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Ethernet converters   # GNOME

GNOME232: Ethernet to RS232 converter

GNOME485: Ethernet to RS485 converter

GNOME422: Ethernet to RS422 converter

GNOMETTL: Ethernet to RS232 (TTL levels) converter

Virtual serial port

GNOME

Datasheet

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CONTENT

BASIC INFORMATION

Description

GNOME232, GNOME485, GNOME422 and GNOMETTL are simple and inexpensive converters of the 10/100 Ethernet to RS232, RS485 and RS422 respectively. They enable easy connection of devices with serial interface to a computer network (e.g. a home or company LAN, or the Internet), but are also able to extend a serial line to the other end of the world via the Internet.

GNOME232 and GNOMETTL only differ in their hardware design and serial line levels. GNOMETTL only features data lines at TTL levels and is supplied without any box.

The converters feature a "virtual serial port", i.e. software which creates a new serial port in the Windows operating system directed to the GNOME module via the Ethernet interface. The converter is easy to configure using the supplied software or a WEB browser.

Application

- Connection to the Ethernet of devices communicating via serial line.

- Communication with remote devices over the Internet.

- Easy extension of your existing equipment by a connection to a computer network.

Features

- Serial line to Ethernet converter.

- Connection to 10/100Base-T Ethernet via RJ45 connector.

- Small size – easy integration into the current equipment.

- Easy configuration via the WEB interface.

- TCP and UDP protocols.

- Serial line terminated in a slip-on bus bar.

- Speed of RS232: 300 Bd to 230.4 kBd
  Speed of RS485/RS422: 300 Bd to 921.6 kBd

- RS232 signals used in GNOME232: RXD, TXD, RTS, CTS, DTR, GND

- RS232 signals used in GNOMETTL: RXD, TXD

- RS485 signals used: RxTx+, RxTx-

- RS422 signals used: Rx+, Rx-, Tx+, Tx-

- Various power supply designs ranging from 5 to 72 V. (Basic range: 5 to 30 V.)

- Indication of power supply, data transmission, network connection and activity.

Types of communication

Converters GNOME use several ports for the communication: The **Data port** (for the usual data transmission) is a user-specific port, by default set to **10001**. The port for setup via **Telnet** is **9999**. The port for setup via **WEB interface** is by default set to **80** (it is also user specific).

TCP server/client

Upon switching on, the device expects data from the serial line and it is also ready to receive the connection request from the Ethernet interface.

If the data come from the serial line, the TCP client mode is activated (see below). If a connection request comes, the module is switched over to the TCP sever mode (see below).

The module may remain in the activated mode, or – after a specific idle time– it may interrupt the connection and wait again for data from the serial line or the Ethernet interface.

TCP server

Upon switching on, the device listens on the selected port and waits for the client connection.

As soon as a client is connected, the data from the Ethernet are immediately sent to the serial line and vice versa. If the client is not connected and the data from the serial line are coming, they are stored in a cache and sent immediately upon the client connecting to the server.

If the client is idle or terminates the connection incorrectly, the module terminates its connection after a preset idle time.

TCP client

When idle, the device waits for the data from the serial line. As soon as the data are received, the device tries to connect to the server at a specified IP address. If the connection cannot be established, the data are stored in a cache memory. Upon establishing the connection, the data are sent out and, simultaneously, the data from the Ethernet are transmitted to the serial line.

UDP

The Ethernet data are expected on a preset port. When the data come from the serial line, they are sent to the preset IP address. Within a UDP transmission, the response of the other side is not checked; the application itself should be protected from data loss.

TECHNICAL PARAMETERS

Ethernet:

Ethernet connection .... RJ45 Ethernet 10/100BASE-T

Interface compatibility .... Ethernet version 2.0/IEEE 802.3

Supported protocols .... ARP, UDP/IP, TCP/IP, Telnet, ICMP, DHCP, TFTP, BOOTP, Auto IP, HTTP

RS232 line (for GNOME232):

Connector .... CAN 9 M (CAN 9 F possible upon request)
ISOLxx versions: slip-on terminal block (bus bar)

Used signals .... RXD, TXD, RTS, CTS, DTR, GND (at voltage levels according to RS232)

RS232 line (for GNOMETTL):

Connector .... PSH – pins with 2.54 mm span

Used signals .... RXD, TXD (at TTL voltage levels)

RS485 line (for GNOME485):

Connector .... slip-on terminal block (bus bar)

Used signals .... RxTx+ (A), RxTx- (B)

RS422 line (for GNOME422):

Connector .... slip-on terminal block (bus bar)

Used signals .... Tx+, Tx-, Rx+, Rx-

Buffer memory:

Transmission (Ethernet > serial line)............. 1.5 kB

Receipt (serial line > Ethernet)...................... 2 kB

Power supply:

Power supply voltage – standard design....... 5 to 30 V (no galvanic isolation)

Power supply voltage – design ISOL05[1] .... 4.5 to 9 V (galvanically isolated power supply)

Power supply voltage – design ISOL12[1] .... 9 to 18 V (galvanically isolated power supply)

Power supply voltage – design ISOL24[1] .... 18 to 36 V (galvanically isolated power supply)

Power supply voltage – design ISOL48[1] .... 36 to 72 V (galvanically isolated power supply)

Current consumption – at 12 V .... typically 80 mA

Current consumption – at 5 V .... typically 190 mA

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[1] The ISOL05, ISOL12, ISOL24 and ISOL48 versions are marked with a special label showing the relevant range. In these versions, power supply is galvanically isolated from other parts of the device.

Other parameters (GNOME232):

Weight ....85 g

Degree of protection IP30

Operating temperature................................–25 to +85 °C[2]

Dimensions..57 mm x 25 mm x 42 mm

Other parameters (GNOMETTL):

Weight ....20 g

Degree of protection IP00

Operating temperature................................–25 to +85 °C[2]

Dimensions..52 mm x 18 mm x 29 mm

Assembly holes ....4 x $\varnothing$ 3.2 mm
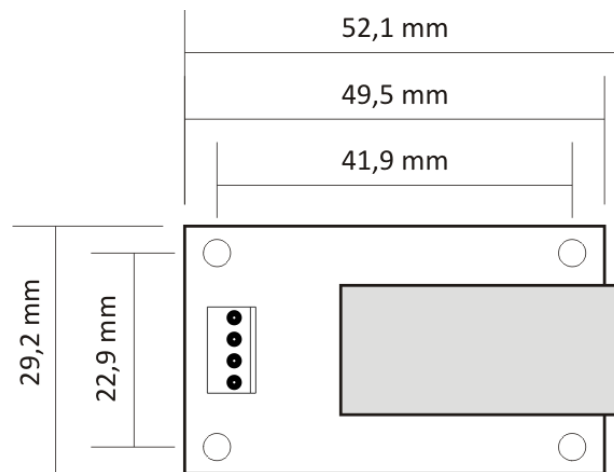
Fig. 1 – GNOME TTL board dimensions

Other parameters (GNOME485):

Weight ....60 g

Degree of protection IP30

Operating temperature................................–25 to +85 °C[2]

Dimensions..54 (63) mm x 24 mm x 33 mm

Dimensions – all ISOL designs......................54 (63) mm x 24 mm x 41 mm

Other parameters (GNOME422):

Weight ....70 g

Degree of protection IP30

Operating temperature................................–25 to +85 °C[2]

Dimensions (incl. the clip)............................54 (63) mm x 24 mm x 41 mm

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[2] In the mode of high-performace CPU only up to +75 °C.

AVAILABLE DESIGNS

Communication encryption:

- No encryption *(standard design)*

- 128, 192 or 256bit communication encryption, Rijndael algorithm

Mounting clip (not applicable to GNOMETTL)**:**

- No mounting clip *(standard design)*

- With a clip for DIN rail

Fig. 2 – With a clip for DIN rail

Power supply (not applicable to GNOMETTL)**:**

- 5 to 30 V no galvanic isolation of power source *(standard design)*

- ISOL05: 4.5 to 9 V with power source galvanically isolated from other parts

- ISOL12: 9 to 18 V with power source galvanically isolated from other parts

- ISOL24: 18 to 36 V with power source galvanically isolated from other parts

- ISOL48: 36 to 72 V with power source galvanically isolated from other parts

RS232 connector (only for GNOME232)**:**

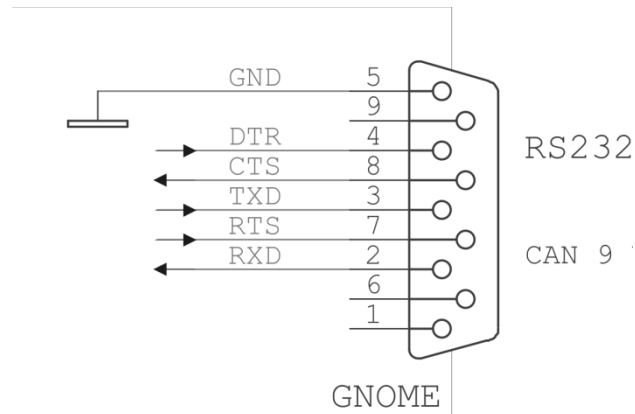- CAN 9 M (Cannon 9, male plug) *(standard design)*

Fig. 3 – Connection of CAN 9 M (male plug)

- CAN 9 F (Cannon 9, female socket) with DCE signals structured to enable direct connection to a PC (connected as illustrated in Fig. 4)
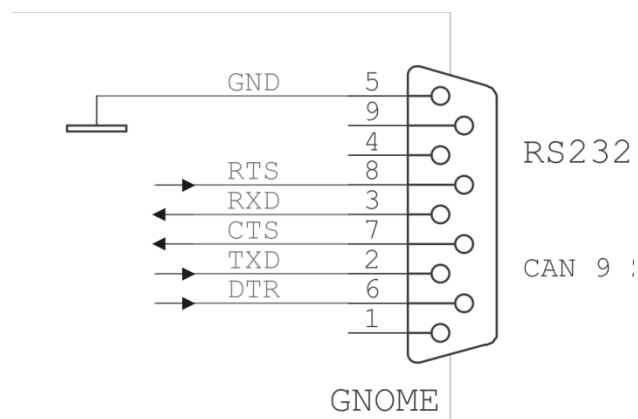

Fig. 4 – Connection of CAN 9 F (female socket)

Do not hesitate to contact us if you have any other special requirements concerning the design and functions of GNOME modules.

CONNECTIONS

Connection of GNOME232

GNOME232 is equipped with 3 connectors.

Fig. 5 – RS232 connector   *Fig. 6 – Ethernet and power supply connectors*   *Fig. 7*

The **Ethernet** interface is connected to the HUB or Switch via the RJ45 connector by regular (non-crossover) cable. The Ethernet interface of GNOME232 is connected directly to a PC via crossover cable (so called "patch cable").

Power supply is connected via a coaxial 3.8 × 1.3 mm connector. The positive pole (+) is inside.

RS232 is connected via CAN 9 – usually the M version (male plug; see Fig. 5). It is also possible to order the F version (female socket). (For RS232 connection, see the previous page.)
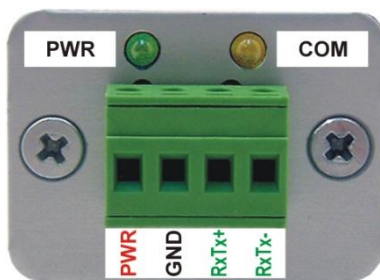
Connection of GNOME485

Fig. 8 – Power supply and RS485 connectors in GNOME485

GNOME485 is equipped with 2 connectors.

The Ethernet interface is connected at the front via the RJ45 connector. It is connected to the HUB or Switch by regular (non-crossover) cable.

The backside panel of the module contains a slip-on terminal block (bus bar) for the connection of power supply (PWR +; GND) and the RS485 communication line (RxTx+; RxTx-)[3]. The connection layout is illustrated in Fig. 8.

ISOLxx versions are equipped with the same terminal block (bus bar) as GNOME422, but only four terminals can be used: PWR, GND, RxTx+ (Tx+) and RxTx- (Tx-).

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[3] The RxTx+ and RxTx- can sometimes be marked as "A" and "B".

Connection of GNOME422

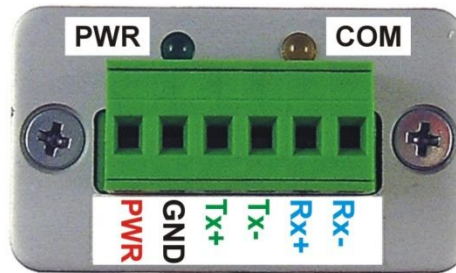GNOME422 is equipped with 2 connectors.

Fig. 9 – Power supply and RS422 connectors in GNOME422

The **Ethernet** interface is connected to the HUB or Switch via the RJ45 connector by regular (non-crossover) cable. The Ethernet interface of GNOME422 is connected directly to a PC via crossover cable (so called "patch cable").

The backside panel of the module contains a slip-on terminal block (bus bar) for the connection of **power supply** (PWR; GND) and the **RS422** communication line (Tx+; Tx-, Rx+; Rx-). The connection layout is illustrated in Fig. 9.

Connection of GNOMETTL

GNOMETTL is equipped with 2 connectors.

Fig. 10 – RS232 connector

The **Ethernet** interface is connected to the HUB or Switch via the RJ45 connector by regular (non-crossover) cable. The Ethernet interface of GNOMETTL is connected directly to a PC via crossover cable (so called "patch cable").

Power supply is connected to the + and – pins of the connector which also serves for the connection of serial line.

RS232 is connected to the T (TxD) and R (RxD) pins of the connector which also serves for the connection of power supply.

Connections – related products

The following items can be ordered as accessories for the converters:

- 12V switched-mode power supply (socket adaptor).
- 12V power supply (with a DIN rail clip).
- TP cable for Ethernet connection.
- *For GNOME232:* 2 m cable terminated with a coaxial 3.8 × 1.3 mm connector. The other end is terminated with loose conductors to be connected to the power supply.

LIGHT INDICATORS

Light indicators – GNOME232 and GNOMETTL

PWR indicator (green)

Indication of power supply voltage.

DCD indicator (yellow)

It is on when a data connection is established.

Link indicator

(Left indicator on the Ethernet connector)

Off .... not connected
Yellow.............. connected – 10Mbps
Green .... connected – 100Mbps

Activity indicator

(Right indicator on Ethernet connector)

Off .... no communication
Yellow.............. Half-Duplex communication
Green .... Full-Duplex communication

Light indicators – GNOME485 and GNOME422

ON indicator (green)

Function .... Indication of power supply voltage

COM indicator (yellow)

Function .... It is on when connection is established.

Link indicator

(Left indicator on Ethernet connector)

Off .... not connected
Yellow.............. connected – 10Mbps
Green .... connected – 100Mbps

Activity indicator

(Right indicator on Ethernet connector)

Off .... no communication
Yellow.............. Half-Duplex communication
Green .... Full-Duplex communication

BASIC NETWORK CONFIGURATION

IP Address

Within a network, GNOME must have the following settings: subnet mask, gateway IP address, and a unique IP address. The subnet mask has been set as 255.255.255.0[4] by the manufacturer; and the IP address as 192.168.1.254.

Default IP address: **_192_ . _168_ . __1__ . _254_**

Default gateway IP address: **__0__ . __0__ . __0__ . __0__**

Default subnet mask: **_255_ . _255_ . _255_ . __0__**

If you change any of these settings, we recommend you to put down the new values:

IP address: _____ . _____ . _____ . _____

Gateway IP address: _____ . _____ . _____ . _____

Subnet mask: _____ . _____ . _____ . _____

MAC Address

The unique address shown on the label found on the side of the device. It constitutes a unique address of the module. It consists of six hexadecimal numbers separated by hyphens – in the following format: 00-20-4A-xx-xx-xx (where xx are the unique numbers shown on the label).

MAC address: **00-20-4A-_____-_____-_____**

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[4] This subnet mask is also known as a "C type" mask.

EASY SETUP OF YOUR GNOME

This chapter gives examples of quick and easy setup of the converters for typical areas of application. (The examples are given for converter in the default setting.)
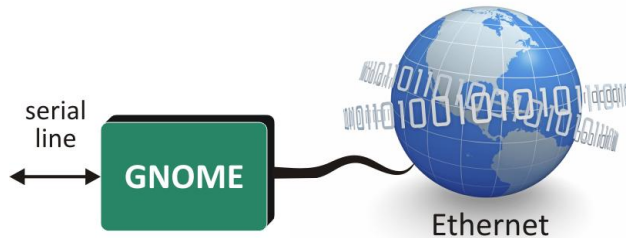
Ethernet to serial line converter (basic setting)

Fig. 11 – Typical connection of GNOME as an Ethernet – serial line converter

1) Connect the converter to your network and ask your network administrator for the basic network parameters to be assigned to the converter (see the previous page: the IP address, gateway IP address, and the subnet mask).

2) Run the Ethernet Configurator Software for IP address setting, which is available on the supplied CD (or from www.papouch.com) and open a wizard in which you first enter the MAC address of the converter (shown on the label found on the side of the module) and then the basic network parameters.

3) The module is now set as an Ethernet/serial line converter with the selected IP address and the following parameters of the serial line: speed 9600 Bd, 8 data bits, no parity, one stop-bit, no data flow control. If you need to change the parameters of the serial line, enter the aforesaid IP address into your Internet browser to open a page where it is possible to set all the parameters of the converter.

Extension of a serial line via Ethernet

The figure below shows typical configuration of two converters for the extension of a serial line via Ethernet.
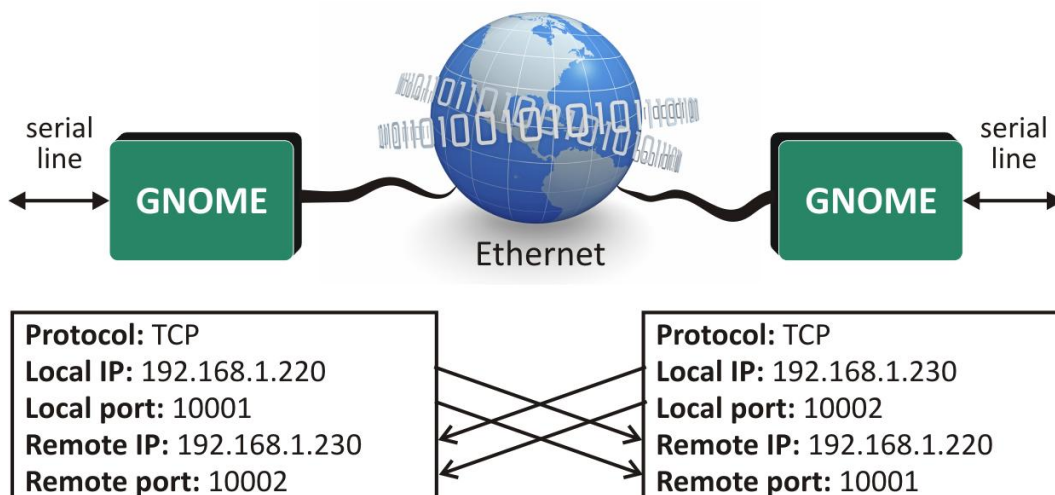

Protocol: TCP	Protocol: TCP
Local IP: 192.168.1.220	Local IP: 192.168.1.230
Local port: 10001	Local port: 10002
Remote IP: 192.168.1.230	Remote IP: 192.168.1.220
Remote port: 10002	Remote port: 10001

Fig. 12 – Example of serial line extension via the Ethernet

Virtual serial port

Virtual serial port is software by Lantronix Company that creates a new serial port in the Windows operating system and this port is directed to the serial port of GNOME via the Ethernet interface. Thus, your existing application does not have to be modified in any way and can communicate with your current hardware over the Ethernet.
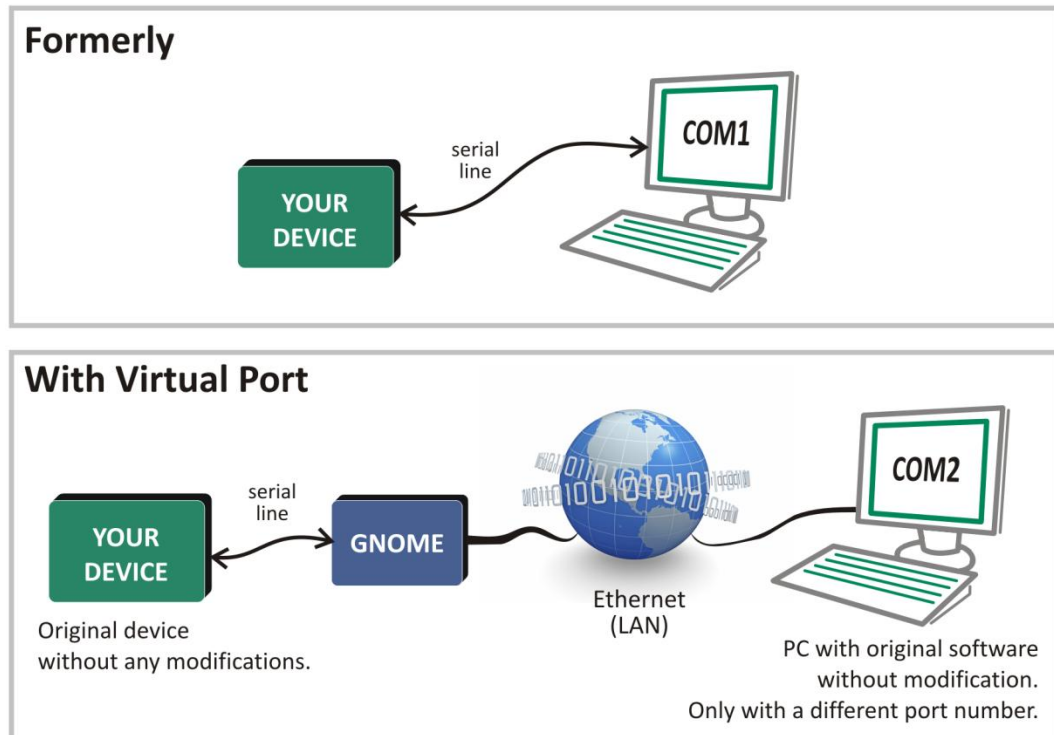

Fig. 13 – Typical connection for directing the serial line of GNOME to "local" COM on PC

Virtual serial port can be downloaded from je www.papouch.com and is also available on the supplied CD.

The window of the Virtual Serial Port can be found in Fig. 15. The left part shows a list of COM ports that are currently available in the system. The right part shows the configuration of the selected port ("Settings" tab) or a test of the port ("Com n Tests" tab). The lower part shows a list of Ethernet devices n the local network using Ethernet chips and modules from Lantronix (the list can be updated by clicking the magnifying glass icon in the upper bar).

A new serial port redirected to the serial port of GNOME in your system can be created by following the instructions below:

Fig. 14 – Virtual port manager (the port is treated as a standard system COM)

1) Click the icon showing a connector with cable in the upper bar.

2) In the dialogue window which opens choose the desired number of the new COM port.

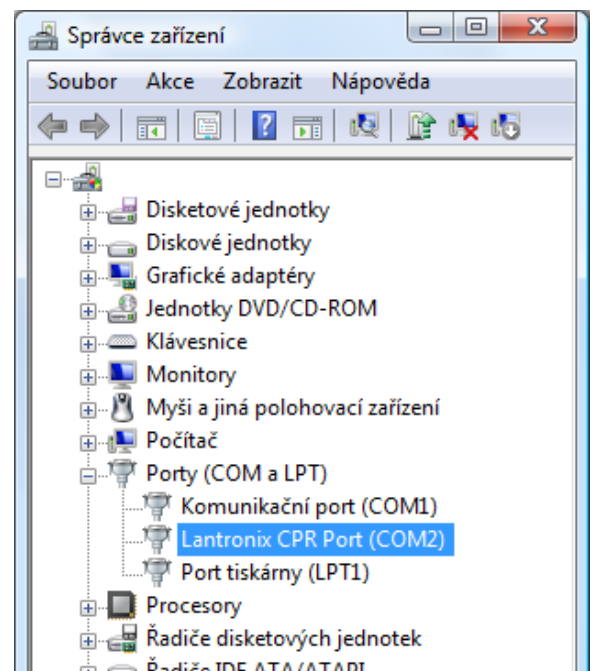3) The port appears in the list on the left. The right part shows its parameters.

4) In the lower part of the Settings window enter the IP address and the number of the data port of your converter and enter any other parameters if necessary.[5]

5) After setting all parameters, click the icon with a floppy disk in the upper tool bar.

6) Now it is possible to test the connection using the "Com n Tests" tab.

7) The virtual COM port is now ready to be used. In your application you can now select the number of the COM port you have entered before. Any data communication going through the new "serial" port will run over the Ethernet via GNOME.
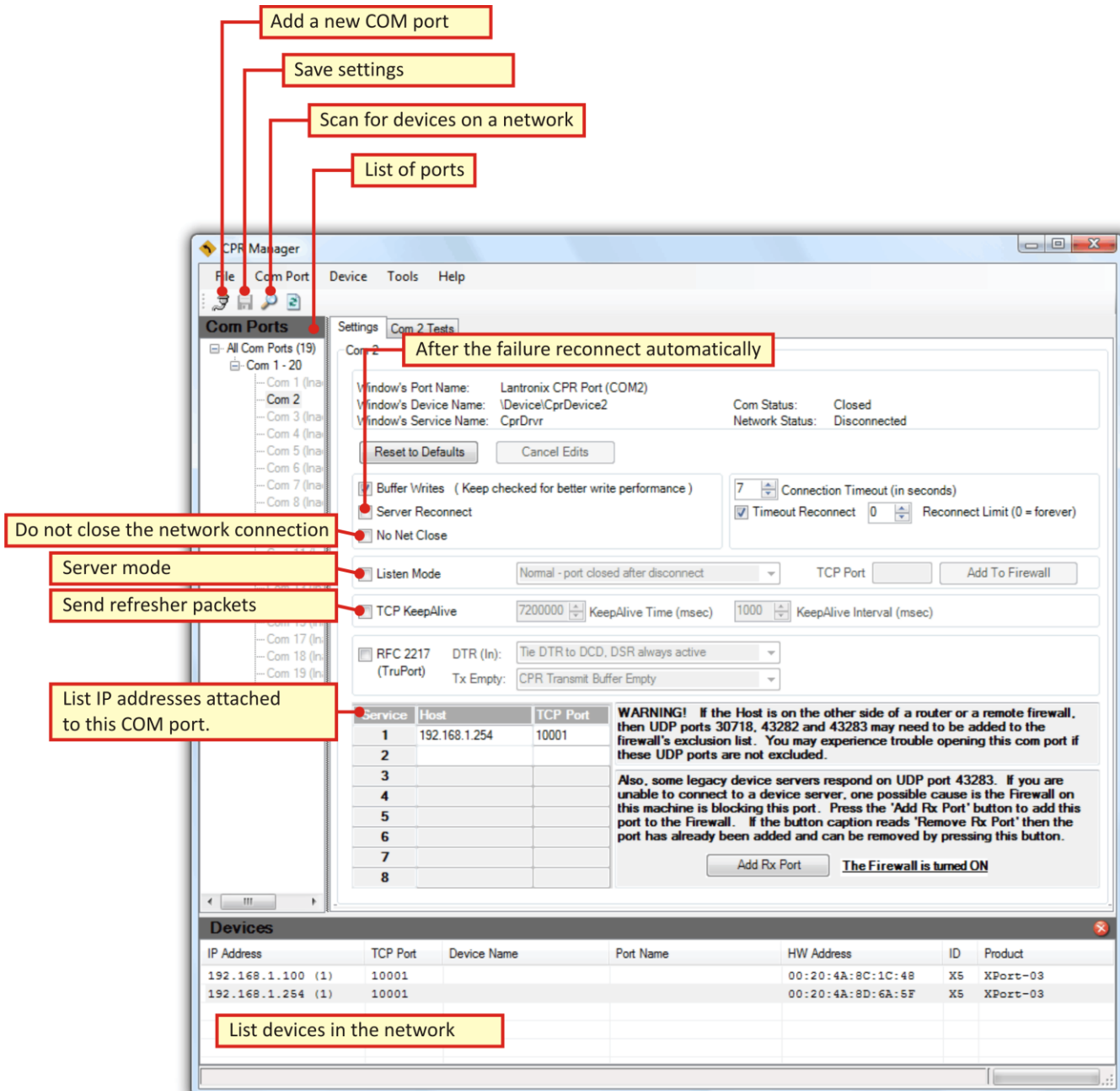
Fig. 15 – The main window of the Virtual Serial Port

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[5] More IP addresses can be set for one COM. After opening the COM port, the device will try to connect to individual IP addresses and ports, one by one. If one attempt fails, it will try to connect to other addresses until a connection is successfully established.

Connection via router

The examples in the following figures show typical configuration of Ethernet converters for communication via TCP and UDP protocols. The figures show a typical situation where the converter is connected to a local network and the user connects to it over the Internet via a router.
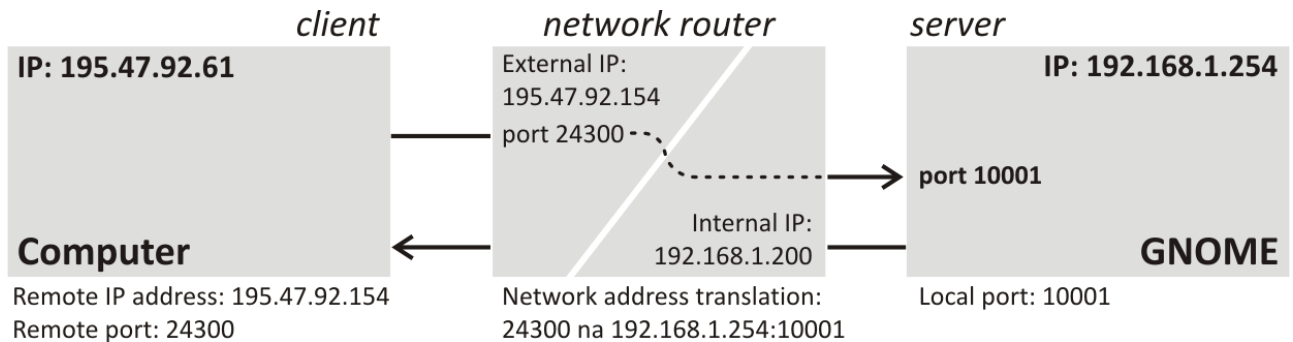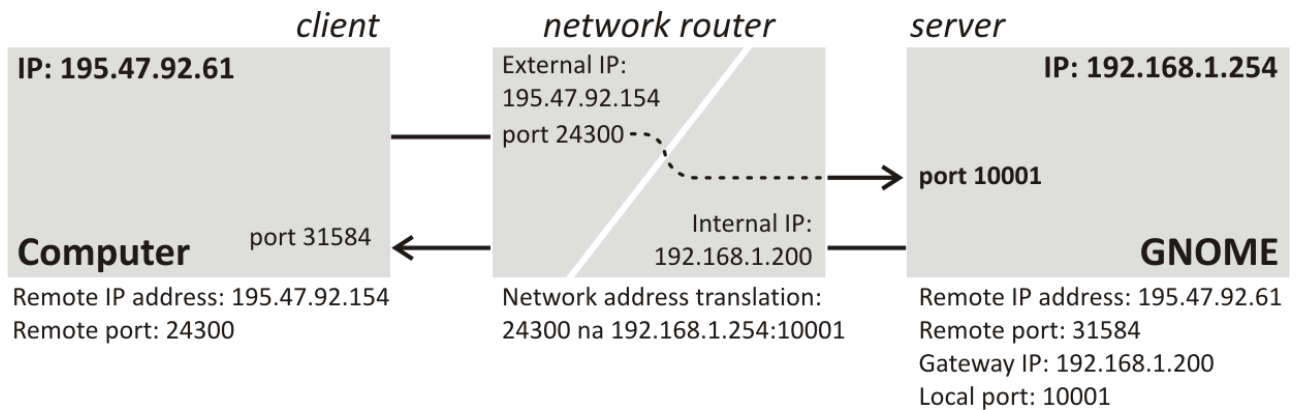

Fir. 16 – Configuration for TCP mode

Fig. 17 – Configuration for UDP mode

METHODS OF SETTING THE PARAMETERS

1) Ethernet configurator (via Ethernet)

2) Web browser (via Ethernet)

3) Telnet protocol (via Ethernet)

4) Terminal program (via serial line)

ETHERNET CONFIGURATOR

Ethernet Configurator is used to set basic network parameters of the device. The software is available on the supplied CD and can also be downloaded from www.papouch.com.

(Before running the software, connect the device to your computer network. Connect it either to a hub, switch, and router or directly to a PC using a crossover cable.)

The program is available in Czech and English languages and contains brief instructions helping the user to set the required IP address.
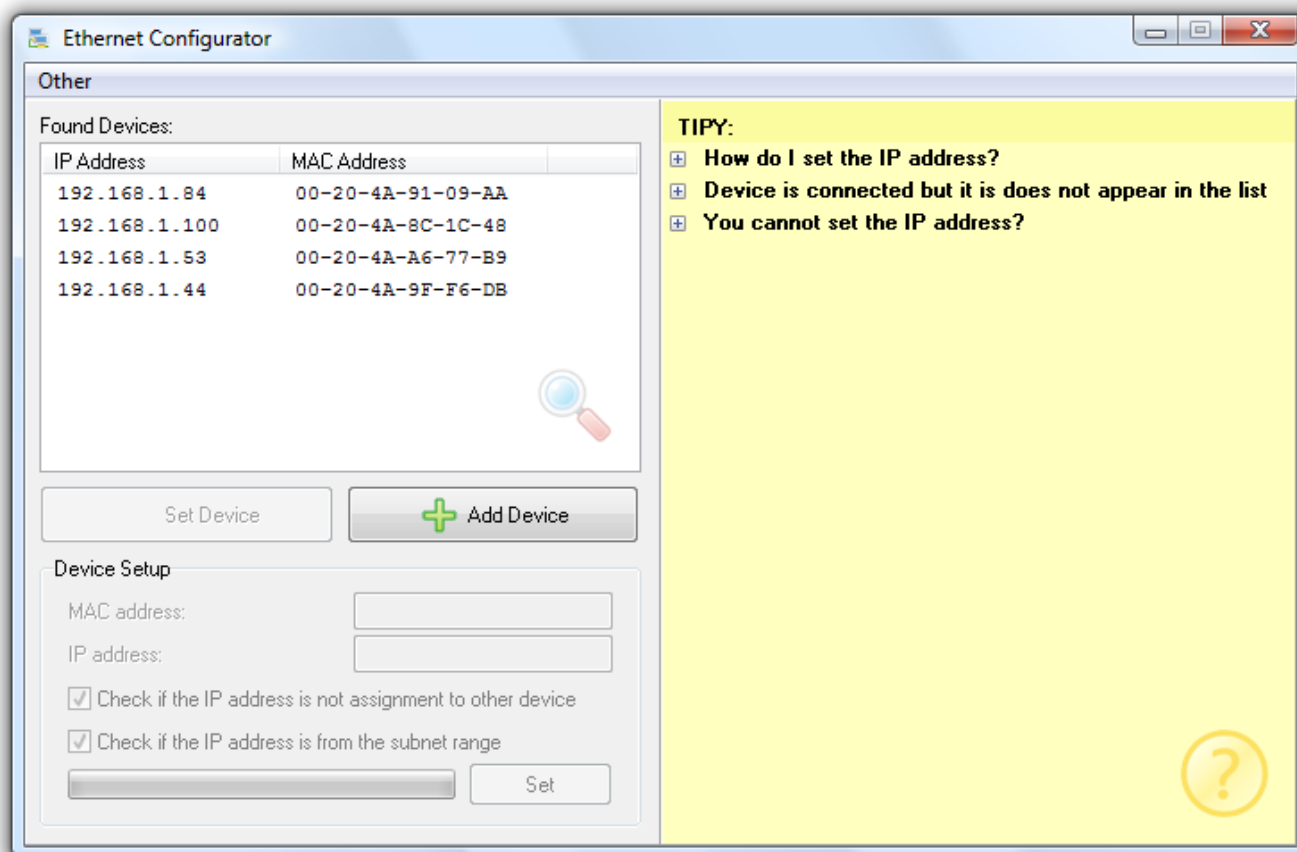

Fig. 18 – Ethernet Configurator

No other settings are necessary for the basic operation of the device – i.e. the Ethernet → serial line[6] converter.

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[6] The RS232 (or RS4xx) line of the converter has the following default parameters: speed: 9600 Bd, number of bits: 8, parity: none, number of stop-bits: 1.

CONFIGURATION VIA WEB BROWSER

1) Open your Internet browser and enter `http://[module IP address]`. (The default IP address set by the manufacturer is 192.168.1.254.)

2) The browser with prompt you to enter a password. (No password is set in the default configuration. Thus, it is not necessary to enter any name or password, just confirm the prompt.)

3) The internal website of the module opens. (The website requires a browser supporting JavaScript.) The main page is shown in Fig. 19.

Fig. 19 – Main page of the website (here, GNOME422 website)

The upper part of the page shows the name of the product, firmware versions and MAC address of the converter.

The left part shows the main menu of the website. The following pages describe individual items of the menu in detail:

Homepage

Homepage of the converter – can be found in Fig. 19.

Contact

Contact information of converter's manufacturer.

Network

This part of the menu deals with basic network settings, such as IP address, subnet mask and Ethernet speed.

Fig. 20 – Network settings

IP Configuration

IP address can be assigned to the converter automatically (Obtain IP address automatically) or manually (Use the following IP configuration).

After the configuration of the IP address has been changed it is necessary to use the new address when connecting to the converter.

The IP address can be assigned automatically using one of the following methods: DHCP, AutoIP, and BOOTP.

The following items apply to the manual assignment of IP address:

IP Address

Setting of the IP address for the GNOME module. It uniquely identifies the module within the respective network.

Subnet Mask

It sets the subnet mask (a range of IP addresses used within the respective network segment) of the GNOME module.[7]

Default Gateway

The gateway IP address is the IP address of the computer which connects the GNOME module to other (higher-level) networks including the Internet.

Ethernet Configuration

Here you can set the speed and type of Ethernet communication. By default the device is set to automatic recognition of the speed and type of communication – "Auto Negotiate" option is selected.

Manual configuration enables to set a fixed value for the speed (10 or 100 Mbps) and type (Full duplex or Half duplex) of communication.

Server

(Server settings)

Use this menu to set advanced functions of the converter.

Fig. 21 – Server settings

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[7] Letter codes are sometimes used for masks.(A stands for 255.0.0.0; B for 255.255.0.0; and C represents 255.255.255.0)

Server Configuration

Telnet Password

The password for connection via Telnet or a web interface. Maximum length: four characters (letters and/or digits).

New password: Enter a new password into the Telnet Password field and once more into the Retype Password field for verification.

Clear the password: Clear the contents of the Telnet Password and Retype Password fields.

To remove a forgotten password follow the instructions given on page 35 entitled "Remove the password for Telnet or WEB".

Advanced

The settings described below can only be made by specialists! Improper handling with these settings can result in unstable communication of the converter or loss of access to the internal website!

CPU Performance Mode

Regular: The speed of serial line can only be set to 230.4 kBd maximum.

High: The speed can be set to 460.8 kBd.

HTTP Server Port

The number of the port where you can find the website of the converter. The HTTP standard port is 80.

This option is useful in case the converter is behind a router or a firewall blocking port 80. Here you can simply set the port to a different number, which is not blocked. The website is then available on *http://[ip_address]:[web_port]/*

Hostlist

In this section it is possible to configure up to 12 remote servers to which the converter will connect in the Client mode if the server set in Connection/Remote Host and Connection/Remote port is not available

Hostlist Settings

Retry Settings

Retry Counter: 3   Retry Timeout: 250

Host Information

No.	Host Address	Port	No.	Host Address	Port
1	0.0.0.0	0	2	0.0.0.0	0
3	0.0.0.0	0	4	0.0.0.0	0
5	0.0.0.0	0	6	0.0.0.0	0
7	0.0.0.0	0	8	0.0.0.0	0
9	0.0.0.0	0	10	0.0.0.0	0
11	0.0.0.0	0	12	0.0.0.0	0

OK

Fig. 22 – Hostlist settings

For each remote server it is possible to define an IP address and port.

The converter tries to connect to the IP addresses one by one. The number of attempts to connect to each address is defined in the Retry Counter field; the waiting time for the response can be set in the Retry Timeout field (value in milliseconds).

Serial Settings

Here it is possible to set the parameters of the serial line, packet creation and buffer memory. Each type of serial line makes certain settings applicable only to some converters.

Fig. 23 – Serial settings

Port Settings

Here it is possible to configure the speed, byte size, parity, number of stop-bits and data flow control on the serial line.

Line type

> Choose the right type of line according to the converter version. RS485 for GNOME485, RS422 for GNOME422 and RS232 for GNOME232 and GNOME 232 TTL.

Flow Control

> To set the mode of data flow control. The following options are available: None, Xon/Xoff, Xon/Xoff pass chars to host, CTS/RTS. Hardware flow control is only available in GNOME232 and GNOME232 TTL.
> Default value: None

Line speed

> This option enables the user to set the communication speed of the serial line in Bauds.

The following options are available: 0, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 (selectable only if "Enable" is set in Server Properties/High Performance), and 921600 (not applicable to this design).

Default value: 9600

Character size

To set the character size – number of data bits. The following options are available: 7 and 8 bits.
Default value: 8

Parity

To choose the desired type of parity. The following options are available: None, Even and Odd.
Default value: None

Stop Bit

To set the number of stop-bits. The following options are available: 1 and 2.
Default value: 1

Pack Settings

The creation of data packets can be controlled after ticking the Enable Packing box.

Idle Time

This setting determines the time interval of idle line (period of time during which no data are received from RSxxx) after which the received data are packed and sent to the Ethernet. The following options are available: 12 ms, 52 ms, 250 ms, 5 s.
Default value: 12 ms

Match 2 Byte Sequence

This activates the mode where the converter expects characters (Match Bytes) which serve as a signal for preparing a packet to be sent. As soon as this character(s) is received, the packet is prepared and send when another (any) character arrives. (This option is useful, for example, to recognize characters preceding the checksum. The last character of the packet is a character which is always the same and precedes the checksum. As soon as this character is received, the converter waits for another byte to be added as the last one to the packet which is then sent.)
Characters in hexadecimal representation are entered in the Match Bytes fields.

Available options: None, One, Two

Flush Mode

This option defines the mode of working with buffer memory. Input Buffer is serial-to-Ethernet buffer memory. Output Buffer is Ethernet-to-serial buffer memory.

Active Connection = connection that is initiated from the converter to the Ethernet.
Passive Connection = connection that is initiated from the Ethernet of the converter.

With Active Connect

Enable: Buffer is cleared with a connection initiated from the converter.

Default value: Disable

With Passive Connect

Enable: Buffer is cleared with a connection initiated from the Ethernet.

Default value: Disable

At Time of Disconnect

Enable: Buffer is cleared when disconnection occurs.

Default value: Disable

Connection – TCP

The following settings become available in the Connection Settings menu after selecting the TCP protocol:

Fig. 24 – Connection settings – TCP

Connect Mode

Passive Connection – Server mode

This option activates the Server mode – the converter waits passively for a connection to be initiated from the Ethernet. The connection may require a password if the following option is selected: "Password Required: Yes".

Active Connection – Client mode

This option activates the Client mode – The converter actively connects to the preconfigured remote server (the server set below in Endpoint Configuration).

None: The Client mode is not active.

With Any Character: To establish a connection after the receipt of any character from the serial line.

With Active Mdm Ctrl In: To establish a connection in the Modem mode.[8]

With Start Character: To establish a connection after the arrival of a particular character to the serial line. Enter the character into the Start Character field.

Manual Connection: The converter will try to establish the connection if it receives from the serial line a command in the following format: `C[IP address]/[port]`

Example of a command received from the serial line to establish connection with IP 192.168.1.105, port 4567: `C192.168.1.105/4567`

If the subnet mask restricts the range of the network's IP addresses, for example to 8 bits (the "C type" mask – i.e. 255.255.255.0), the command can have an abridged format as follows: `C105/4567`

Autostart: The converter will try to establish a connection to the remote address set in the Endpoint Configuration section immediately after it has been switched on.

Endpoint Configuration

Set the remote server for GNOME to connect to. Enter the IP address into the Remote Host field and port number into the Remote port field.

The Local Port field shows the number of the converter from which the connection is to be established.

D i s c o n n e c t   M o d e

Inactivity Timeout

> If this option is selected and a connection to the Ethernet established and there is no communication in any direction for the preset period of time, the connection is terminated. Enter the period of time in the following format "mm:ss" (minutes: seconds).

---

[8] This option is only applicable to GNOME422 if a remote modem is connected to the RS422 line of the converter via a RS422/RS232 converter.

Connection – UDP

The following settings become available in the Connection Settings menu after selecting the UDP protocol:

Fig. 25 – Connection settings – UDP

For UDP Datagram Type choose 01.

Endpoint Configuration

Set the remote server for GNOME to connect to. Enter the IP address into the Remote Host field and port number into the Remote port field.

The Local Port field shows the number of the converter from which the connection is to be established.

Accept Incoming

To set what the module should do when an incoming connection is received.

Yes: Incoming connections will always be accepted.

No: Incoming connections will never be accepted.

Accept Incoming/DTR: This option is not supported.

E-mail

Use this menu to configure email sending. Emails are sent based on events set as Trigger 1 to 3 in the main menu.

Email Settings

Server IP Address: 0.0.0.0   Server Port: 25

Domain Name:

Unit Name:

Recipients

Recipient 1:

Email Address:

Recipient 2:

Email Address:

OK

Fig. 26 – Email settings

Set the IP address of the SMTP server (in the Server IP Address field) and port (Server Port).[9] Enter the name of the server into the Domain Name field, and the name of the converter into Unit Name.

The emails will be sent to one or two email addresses (Recipient 1 and Recipient 2).

---

[9] Musí jít o server, který nepožaduje ověření autorizace při odesílání zprávy.

Trigger

The windows of Trigger 1 to Trigger 3 make it possible to configure up to 3 events which send an email to the address(es) specified on the previous page in chapter EMAIL.

Fig. 27 – Email Trigger Settings

Email sending can be triggered by one or two bytes received by the serial line. The message to be sent can be entered into the **Message** field.

To activate this function, tick the **Enable Serial Trigger Input** box. It is also necessary to define whether one (**One Byte**) or two (**Two Bytes**) characters are expected. Hexadecimal code should be entered into the **Match Data** fields

Min. Notification Interval is the minimum time which must elapse between two emails. Thus emails are not sent more frequently than once in the preset period of time.

Re-notification Interval is a setting which does not apply to the GNOME module.

Apply Settings

This option saves all changes that have been made. If any setting has been changed, the converter will restart. Then it is necessary to reconnect to the converter using the newly set parameters – e.g. to a different IP address and port.

Apply Factory Defaults

Resetting the converter to its factory default settings.

CONFIGURATION VIA TELNET OR SERIAL LINE

Connection

Telnet: IP address is known

(The factory default IP address is 192.168.1.254.)

1) In the Windows OS select Start/Spustit, enter `telnet` and click Enter.

2) Connect to the IP address of the module. (enter `open [IP address in dot format] 9999` and click Enter.)

3) If the entered IP address is valid, the converter writes the following introductory text:

   MAC address 00204A9AE5E2
   Software version V6.1.0.2 (060217) XPTEXE
   Press Enter for Setup Mode

   Now it is necessary to press Enter within 3 seconds, otherwise the configuration mode will close.

4) The converter will display an overview showing its complete configuration.

5) The overview ends with a paragraph called "Change setup:" which lists groups of parameters that can be configured.

Telnet: IP address is not known

(The converter can also be reset to its factory default settings which restore the default IP address of 192.168.1.254, but also rewrite other parameters.)

1) Open the window of the cmd command (In the Windows OS select Start/Spustit, enter `cmd` and click Enter.)

2) Make the following entries into the ARP table:

   a. Enter `arp -d` and confirm by Enter. This will erase the existing ARP table.

   b. Use the following command to assign an IP address to module MAC address:

      `arp -s [ip_address_in_dot_format] [Xport_MAC_address]`

      example: `arp -s 192.168.1.254 00-20-4a-80-65-6e`

3) Now open telnet. (Enter `telnet` and click Enter.)

4) Enter `open [IP_address_assigned_to_MAC_address] 1` and confirm.

5) After a while, the terminal will display an error message saying that connection failed. However, this step is necessary for the module to enter the IP address into its ARP table.

6) Connect to the IP address of the module. (enter `open [IP address in dot format] 9999` and click Enter.)

7) So far you have only enter the configuration mode of the module. The IP address has not been set yet. It must be set in menu Server Configuration > IP Address. If you close the

configuration mode without saving the settings and IP address configuration, the whole procedure must be repeated!

8) If the entered IP address is valid, the converter displays the following introductory text:

```
MAC address 00204A9AE5E2
Software version V6.1.0.2 (060217) XPTEXE
Press Enter for Setup Mode
```

Now it is necessary to press Enter within 3 seconds, otherwise the configuration mode will close.

9) The converter will display an overview showing its complete configuration.

10) The overview ends with a paragraph called "Change setup:" which lists groups of parameters that can be configured.

Serial link

1) Switch off the module power supply.

2) *GNOME232:* connect converter's serial line with PC by crossover cable.

GNOME485 and GNOME422: connect to the module of your converter via the RS232/RS422 or RS232/RS485 respectively.

On PC, open the serial terminal with the following parameters:

Speed: ....9600 Bd

Number of bits: 8

Parity: ....none

Number of stopbits:1

Data flow control: ...none

3) Press the x key and switch on the module power supply. Hold the key pressed until the following text displays:

```
MAC address 00204A9AE5E2
Software version V6.1.0.2 (060217) XPTEXE
Press Enter for Setup Mode
```

Now it is necessary to press Enter within 3 seconds, otherwise the configuration mode will close.

4) The converter will display an overview showing its complete configuration.

5) The overview ends with a paragraph called "Change setup:" which lists groups of parameters that can be configured. These items are described below.

Main menu

Menu items can be selected using the numbers written before them. Select the desired number and click Enter.

The menu has the following structure:

```
Change Setup:
   0 Server
   1 Channel 1
   3 E-mail
   5 Expert
   6 Security
   7 Defaults
   8 Exit without save
   9 Save and exit            Your choice ?
```

Factory Defaults

By pressing 7, the converter will be reset to its factory default settings.

Exit without save

Close the configuration mode without saving any changes.

Save and exit

This option saves all changes that have been made. If any setting has been changed, the converter will restart. Then it is necessary to reconnect to the converter using the newly set parameters – e.g. to a different IP address and port.

Default settings

Below see the configuration of the converter set by the manufacturer or restored after selecting Apply Factory Defaults (page 30) in WEB configuration or in Telnet.

Serial line and Ethernet

Baudrate .... 9600 (Bd)
I/F Mode .... 4C (8 bit, no parity, 1 stop bit)
FLOW .... 00 (no control)
Port No 10001
ConnectMode .... C0 (server)
Hostlist retry counter 3
Hostlist retry timeout .... 250 (msec)
Start character for serial channel 1 ... 0X0D (CR)
Remote IP Address 000.000.000.000
IP Address 192.168.1.254
Gateway Address 255.255.255.0
Remote Port 0
DisConnMode 00
FlushMode 00
DisConnTime 00:00
SendChar 1 00
SendChar 2 00

Advanced settings

TCP keepalive .... 45 (seconds)
ARP cache timeout .... 600 (seconds)
HTTP port number 80
SMTP port number 25

Security settings

SNMP .... Enabled
SNMP community name .... public
Telnet setup .... Enabled
TFTP download .... Enabled
Port 77FEh .... Enabled
Web Server .... Enabled
ECHO .... Disabled
Enhanced password .... Disabled
Port 77F0h .... Enabled

Email

Priority L
Min. notification interval .... 1 sec
All other parameters 0

FAQ

Remove the password for Telnet or WEB

(The following procedure cannot be used for GNOME485.)

The password set for Telnet or WEB can only be removed via the serial line. The password cannot be removed remotely via the Ethernet. Use the following procedure:

1) Connect your converter to a PC (GNOME232 via crossover RS232 cable; for other converters it is necessary to connect to the RS232 serial port on the PC via the relevant converter).

2) Disconnect GNOME from the power supply.

3) Run a terminal program on your PC[10] and open the serial port to which your converter is connected. Data connection parameters:
   Speed: 9600 Bd
   No of data bits: 8
   Parity: none
   No of stop-bits: 1
   Data flow control: none

4) Press and hold the "x" key and connect the power supply to your converter. After a white, the terminal displays the introductory text. Immediately confirm it by clicking Enter (within 2 seconds; otherwise you will not be allowed to enter the configuration mode).

5) The system will open the same menu as for configuration via Telnet.

6) In this menu choose the "Server" segment. In this segment you can find the "Change telnet config password" option. Here, enter Y to indicate that you want to change the parameter.

7) A window will appear prompting you to enter a new password. Here, enter a new password or leave the parameter empty to disable the password.

8) In the menu then select "Save and exit" to save the new password settings.

---

[10] For example TeraTerm, which can be downloaded from: http://www.ayera.com/teraterm/

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