation and almost 1 MB for each variable sampled/ displayed by graph) Communication ports: one USB port available for the key and in the local installations, at least one serial port available for the 232/485 converter Windows 2000 Professional SP4, Windows XP Professional SP1 Internet browser Explorer 6.0 (o higher)	NO
Pl@ntVisor	Supervision Software PlantVisor configured for "Local Supervision"	YES
	Hardware USB key	YES
	Optional: external modem GSM	YES

⚠ **The PC where the supervision software is installed, has to be dedicated only for supervision**

LAYOUT

| REMOTE SUPERVISION | LOCAL SUPERVISION | LOCAL SUPERVISION |

SYSTEM FUNCTIONALITY

The remote supervision is a centralized system to control local supervisor by remote PC where is installed PlantVisor in "Remote" configuration.

View temperature and humidity values	YES
View complete unit status	YES
View all parameters	YES
Alarm signalling with description	YES
Temperature and humidity graphic trend	YES
ON/OFF unit and alarm reset	YES
Modify all parameters	YES
Alarm SMS option (with modem GSM)	YES
FAX and e-mail alarm signalling	YES
Print report	YES
Ethernet/Internet access to PC and see units	YES

LOCAL SUPERVISION COMPONENTS LIST

Device	Description	Supplied by CLIMAVENETA
	Serial card RS485 installed in each unit	YES
120 Ω	Serial cable RS485 and resitance 120Ω- 1/4W Max 1000mt.	NO
	USB / RS485 converter with cable	YES

Device	Description	Supplied by CLIMAVENETA
	Local PC REQUIREMENTS: Processor: Pentium 4 2.0 GHz (or equivalent) Ram: 512 MB Disc: 20 GB, (200 MB for installation and almost 1 MB for each variable sampled/ displayed by graph) Communication ports: one USB port available for the key and in the local installations, at least one serial port available for the 232/485 converter Windows 2000 Professional SP4, Windows XP Professional SP1 Internet browser Explorer 6.0 (o higher)	NO
Pl@ntVisor	Supervision Software PlantVisor configured for "Local Supervision"	YES
	Hardware USB key	YES
	modem PSTN	NO
	Optional: external modem GSM	YES

⚠ The PC where the supervision software is installed, has to be dedicated only for supervision

REMOTE SUPERVISION COMPONENTS LIST

Device	Description	Supplied by CLIMAVENETA
	Remote PC REQUIREMENTS: Processor: Pentium 4 2.0 GHz (or equivalent) Ram: 512 MB Disc: 20 GB, (200 MB for installation and almost 1 MB for each variable sampled/ displayed by graph) Communication ports: one USB port available for the key and in the local installations, at least one serial port available for the 232/485 converter Windows 2000 Professional SP4, Windows XP Professional SP1 Internet browser Explorer 6.0 (o higher)	NO
Pl@ntVisor	Supervision Software PlantVisor configured for "Remote Supervision"	YES
	Hardware USB key	YES
	modem PSTN	NO
	Optional: external modem GSM	YES

⚠ The PC where the supervision software is installed, has to be dedicated only for supervision

The connection with the RS485 network is carried out by means of the plug-in terminal connector on the card.
Pin-wiring of the connector is stamped on the card (see table below). If the card is placed in the last position of the supervision serial line, pins 2 and 3, you must connect a 120Ω - 1/4W end line resistor.
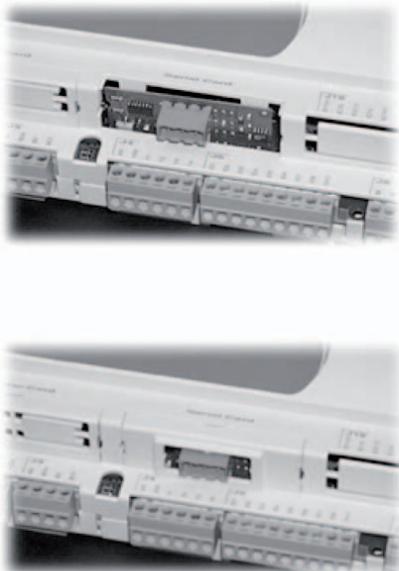
pin	significato / meaning
1	GND
2	RX+/TX+
3	RX-/TX-
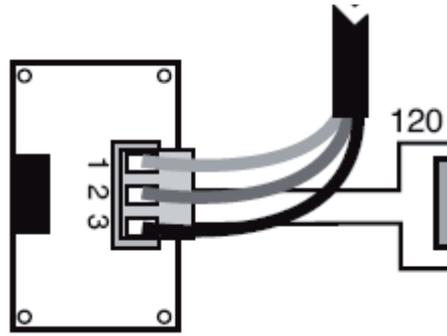
To censure that the ACCURATE units are configured as follow table:

CLIMAVENETA controller setting	
Protocol	Standard
Baud rate	19200
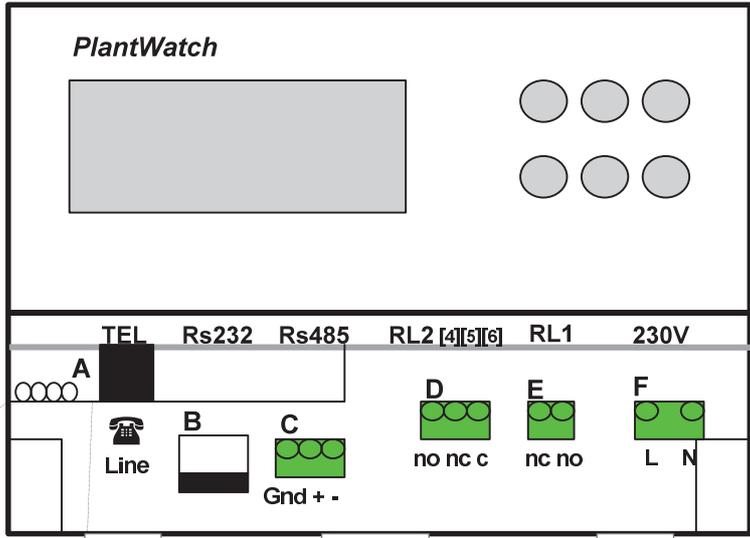
Meaning for the LEDs on the internal modem board (**only for PlantWatchwith internal modela**)

LED	MEANING	ACTION	
Tx (red)	Data transmission	PW $\Rightarrow$ remote modem	Flashes during communication
Rx (green)	Data reception	PW $\Leftarrow$ remote modem	Flashes during communication
Dtr (yellow)	Data terminal ready	PW modem ready	Always ON with some flashes
Cd (yellow)	Carrier detect	connecting to remote modem	Always ON during communication

DESCRIPTION OF THE CONNECTORS

A	6-way RJ-11 for PSTN telephone line (only for version with internal modem)
B	8-way RJ-45 for RS232 serial (downloading log, uploading parameters, code and external modem connection)
C	3-way RS485 serial terminal for connection to Carel controllers and printer board
D	3-way terminal for 230V alarm signal /relay RL2)
	Contacts 4-6 = normally open
	Contacts 5-6 = normally closed
E	2-way terminal for 230V external modem reset (relay RL1)
F	230V or 110V power supply (depending on the version)

WARNING AND USE OF THE CHANNELS

1	Use channel **1** to pass the telephone line cable; no other cables, not even very low cables, may pass through this channel.
2	Use channel **2** for the RS485 line that connects the Carel instruments; it way also be used at the same time to pass the lines carrying any very low voltage safety loads activated by relays 1 and 2. This channel can also be used for the RS232 line if using the external modem or a permanent connection to the personal computer.
3	Channel **3** should be used to pass the PlanWatch power supply line and the lines of any mains voltage loads activated relays 1 and 2.

Ref. Connector A
Connector A (RJ-11) is present only in the Plantwatch version fitted with internal modem, it can only be used for connection to a PSTN telephone line.

Ref. Connector C
This terminal is connected to the 3-wire RS485 network (twisted pair+shield) that connects the instruments controlled by Plant-Watch. Use AWG20/22 cables with a capacity between the òeads of less than 90pF/m (BELDEN 8761/8762 cables). The RS485 section is optically-insulated from the other signals present in the PlantWatch system (RS232 line and telephone line).

To censure that the ACCURATE units are configured as fol-low table:

⚠ **It is necessary to access the system as administrator user of the computer in order to install the software correctly.**

1. Insert the PlanVisor CD-Rom, the installation programm will start automatically or if necessary start with set-up.exe.
2. Follow the installation instruction, select language, and "Remote" or "Local" configuration according to Remote or Local supervision:
3. Complete the installation.
4. Connect the USB/RS485 converter ▭ (already connected to RS485 sereil line) to PC by mean the suitable cable equipment.
5. Insert the Hardware USB key ▭ to a free USB port.
6. Start PlantVisor

CLIMAVENETA controller setting	
Protocol	standard
Baud rate	19200
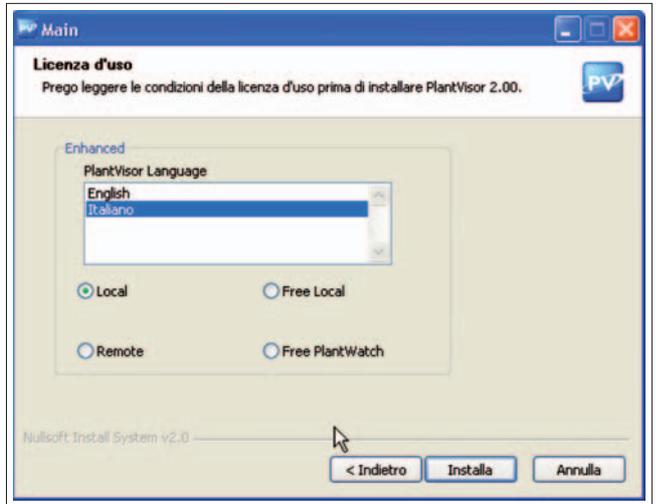
USB/RS485 CONVERTER CONFIGURATION ▭
To configure the USB/RS485 converter on PlantVisor is necessari to verify which COM porti is been associated .

• From "My Computer" right mouse button, and select Manage)
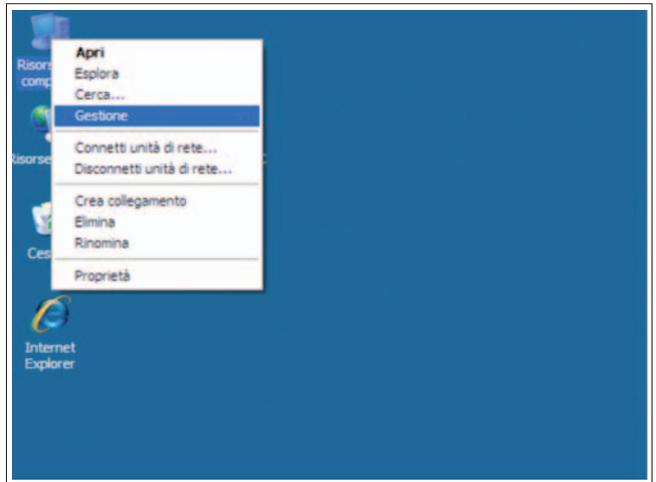
• Select "Device manager" ⇒ "Port (COM e LPT)"
• In this example the USB/RS485 converter is assocated at COM3 port.
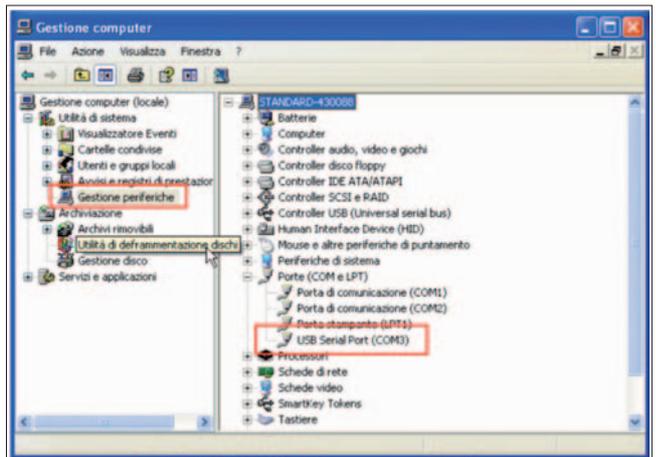
7. Start PlantVisor and insert Login and password

   For first access:
   Login: Administrator
   Password: (empty) it can be changed afterwards by
              configuration masks

8. select Service menù ⇒ Network
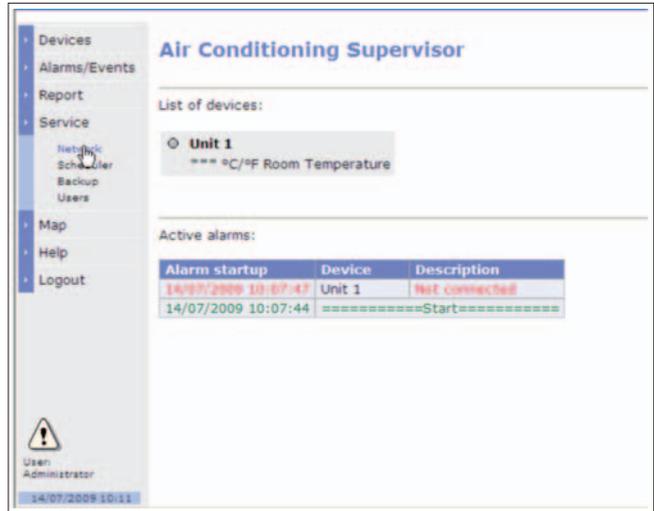
9. Selezionare menù Site configuration.
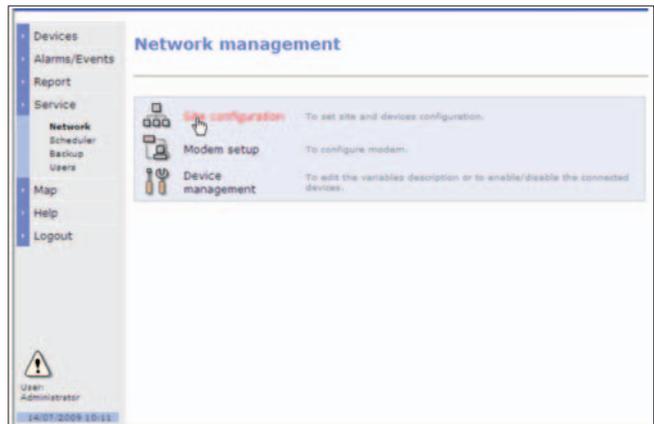
10. In "Serial configuration", select the COM port (es.
    COM3) associated at USB/RS485 converter, configure
    the BAUD RATE a 19200.
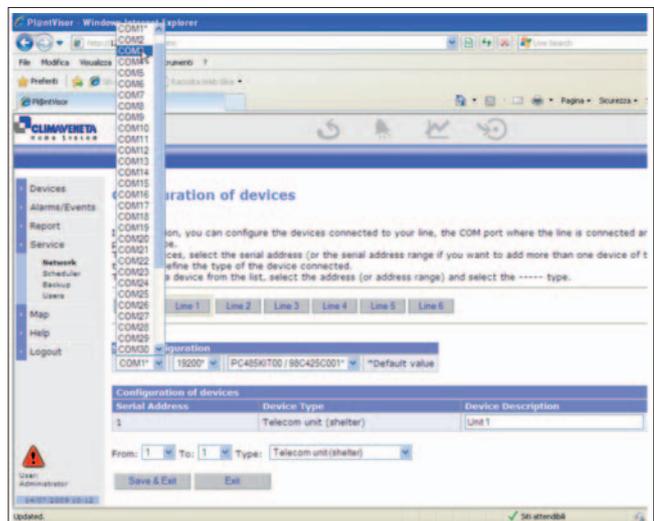
11. Select the device connected into the port (PC-Gate/CVSTDUMOR0).

12. Select the unit type "ACCURATE close-control unit"

13. Save the configuration and exit. To see if the setting are right, is necessary to reboot the PlantVisor.

For the whole functionality and details see the complete PlantVisor manual.
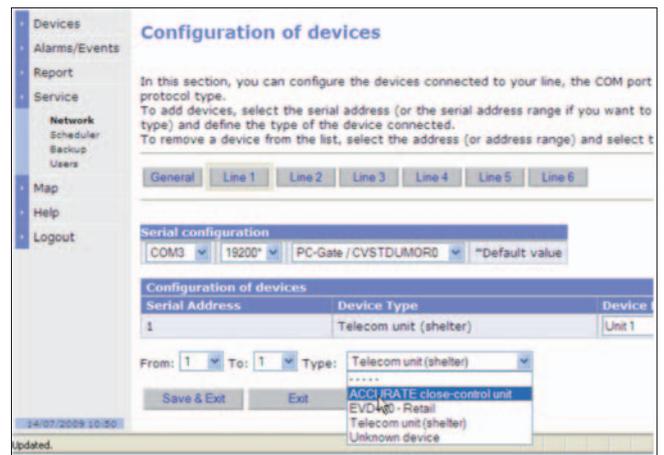
The CLIMAVENETA unit's are compatible with all the protocols that are emerging as the "de facto"standards in the world of HVAC/R and intelligent building management, and that are consequently used in the leading BMS: LonWorks®, Modbus®, BACnet™, TCP/IP, SNMP, TREND.

Each protocol needs a dedicated serial card, fitted in the suitable slot of ACCURATE controller.

RS485 Card
prot. CAREL - MODBUS RTU

pCOWEB Card
prot. BACNet, SNMP, TCP/IP

RS232 Modem Card

LON - FTT10 Card
prot. LONWORKS

Supplied by CLIMAVENETA

TREND Card
prot. TREND

Not supplied by CLIMAVENETA
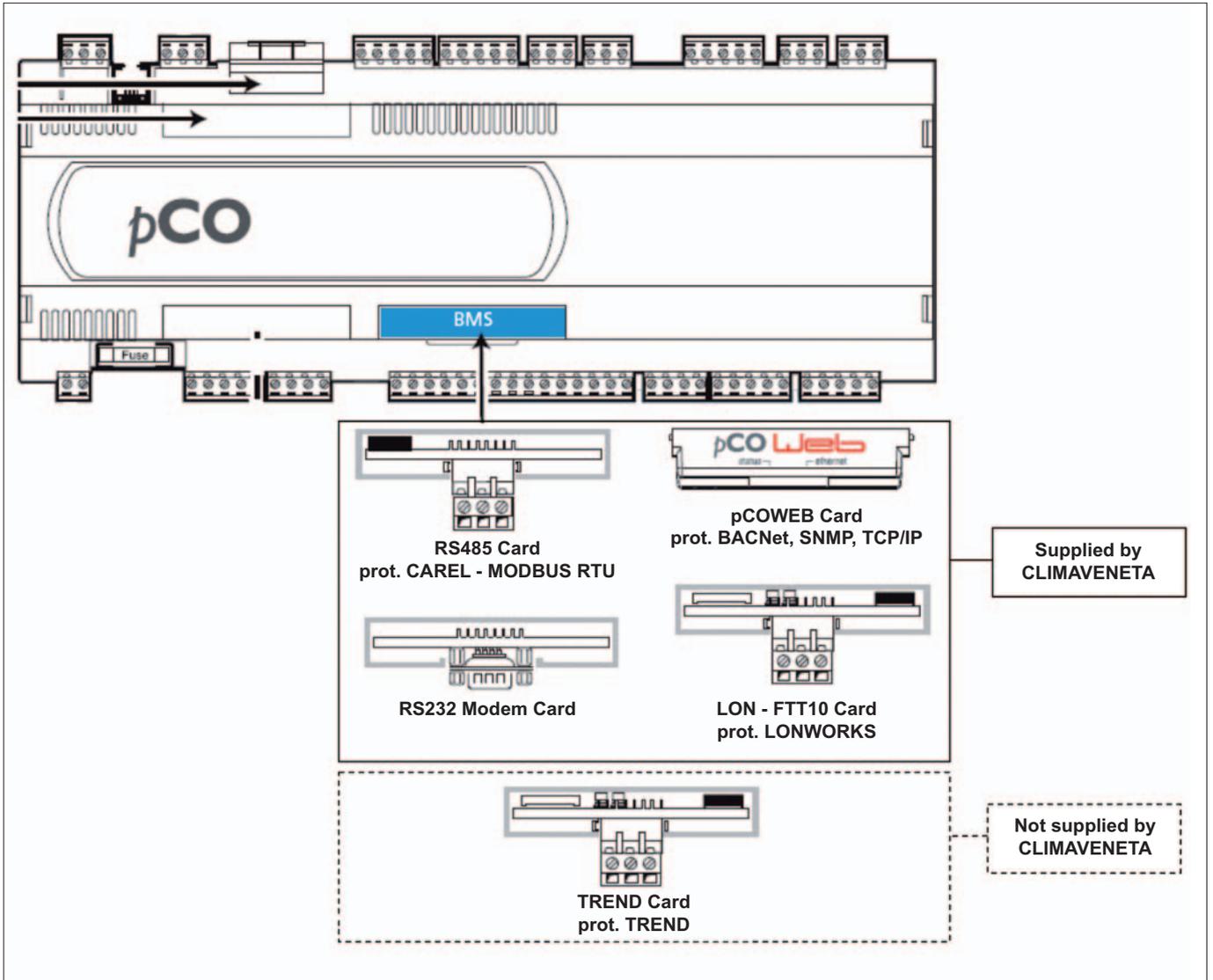
At the BMS are available all the variables to control the unit:

DIGITAL VARIABLES

ID	DESCRIPTION	MEASURE UNIT	READ/WRITE
	UNIT STATUS		
1	Unit (Evaporating Fan) ON	-	R
2	Compressor 1	-	R
3	Compressor 2	-	R
4	Electrical Heaters 1	-	R
5	Electrical Heaters 2	-	R
6	Dehumidification	-	R
7	Hot gas by-pass	-	R
8	Humidification	-	R
9	Emergency Mode	-	R
	ALARMS		
20	Wrong Phases Sequence	-	R
21	Smoke/fire or flooding (only EX units with PCO1-SMALL)	-	R
22	Smoke/fire	-	R
23	Flooding	-	R
24	Loss of air flow	-	R
25	High pressure – circuit 1	-	R
26	High pressure – circuit 2	-	R
27	Low pressure – circuit 1	-	R
28	Low pressure – circuit 2	-	R
31	Heaters overheating	-	R
32	Dirty filter	-	R
33	Humidifier – High Current	-	R
34	Humidifier – No water	-	R
35	Humidifier – Low Current	-	R
36	EEPROM Failure	-	R
37	Loss of water flow	-	R
38	Room temperature sensor failure	-	R
39	Room humidity sensor failure	-	R
40	Supply air temperature sensor failure	-	R
41	Cold water temperature sensor failure	-	R
42	Hot water temperature sensor failure	-	R
43	Outdoor air temperature sensor failure	-	R
44	LAN disconnected	-	R
45	High room temperature	-	R
46	Low room temperature	-	R
47	High room humidity	-	R
48	Low room humidity	-	R
49	High water temperature	-	R
50	Wrong password	-	R
51	General Alarm	-	R
52	Mainteinance Signalling	-	R
	COMMANDS		
80	ON/OFF unit	-	R/W
81	Alarm Reset	-	R/W

R   Readable
W   Writable

ANALOGIC VARIABLES

ID	DESCRIPTION	MEASURE UNIT	READ/WRITE
	SENSORS VALUES		
1	Room temperature	°C	R
2	Room relative humidity	%	R
3	Supply air temperature	°C	R
4	Cold water temperature	°C	R
5	Hot water temperature	°C	R
6	Outdoor air temperature	°C	R
	OUTPUT VALUES		
7	Cold water valve ramp	%	R
8	Hot water valve ramp	%	R
9	Evaporating fan speed	%	R
	SET-POINTS		
20	Cooling setpoint	°C	R/W
21	Heating setpoint	°C	R/W

INTEGER VARIABLES

ID	DESCRIPTION	MEASURE UNIT	READ/WRITE
	SET-POINTS		
20	Dehumidification set	%	R/W
21	Humidification set	%	R/W
22	High room temperature threshold	°C	R/W
23	Low room temperature threshold	°C	R/W
24	High room humidity threshold	%	R/W
25	Low room humidity threshold	%	R/W

R   Readable
W   Writable
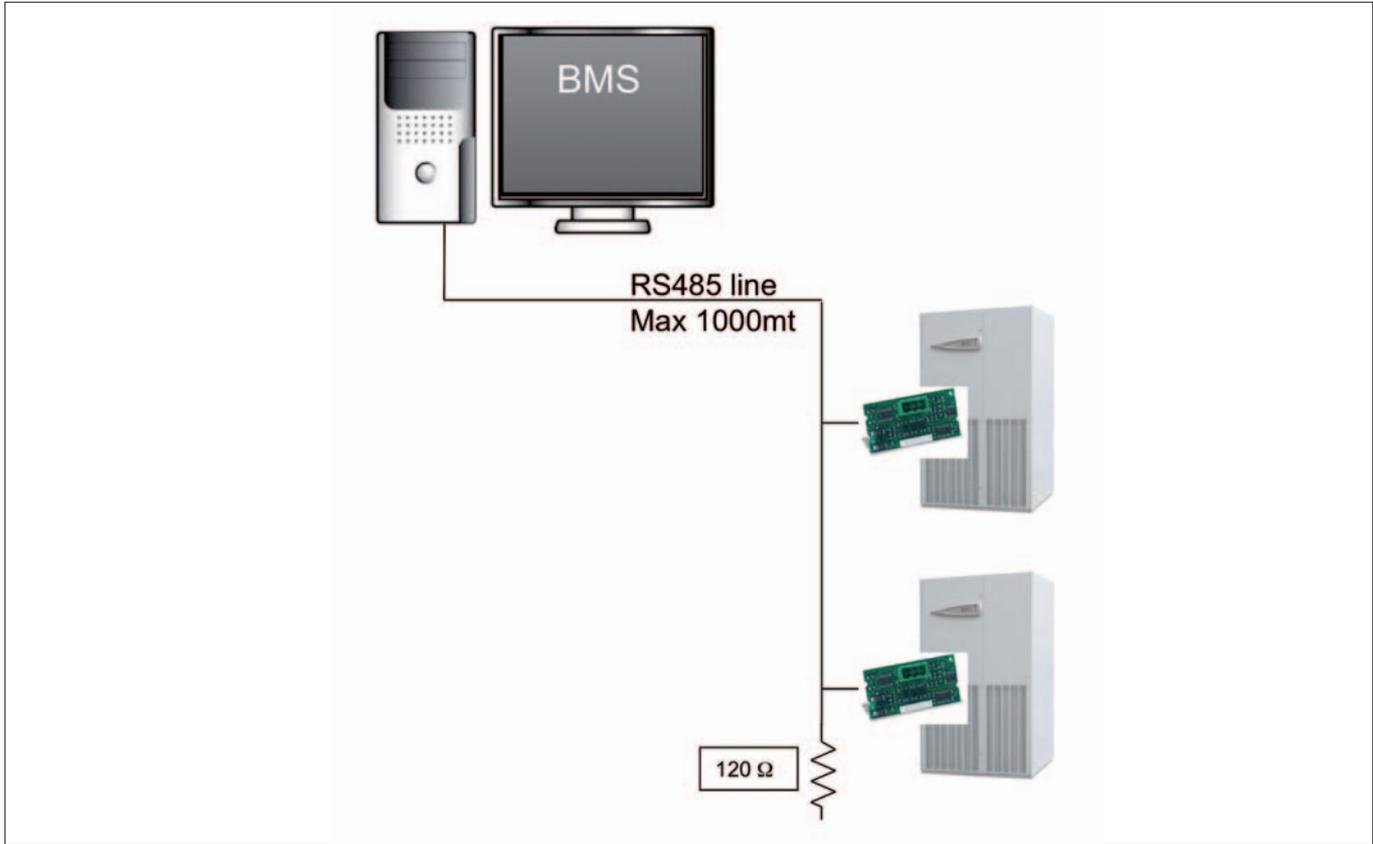
Modbus is a serial communications protocol published by Modicon in 1979 for use with its programmable logic controllers (PLCs). It has become a de facto standard communications protocol in industry, and is now the most commonly available means of connecting industrial electronic devices.

The Modbus protocol for ACCURATE units is RS485 RTU type (1byte = 2 characters hexadecimal). Is sufficient to install the RS485 serial card into suitable slot of pCO controller of ACCURATE and set, on the "SERIAL SETUP", the Modbus protocol and BAUD RATE according to the serial connection of BMS (check with System Administrator).

	COMPONENT LIST	
Device	**Description**	**Supplied by**
	Serial card RS485 installed in each ACCURATE	CLIMAVENETA
	Serial cable RS485 and resitance 120Ω- 1/4W Max 1000mt.	Client/Installer
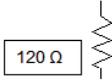
CLIMAVENETA controller setting	
Protocol	MODBUS
Baud rate	19200

Comunication parameter suggested	
Timeout response	500ms
Intercharacter delay	80ms
Interpacket delay	80ms
Max retries	3
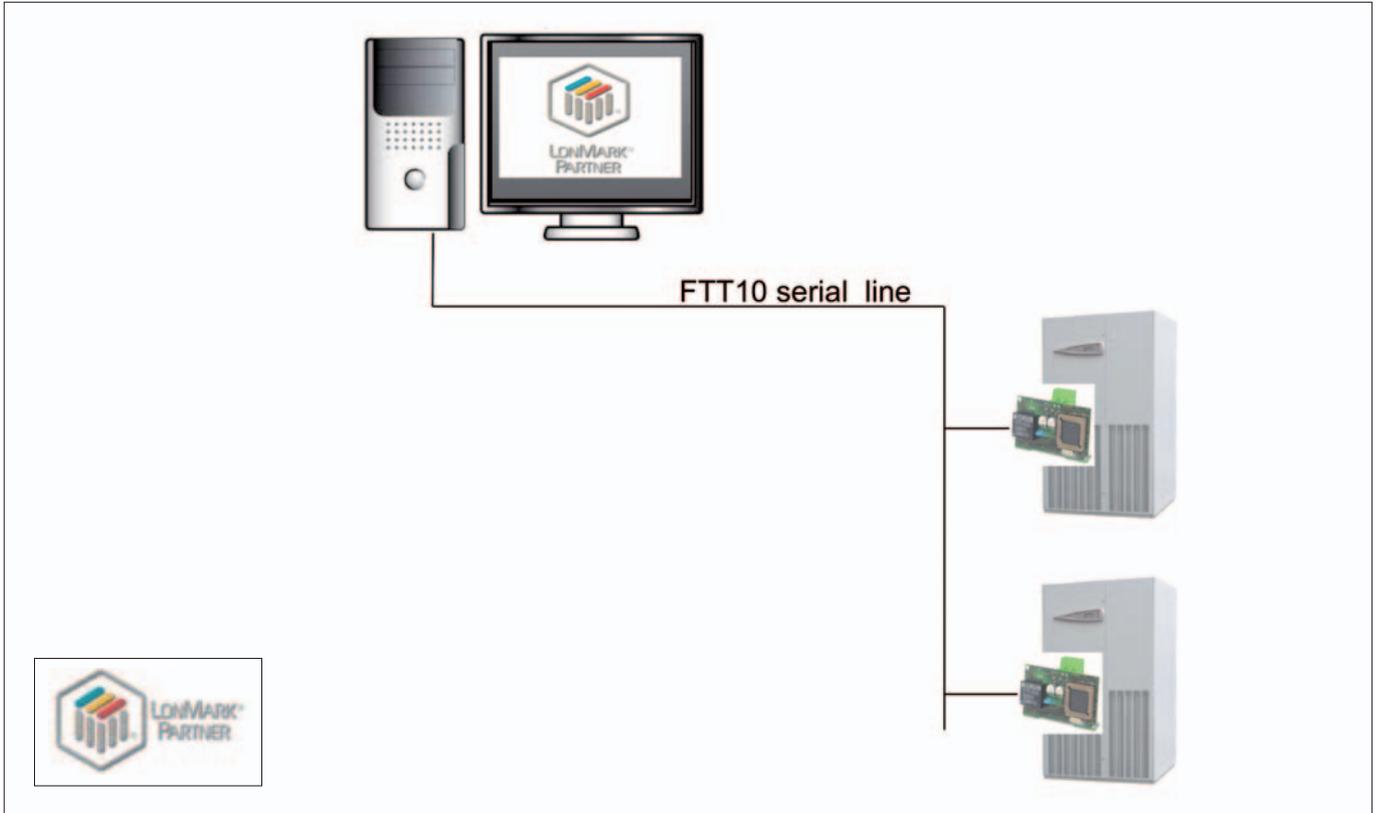
FTT10 serial line

LonWorks is a networking platform specifically created to address the needs of control applications. The platform is built on a protocol created by Echelon Corporation for networking devices over media.

LonWorks is a networking platform specifically created to address the needs of control applications. The platform is built on a protocol created by Echelon Corporation for networking devices over media

The LON serial card uses an Echelon® FTT-10 transceiver, approved for use on the TP/FT-10 channel.

This channel has the following main characteristics:

• allows the connection of a maximum of 64 nodes for each network segment;

• the nodes can be connected without any restrictions in the topology: that is, star, ring, on one bus only, or with any combination of these;

• communication speed: 78,125 kbps;

• maximum distance (Belden 85102 cable): 500m for connections between the nodes with free topology; 2700m for bus connections with double line terminator

⚠ **In order to become operational, the board must be programmed and it requires knowledge of and experience with the LonWorks® network installation and maintenance tools.**

The user must then copy the .NXE file (supplied by CLIMAVENETA) to the memory on the interface board using the LonWorks® network installation and maintenance systems, such as LonMaker™ or NodeBuilder®, so as to render the node operational.

As well as the .NXE file, a file with the extension .XIF (External Interface File) will also be provided, containing the essential information on the node that is used by the network management instrument for the configuration of the node.

COMPONENT LIST supplied by CLIMAVENETA	
Device	**Description**
	LON-FT10 serial card in each unit
File .NXE File .XIF	Application to be copied to the interface using LonMaker™ or similar tools; External Interface File, containing the essential information on the node;

CLIMAVENETA controller setting	
Protocol	LON
Baud rate	4800
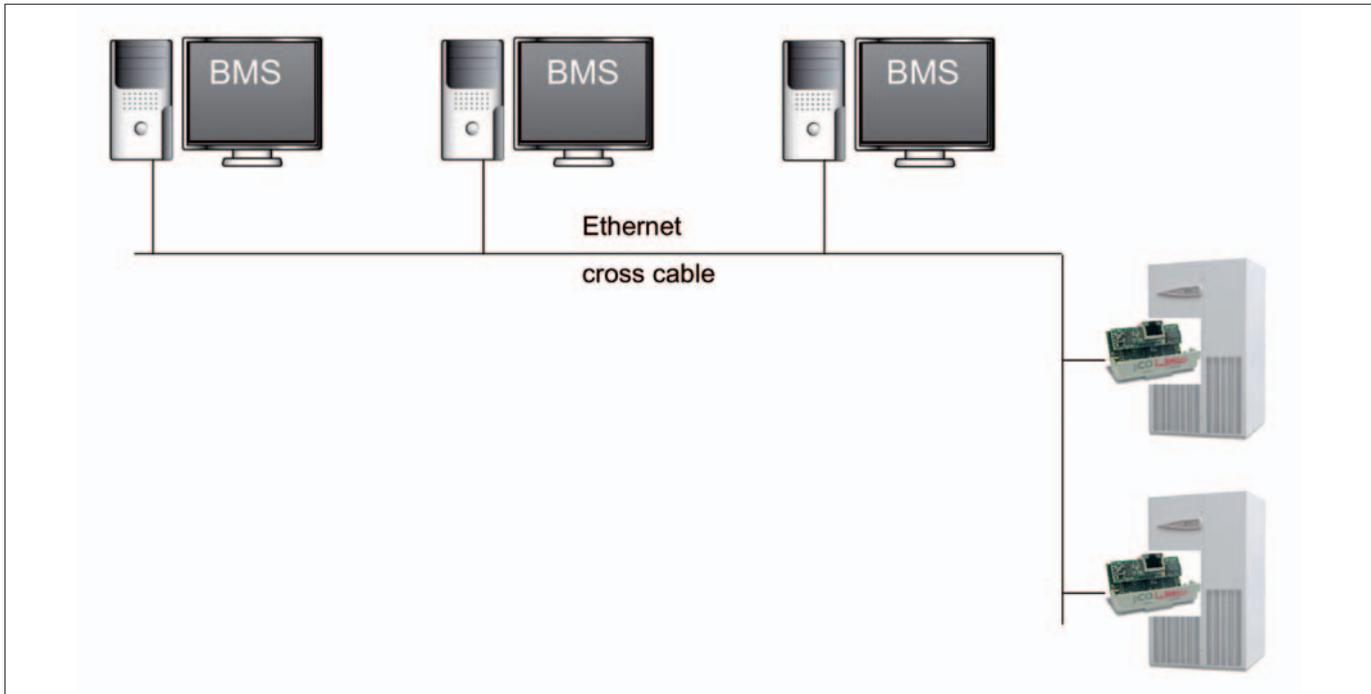
pCOWeb acts a "gateway", that is, a translator between the "CAREL supervisor" data protocol and the Ethernet network protocols commonly used to connect the computers in a building. This is a board for pCO sistema controllers that interfaces the latter with the emergine protocols (BACnet™ SNMP) in HVAC, and is based on the physical Ethernet™ standard.
The pCOWeb has a big capacity of memory (8Mb flash wich 4Mb for user) and calculating (ARM7 74MHz with LINUX operating system).
This therefore allows connection to the following network:
• with the web server capabilities of pCOWeb, the user can download, via FTP, the HTML pages relating to the specific application and then use a browser for the remote management of the installation.
• SNMP v1, v2, v3
• BACnet™Ethernet™, BACnet™/IP, BACnet™ MS/TP
• LANs ot Internet.
The net parameter configuration could be in automatic way if a DHCP server is present

pCOWeb connected to an Ethernet network provides the following functions:
• WEB server: used to check or change the operating status of the pCO controller using a remote computer running, for example, Internet Explorer™ or Mozilla Firefox; dynamic web pages developed by the user can be added; supports CGI technology; supports protection for accessing web pages;
• Logger: pCOWeb can record the values of some of the pCO controller variables in a file on its non-volatile memory; the file can then be downloaded to a PC using Internet Explorer™;

• Graphs: the trends over time of the data saved with the Logger function can be viewed on graphs;
• E-mail: pCOWeb can send e-mails when programmable events occur on the pCO controller (activation of alarms, exceeding of thresholds) or at set time intervals; a file in XML format can be attached containing the values of the variables;
• FTP PUSH: pCOWeb can send a file in XML format containing values of the variables to a suitably configured computer; the send operations can be programmed in the same way as for send the e-mail messages (upon event or at set times); the file is sent using the FTP protocol;
• SNMPv1 & v2: to access pCOWeb from a computer using supervision software based on the SNMP protocol. pCOWeb can send programmable enterprise TRAP or INFORM packets for alarm notifications;
• BACnet Ethernet ISO8802-2 over 8802-3: to access the pCO controller using supervision software based on the BACnet Ethernet protocol;
• BACnet/IP (Addendum A/Annex J): for access using supervision software based on the BACnet/IP protocol;
• FTP server: used to copy data files or web pages from/to pCOWeb in a simple manner, using programs based on dragging icons from one window to another;
• DHCP: used to connect pCOWeb to a local network using the method of automatic addresses assignment by a central server, rather than statically setting the addresses on the individual devices; DHCP is active by default;
• Plugins: used to add additional applications developed by CAREL or by the user in script or compiled format;
• Firmware update: the pCOWeb firmware can be updated from a computer.

COMPONENT LIST supplied by CLIMAVENETA	
Device	**Description**
	pCOWeb serial card in each ACCURATE

CLIMAVENETA controller setting	
Protocol	Standard
Baud rate	19200

CONFIGURATION INSTRUCTIONS

The PC can communicate with pCOWeb if the settings on both devices are correctly aligned.

As the pCOWeb default settings can only be changed once the connection has been established with the PC, when first accessing the device the personal computer will need to be configured to adapt it to the pCOWeb default settings.
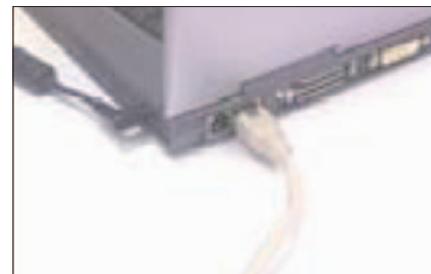
A - PC SETTING

disconnect the personal computer from the data network (if connected), and connect it directly to the pCOWeb using the cable (crossover).

B - IP address and subnet mask information

The personal computer must be set not to use the DHCP, but rather the following IP address: 172.16.0.2. The Subnet mask field also needs to be set;the Gateway is not required..

1. Double click "Control Panel"
2. Double click "Network and dial-up connections"
3. Double click "Local area connection"
4. Click "Properties"
5. Double click "Internet Protocol (TCP/IP)"

⚠ **Note down all the settings shown in the new window: this will be useful for returning to the original settings when the procedure is terminated, so that the PC can again communicate with the data network it was previously connected to.**

6. Click "Use the following IP address"
   Set the following parameters:
   IP address = 172.16.0.1
   Subnet mask = 255.255.0.0
7. Click the OK button to close all the windows.
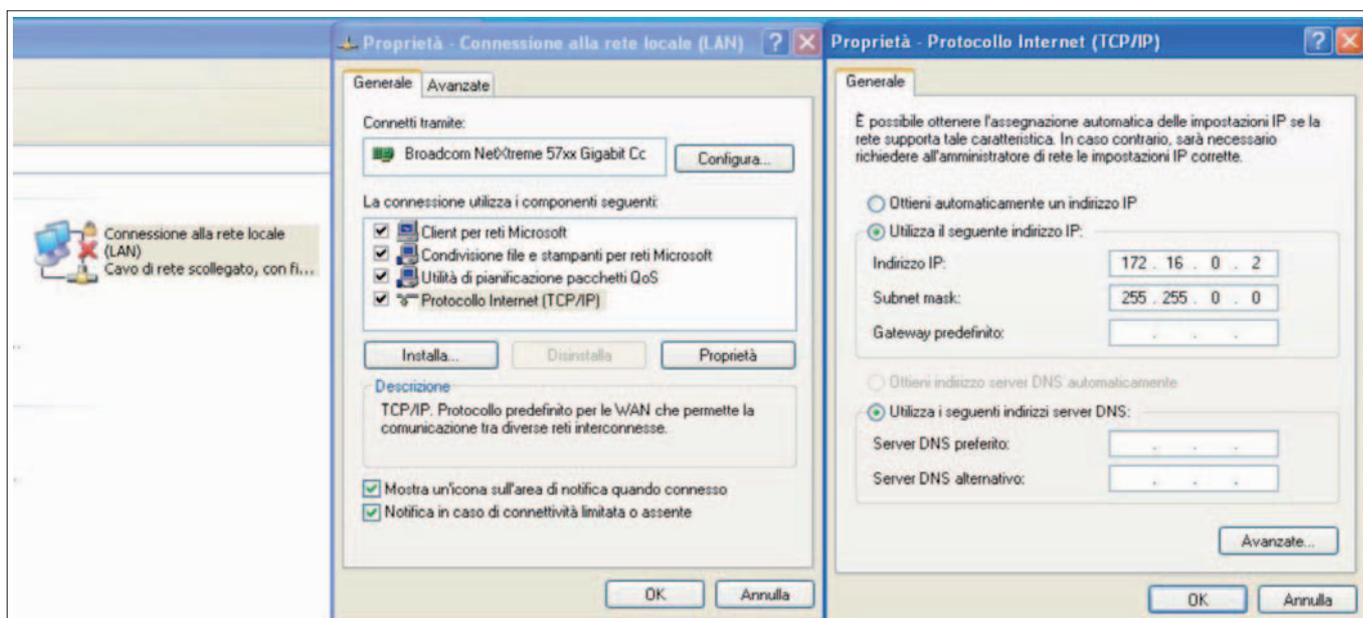
C - Proxy

The following procedure tells the personal computer to not use the network device called the "proxy" for communication: in fact, the PC is not connected to the network and if the "proxy" is not disabled communication would not be possible.

1. Open the Windows "Control panel".
2. Double click "Internet options";
3. Click "Connections". Another window will be displayed.
4. Click "LAN settings…
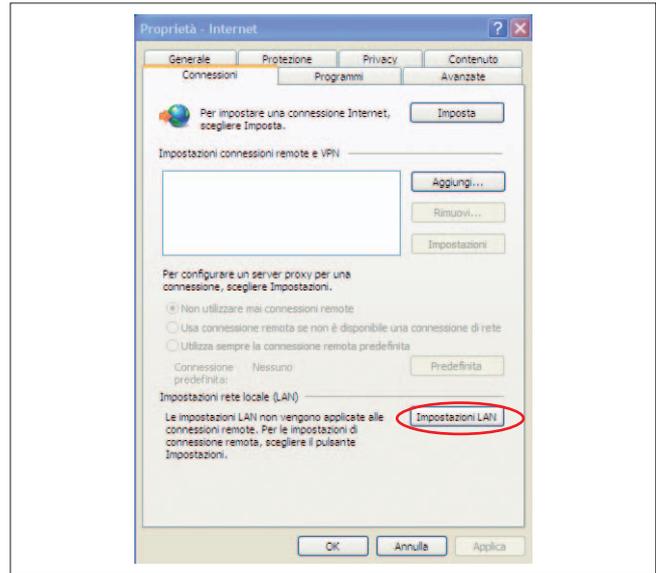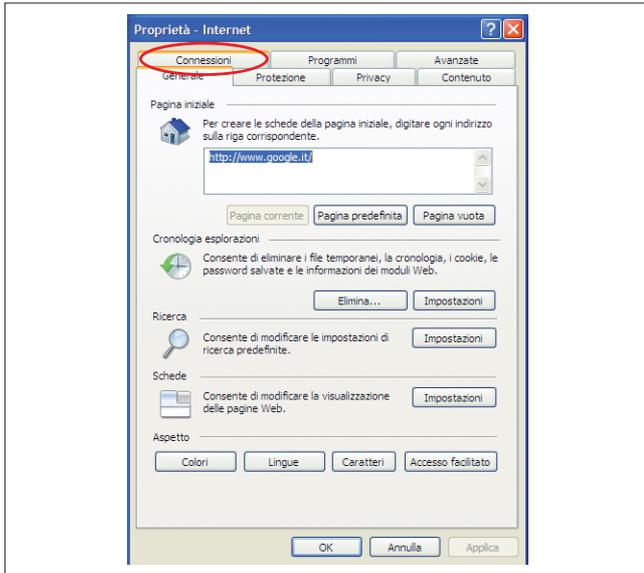
5. Disable the proxy server.
6. Close the windows using the OK button.
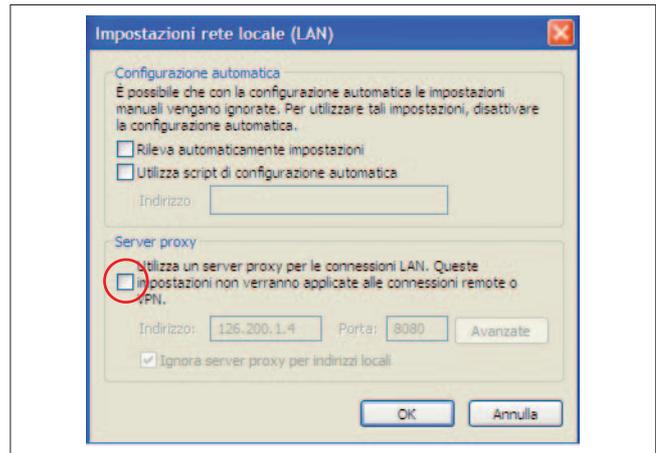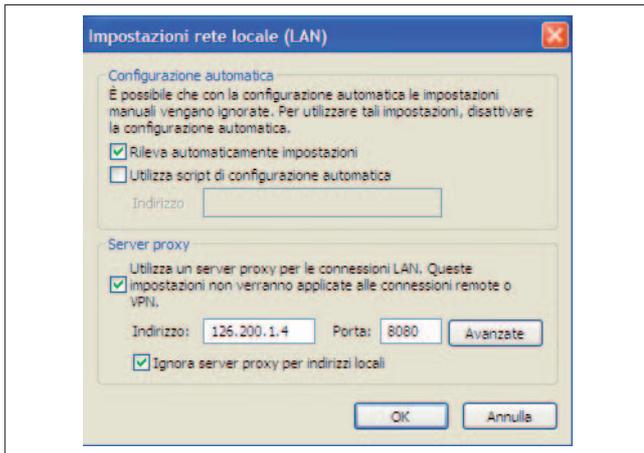
Activating the factory network settings (button)

1. Switch on the pCO controller EVOLUTION.
2. Check that both the indicator LEDs on the pCOWeb connector come on within a few seconds.

⚠ **The activation of the factory settings or the user settings can only be selected when starting the pCOWeb. pCOWeb will reboot whenever it is restarted.**

3. Immediately after reboot, as soon as the Status LED remains on steady GREEN, to activate the factory settings rather than the user settings, hold the button;
4. After around 20 seconds the Status LED, due to the button being pressed, will turn RED and flash slowly 3 times; the button must be released before then end of the 3 flashes;

5. Once the red flashes have terminated, the Status LED will turn GREEN and, if the procedure has been performed correctly, immediately after the Status LED will confirm the pressing and release of the button by flashing quickly 3 times RED, and then will come on steady GREEN again for around one minute (completion of the start-up phase); once the start-up phase has been completed, the Status LED will start flashing: pCOWeb will now start operating;

In this mode pCOWeb will not use the values of the "User" parameters for communication, but rather the following factory values:
IP address: 172.16.0.1
Subnet mask: 255.255.0.0

NOTE: These values remain active until pCOWeb IS RESTARTED.
When next rebooted, pCOWeb will return to the "User" configuration. The network communication parameters should be configured immediately.

Accessing pCOWeb from a PC

For pCOWeb to communicate with the data network it is installed in, a number of network communication parameters need to be correctly set.

⚠ **The assistance of the network administrator is required to establish if pCOWeb can be connected, and to understand the essential data relating to the installation.**

On the PC open Internet Explorer; in the address field enter the following number, including the dots:

172.16.0.1 then press ENTER.

The pCOWeb main page "index.html" will be displayed, and click on "Go to Administrator Area"
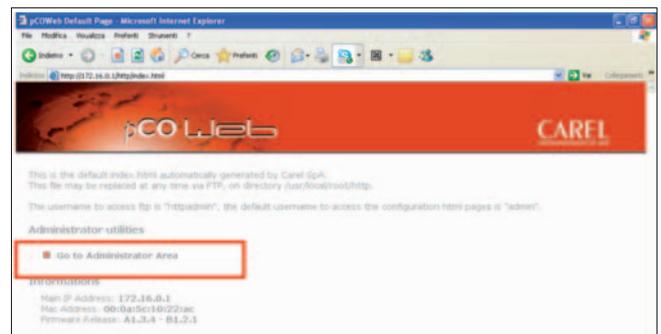
at the login and password request, insert the factory setting:

Username: **admin**
Password: **fadmin**
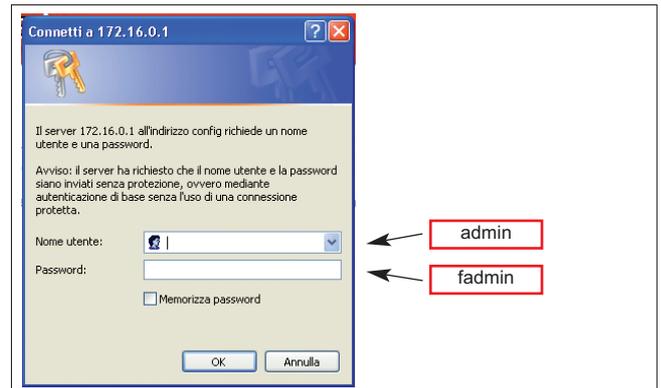
If the login data entered are correct the following page will be displayed:

Click "Informations" to refresh Pco variables

⚠ **pCOWeb is already ready in the factory configuration for network with DHCP and no operation is required.**
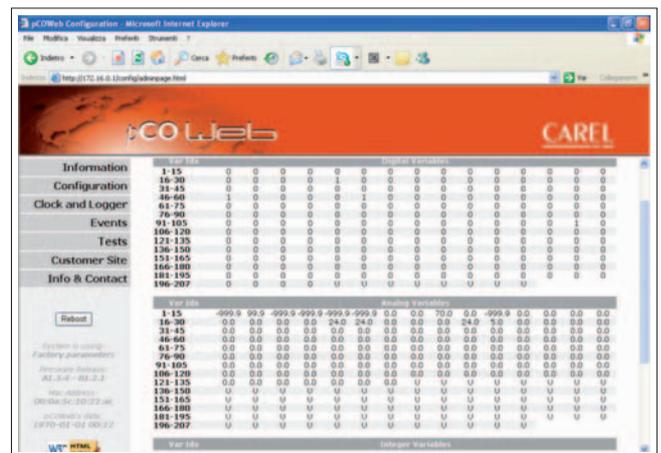
To set the Network configuration, starting by the main configuration page – Information, click "Configuration", then click the "Network" tab.
set the following fundamental user network parameters:
• IP address
• NetMask
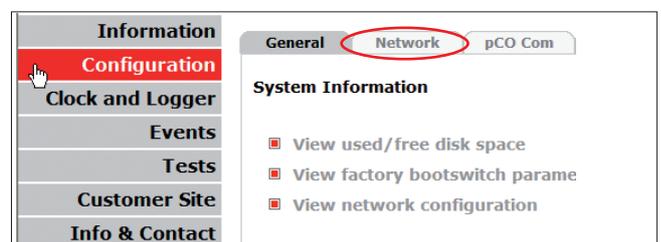
⚠ **The values set will only be used when pCOWeb is next rebooted.**

EVENT NOTIFICATION

Notification messages can be programmed to be sent when events occurred. The following types of notification messages are managed:
• E-mail, the body of which can contain customised text or a web page with the values of the pCO controller variables read at the moment the message was sent; possibility to attach a custom XML file containing the values of the variables;
• XML file, identical to the one sent by e-mail, but in this case delivered by FTP (FTP PUSH function);
• SNMP TRAP or INFORM messages, which can contain up to 5 values of selected pCO variables.

1. From pCOWeb main page, click on "Events".

2. Click "View and modify the events' recipients" if you need to configure email properties (that have to be provided by your server administrator).

The settings in this window will be common to all the events generated.

SETTING THE NOTIFICATIONS SET UPON VARIATIONS IN THE VARIABLES

• Click "Events trigged by digital variables" or
• Click "Events trigged by analogs variables" or
• Click "Events trigged by integers variables"

Example of variable setting:
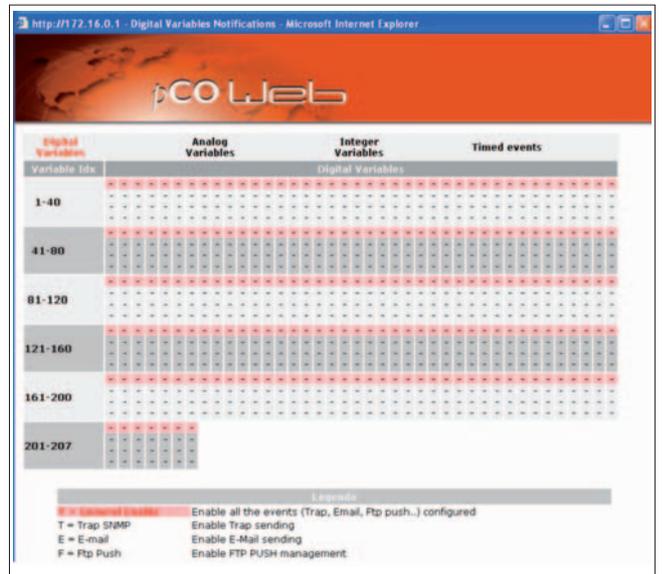
• Click on variable check box (Example: digital variable 1):
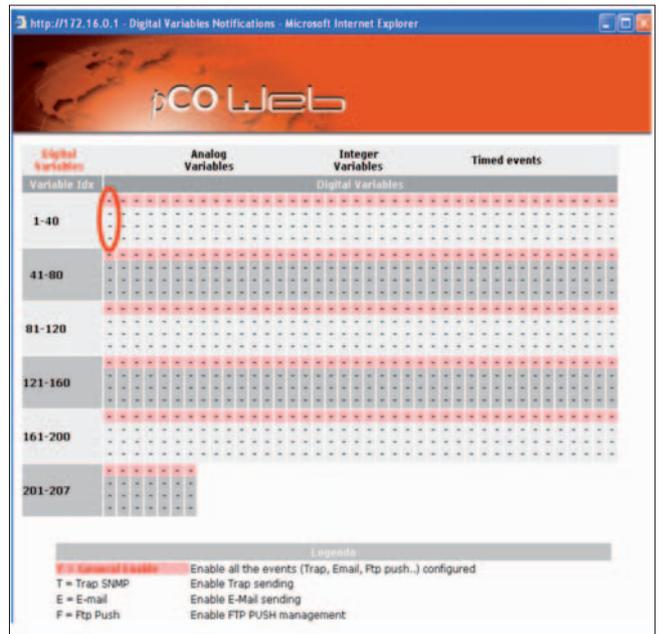
and set the parameters:
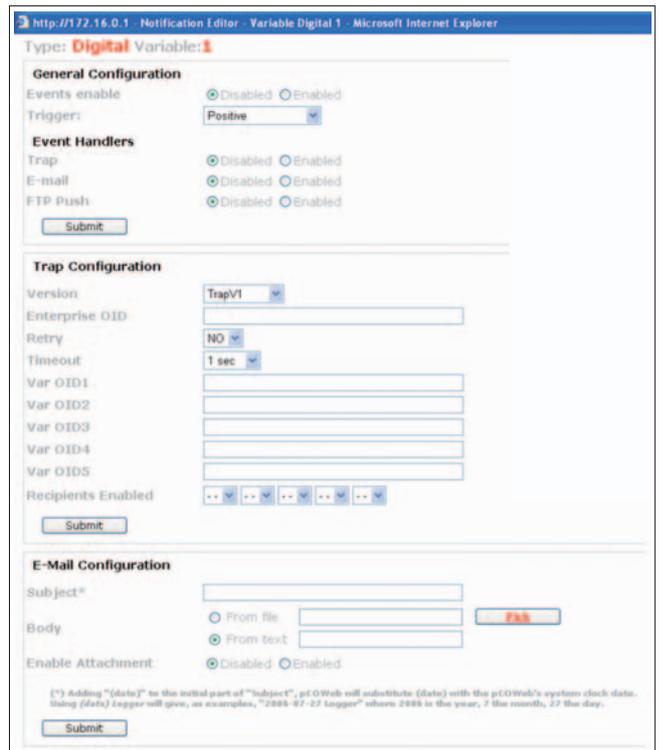
More informations are available in PCOWEB service Manual.

BACNET PROTOCOL
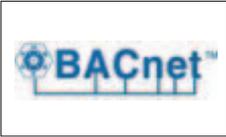
pCOWeb can recognise queries sent by a supervisor that uses the BACnet protocol (Building Automation Control Networks), in the following two versions:

• BACnet/IP (Addendum A/Annex J)
• BACnet Ethernet ISO8802-2 over 8802-3

The two standards use the same physical means for carrying the data (Ethernet RJ-45 network) but differ as regards the different ways the data packets are encoded. If BACnet is used, during installation the proper version needs to be set to coincide with the type used by the supervisor.

⚠ **The system integrator, who is usually responsible for setting the various parameters, checking network communication and setting up the supervision system, should know how BACnet works.**

The basic BACnet parameters configuration are available on suitable menù " Configuration" .

The values set will only be used when pCOWeb is next rebooted.

For advanced configuration, go to http://ksa.carel.com and download the BACset Configuration Tool.
BACset can be used to set all the properties of the BACnet objects supported by pCOWeb, save them on pCOWeb or on the PC for later use when required.

SNMP PROTOCOL

SNMP (Simple Network Management Protocol) is a protocol used in Ethernet networks for controlling and setting the parameters for the network devices, for example switches and network printers.

⚠ **The system integrator, who is usually responsible for setting the various parameters, checking network communication and setting up the supervision system, should know how SNMP works.**

A simple system based on the SNMP protocol normally features a series of devices, each containing an SNMP Agent, as well as a central supervisor called the NMS – Network Management Station – which periodically queries the devices, acquiring the status and where necessary setting the operating parameters.

The simplicity of its messages means that SNMP is becoming increasingly widespread, above all for the control of industrial devices.

pCOWeb includes an SNMP v2c Agent, that is, an application that responds to network queries in SNMP protocol version 1 and 2c.
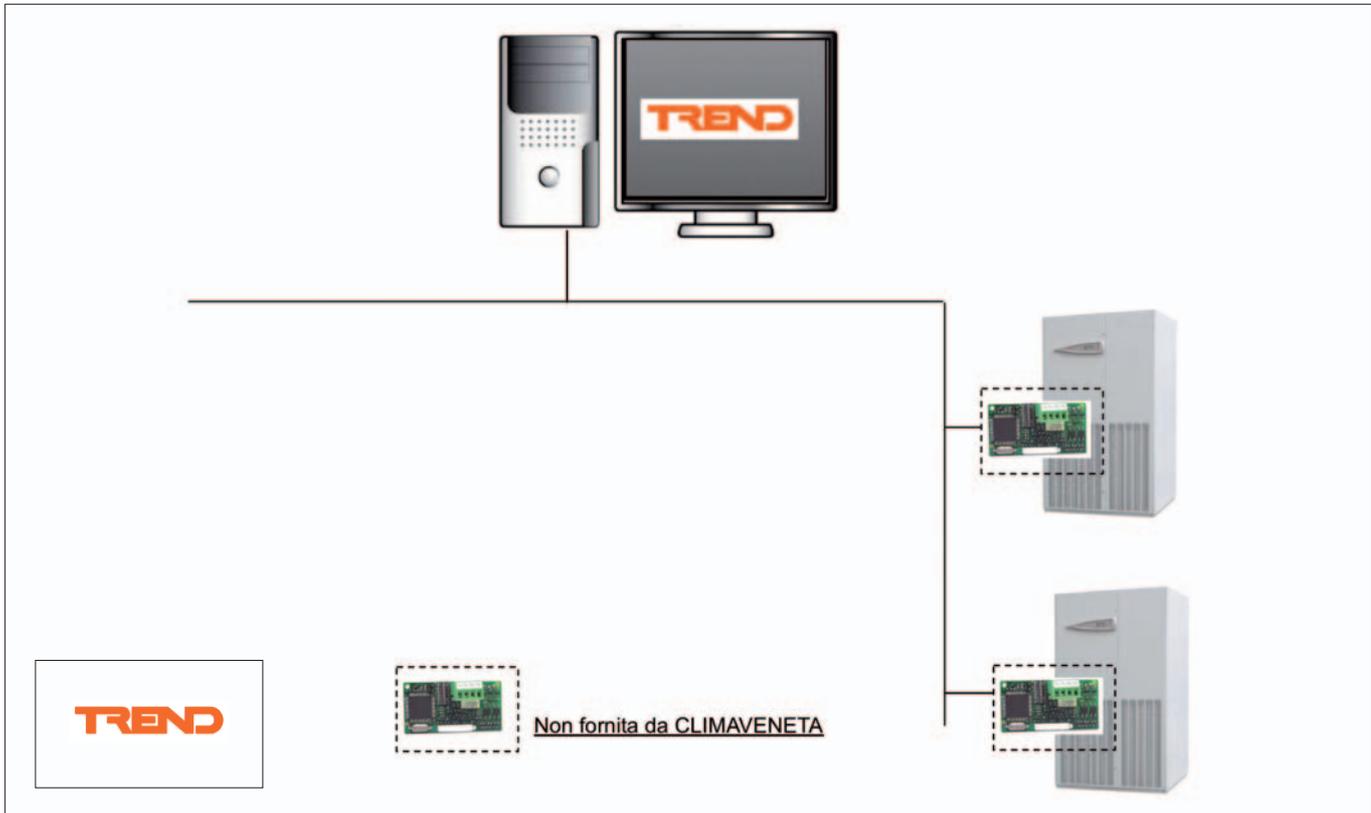
The basic SNMP parameters configuration are available on suitable menù "Configuration" .

The values set will only be used when pCOWeb is next rebooted.

Non fornita da CLIMAVENETA

TREND is a building automation system that is very widely used in English-speaking countries and in Europe in general.
The Climaveneta Air conditioning units, by mean the suitable serial card (not supplied by CLIMAVENETA), are TREND suitable.
The TREND serial card has to purchase from TREND UK or CAREL UK (trend@carel.com), and it has to be programmed directly by the supplier with a .CDE file and Serial Variables.doc provided by CLIMAVENETA.

Device	COMPONENT LIST	
	Description	Supplied by
	TREND Serial card for each unit	TREND or CAREL UK
CDZ1CLOSE.CDE	Variables configuration file for TREND serial card	CLIMAVENETA
Serial Variables.doc	Air conditioning Variables list	CLIMAVENETA

CLIMAVENETA controller setting	
Protocol	Standard
Baud rate	Check with System Admnistrator

The RS232-Modem serial card i san option to allow connecting the unit with HAYES analogic modem or GSM.

WITH ANALOGIC MODEM PSTN
The connection of analogic modem to a remote PC allows a supervision system with the same caratteristics as already described in the Supervion paragraph.

| Device | COMPONENT LIST | Supplied by CLIMAVENETA |
	Description	
	Serial card RS232 Modem for each unit	YES
	modem PSTN	NO
	Remote PC REQUIREMENTS: Processor: Pentium 4 2.0 GHz (or equivalent) Ram: 512 MB Disc: 20 GB, (200 MB for installation and almost 1 MB for each variable sampled/displayed by graph) Communication ports: one USB port available for the key and, in the local installations, at least one serial port available for the 232/485 converter Windows 2000 Professional SP4, Windows XP Professional SP1 Internet browser Explorer 6.0 (o higher)	NO
	Supervision Software PlantVisor configured for "Remote Supervision"	YES
	Hardware USB key	YES
	Optional: external modem GSM	YES

PIN	Meaning	PIN	Meaning
1	CD	5	GND (frame)
2	RX	6	not connected
3	TX	7	RTS
4	DTR	8 and 9	not connected

CLIMAVENETA controller setting	
Protocol	Standard
Baud rate	19200

WITH GSM MODEM
The connection with a GSM modem allows to send SMS to GSM phone in case of allarms.

	COMPONENT LIST	
Device	**Description**	**Supplied by**
	Serial card RS232 Modem in each unit	CLIMAVENETA
	External GSM modem	CLIMAVENETA

CLIMAVENETA controller setting	
Protocol	Standard
Baud rate	19200

PROBLEM	CAUSE	SOLUTION
LON		
	LON board does not programmed with .NXE file	Verify to hav the .NXE file supllied by Climaveneta and download it on the board with a suitable software tool. See the dedicated paragraph for "LON Serial card"
PLANTVISOR		
	USB hardware key not programmed	Require to Climaveneta Service the programmed USB Hardware key
	USB Hardware key not present	Check if the USB hardware key is installed in USB port
	USB hardware key driver's not installed	Uninstall and install the PlantVisor software. See the dedicated paragraph for "PlantVisor installation"
	USB/RS485 converter configuration error	Verify on Plantvisor the correct configuration of COM port and device type (PC-Gate/CVSTDUMR0). See the dedicated paragraph for "USB Converter configuration"
	Configuration error of unit controller protocol's	Check the Protocol type and BAUD rate on pCO controller and Plant visor configuration. See the dedicated paragraph for "Plantvisor installation".
PLANTWATCH		
UNIT Nr…......... not connected	Wrong configuration of pCO controller	Check the protocol type (standard) and BAUD RATE (19200) on pCO controller. See the dedicated paragraph for "PLANTWATCH connection".
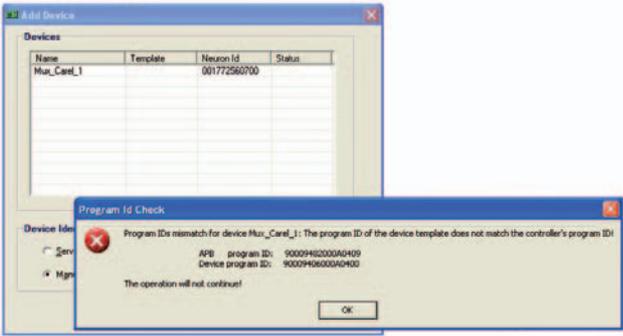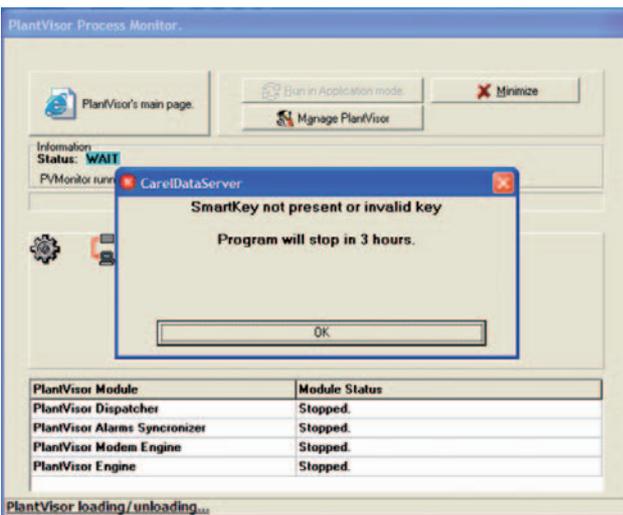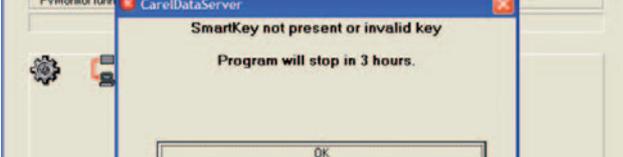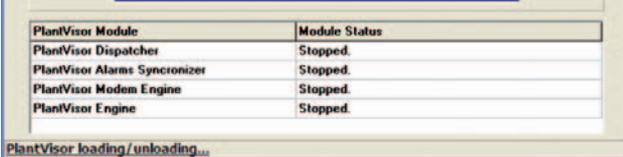
CLIMAVENETA