

EH-net Server

The EH-net server is a product that makes it possible to remotely operate Ouman control devices and systems via the internet. When building technology devices are connected to the EH-net server via the Modbus you can operate them from wherever you have an internet connection. Ouman products that can be connected to EH-net operate independently after they are connected so it doesn't matter if they become temporarily disconnected.

With EH-net you can visually check a number of functions in the same user interface. This makes it easier to optimize controls and improve energy efficiency.

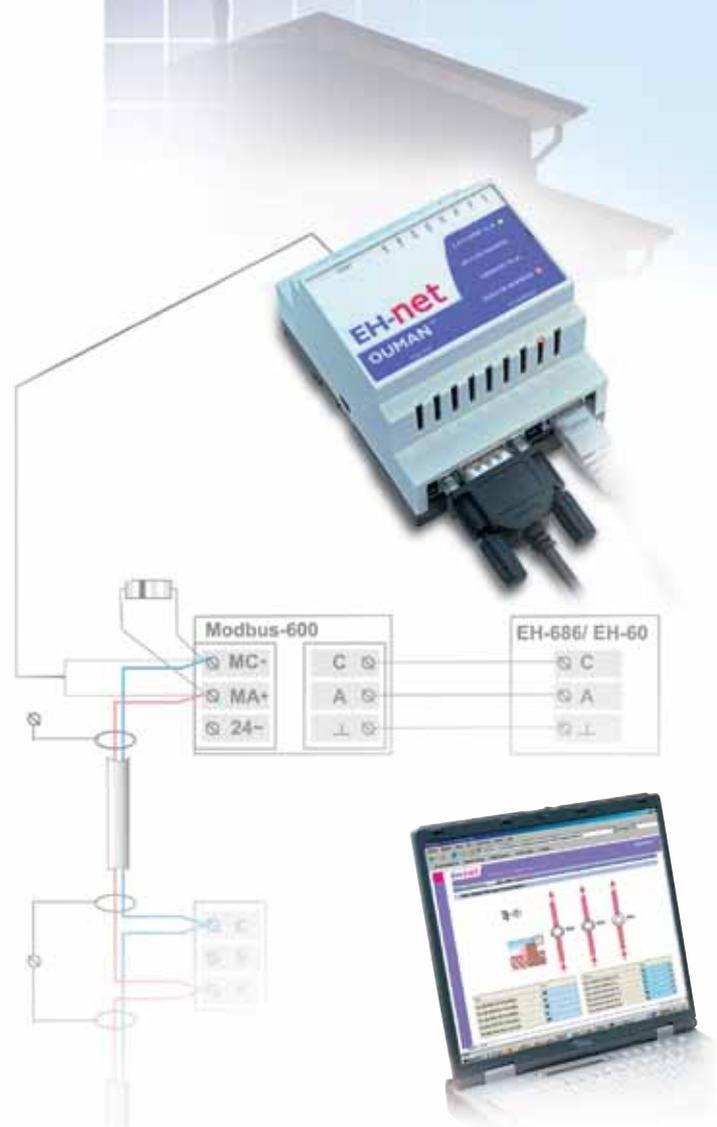
EH-net can be attached Ounet system.

Typical users

- * maintenance men
- * caretakers
- * security services
- * tenants and owners of facilities

This configuration and administration guide is for persons who have been given EH-net administrator or super administrator rights.

Configuration and administration



The screenshot shows the 'Configure: 00:30:11:FB:0E:1F' window. It contains the following fields and options:

- Ethernet configuration
- IP address: 10 . 200 . 1 . 1
- Subnet mask: 255 . 255 . 255 . 0
- Default gateway: 0 . 0 . 0 . 0
- Primary DNS: 0 . 0 . 0 . 0
- Secondary DNS: 0 . 0 . 0 . 0
- Hostname:
- Password:
- New password:
- DHCP: On, Off

The screenshot shows the 'EH-net Local Web Administration' interface. It features a 'Add user' form with the following fields:

- User name
- Age
- E-mail (e.g. j@modbusouman.fi)
- Mobile (e.g. +35840231887)
- Access to send SMS via e-mail
- Language
- User level
- Password
- Repeat password

MODBUS®

www.ouman.fi

OUMAN®

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Creating the EH-net system

Needed equipment and programs

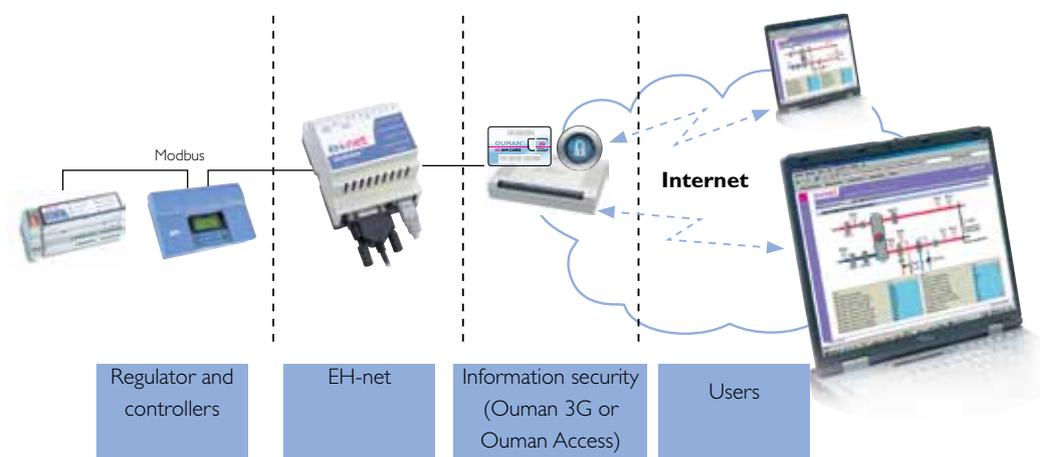
- PC
- Windows 98, ME, XP, 2000 or Vista operating system
- Internet browser: Explorer 6.0 (or newer) or Mozilla Firefox 2.0 (or newer)
- Java expansion(plug in) (www.java.com)
- EH-net Config program (www.ouman.fi/ehnetohjelmat)
- Ethernet cross connection cable
- Modbus cards or Modbus-adapter for EH devices to be connected to the EH-net (optional equipment)
- GSM modem and SIM card for the EH-net server *)
- If an EH-686 device is connected to the system, an EH-686 Manager program version 1.6.0.0 or newer is needed (the program can be loaded at www.ouman.fi/ehnetohjelmat)
- Information about EH-I05 controllers that can be connected to the EH-net system (which control ports are in use, operation mode, sensor connections, etc.) This information can be gotten directly from the controller or pc via the EH-I05 configuration program by feeding an operation code.
- Connection diagrams for the devices (EH-200 serial) that can be connected to the system.
- Use of a firewall is absolutely recommended for information security reasons if the EH-net is connected to a public network.

*) *) The GSM modem is optional equipment that makes it possible to relay alarms from the EH-net to selected GSM phones. GSM alarms can be taken into use before the EH-net server is connected to the Ethernet. Ouman modems have been tested to be compatible.

The EH-net system's configuration phases

The EH-net system's installation progresses as follows:

1. Load the programs you need from the list (see previous page) into your computer when you configure the system.
2. Installation of Modbus cards.'
3. Connections for EH-net system: :
 - EH-net
 - Modbus
 - GSM-modem
4. Forming a cross cable connection.
5. Basic settings
 - Super administrator settings
 - General EH-net server settings
 - Adding templates
 - Adding Modbus devices to the EH-net system
 - Creating pages
 - Adding and modifying alarms
 - Log settings
 - Adding bindings
 - Making backup copies



Loading and installing necessary programs

EH-net Config

EH-net Config is a PC program for configuring network addresses for EH-net servers. The program inspects the Ethernet behind the same switch and identifies the EH-net servers connected to it. The program enables the user to determine EH-net server network settings (IP addresses, Subnet masks, Default gateways, DNS:s and master names).

Program search configuration:

Download the [EHnetConfig.zip](#) file from Ouman Oy:s internet page at www.ouman.fi/ehnetohjelmat. Unzip the zip file into the desired directory/index.

OuflexTool

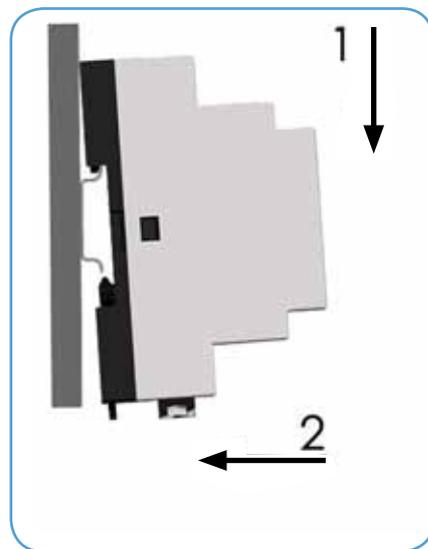
If there are Ouflex devices connected to the EH-net system, then a template must be created with the Ouflex Tool program for each Ouflex device with a different configuration. The created template is transferred to EH-net manually (see p. 18, Adding a device).

The application in the Ouflex device can be loaded to the Ouflex Tool and made into an EH-net template.

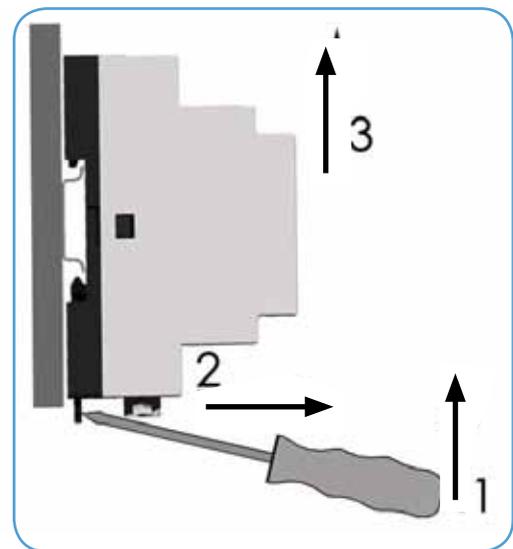
Installing the EH-net server on a DIN rail

The EH-net server can be installed on a DIN rail (according to the diagram below). The EH-net and the first device on the Modbus must be positioned close enough to each other (length of K010 cable about 0.5m). We recommend installing all of the Ouman control devices in a place that can be locked up (for safety of operation).

Attachment on a DIN rail



Detachment from a DIN rail



EH-net server interfaces and indicator lights

EH-net palvelimessa on seuraavat liitännät:

- RS-232 (9-pole D9 connector)
- RS-485 (connector)
- 10/100 Mbps Ethernet (RJ-45 connector).

Server interfaces



Power supply
9-32VDC / 1.7W or
24 VAC/4VA

Modbus
connection



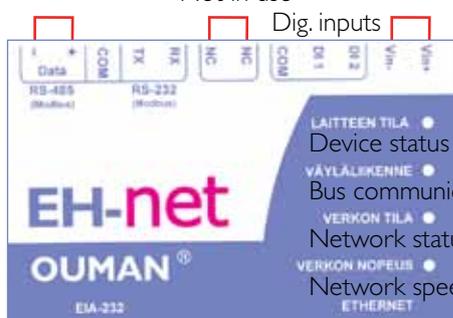
GSM-modem serial
port interface DSUB-
9, RS-232

Ethernet interface
RJ-45, 10/100Mbps

Modbus-interface
RS-485 connection

Power

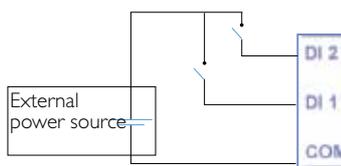
Not in use



GSM-modem interface

Ethernet interface

Connecting digital inputs:
(0-2V = 0, 10-24V = 1)



Indicator light function

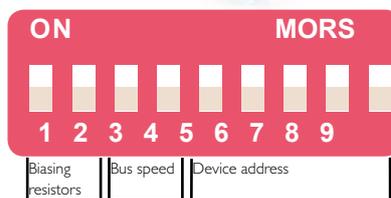
Name	Color	Function
Device status	Not lit Green Orange	Power not on The device runs normally The device is executing initial program load
Bus communi- cation	Blinks green Blinks red Orange light is lit	Serial communication package being received Serial communication package being sent The device is executing initial program load
Network status	Blinks green Blinks red	Network communication package being received Network communication collision observed
Network speed	Not lit Green Orange	Network connection has not been identified Identified Ethernet network connection, 10Mbps Identified Ethernet network connection 100Mbps

Modbus-card installation

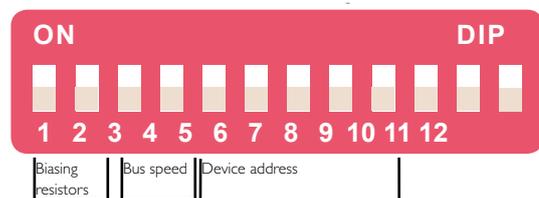
Ouman regulators and control devices are connected to the EH-net server via Modbus. Controllers of the EH-60, EH-686, EH-105, EH-200 series as well as Geopro and Lämpöässä devices are made compatible with Modbus by using a special DIN-rail external Modbus adapter module. Another way of making the controllers of the EH-105, EH-200 series as well as Geopron and Lämpöässä controllers compatible with Modbus is to install the Modbus adapter card directly inside the case, to the circuit board, to the designated area. No special card is needed for the EH-net server.

The Modbus card DIP switches must correctly positioned for the devices to operate correctly on the Modbus. The values corresponding with the positions of the DIP switches can be seen in the table at the next page.

MODBUS-X00-DIN -adapter



MODBUS-X00 -adapter card



Biasing resistors (DIP 1-2)

Biasing resistors ensure that the status of the bus remains stable. This is especially important if the bus is long and there are interferences in the environment. Biasing resistors should only be taken into use with the Modbus card of the first and last device in the network.

Selection of bus speed (DIP 3-4)

The bus speed must be the same for all devices connected to the bus for data transmission to occur between the EH-net server and the devices connected to the bus. The EH-net server baud rate has been factory set at 9600 bps. Ouman Oy recommends using a maximum baud rate of 9600 bps to avoid interferences.

Selection of a device address for the Modbus device (DIP 5-9)

Each Modbus device must have its own device address. Use DIP switches 5-9 to set the addresses.

DIP switches 10-12 (Modbus-105 and Modbus-200)

Modbus-105 and Modbus-200 cards have "extra" DIP switches 10-12 which must be in the "off" position (factory setting)!

Connecting the Modbus

The EH control devices and systems have been updated so they are Modbus compatible. In the following the devices and EH-net server are connected to the same Modbus and basic settings are performed to ensure data transmission.

A twisted-pair cable, e.g. Datajamak 2x(2+1)x0.24, must be used to connect the Modbus. The bus must be set up as a chain with the cable going from one Ouman Modbus device to another (max. branch length 0.5m). The maximum length for the bus is 1200m.

If necessary, the protective shield for the cable can be connected to a ground to prevent interferences. It only has to be connected at one end of the protective shield.

1. Make sure that you have taken the biasing resistors from the Modbus card into use for the first and last device on the bus. (DIP 1 and 2 are in the ON position).
2. Connect the Modbus cable from one Ouman Modbus device to the next. (see connection diagram p. 11).
3. Connect the Modbus end of the cable to EH-net.
4. Connect the other end of the cable to the bus connection spot on the first device (EH-200 serie, EH-105, Lämpöässä, Geopro) on the bus as follows:

Wiring instruction for MOD-BUS-X00-DIN adapter.

Modbus-100-DIN (EH-105).

Modbus-200-DIN (a EH-200 series device)

and Modbus-600 (EH-60/686):

- Yellow wire to connection slot "MA+" and white wire to connection slot "MC-".
- If the first or last device is connected via an external Modbus-adapter, connect the termination resistor between "MA+" and "MC-".
- Also bring supply voltage to the Modbus-adapter:

Wiring instruction if a Modbus-adapter card has been installed inside the case of the device.

EH-105 and EH-200 serie controllers and also Geopro and Lämpöässä controllers:

- The yellow cord goes to connection point "A" and the white cord goes to connection point "C".
- Connect 120 Ω terminal resistors to both ends of the bus. The resistors are in the accessory bag that comes with the Modbus card.
- Connect the terminal resistor between "A" and "C".

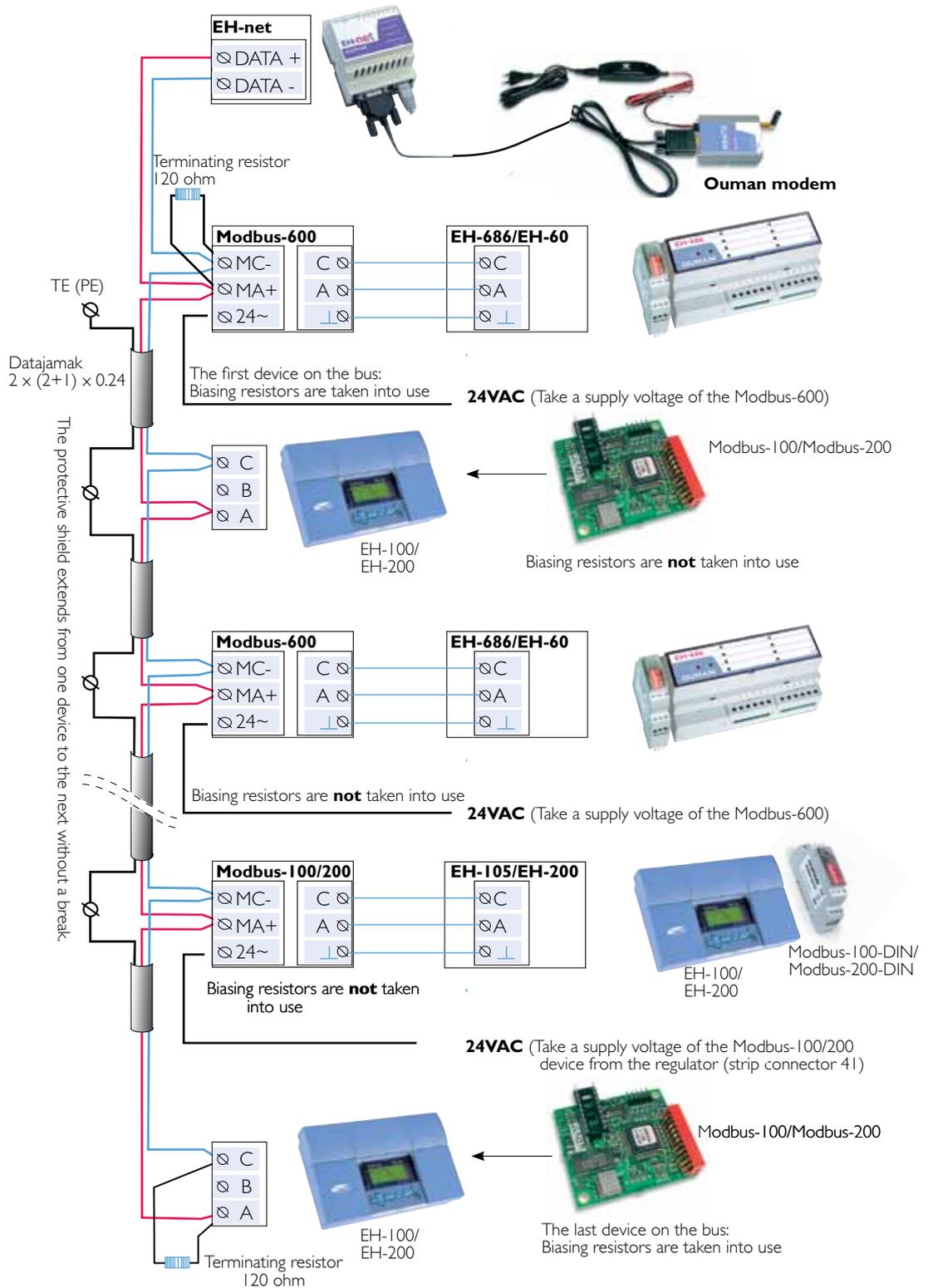
5. Turn on the power to the devices.
6. The EH-net operating voltage range is 9-32 VDC/1.7W or 24VAC/4VA. Connect alternating or direct-current voltage to the EH-net server as follows:
 - DC in use: Positive voltage (+) for connector no. 24 (Vin+) and negative voltage (-) for connector no. 23 (VIN-).
 - AC in use: Phase (~) for connector no. 24 (Vin+) and ground (\perp) for connector no. 23 (VIN-).

Connecting the Modem (optional equipment) to the EH-net server:

7. Connect the EH-net server and Ouman/Fargo modem to each other using the jumper cable having D-9 and D-15 connectors on the ends. A jumper cable with a D-9 connector on both ends must be used with a Nokia GSM modem. Note! The jumper cable that comes with the modem having a D-9 or D-15 connector on one end and no connector on the other end cannot be used as a jumper cable. (see EH-net server connection illustration p.7).
8. Put the GSM modem SIM-card in the phone and check that it asks for the PIN-code. Change the PIN-code if necessary. After that put the card in place according to the GSM modem instructions.
9. Turn on the power to the modem.
10. Other GSM modem settings are performed later (see p.17)

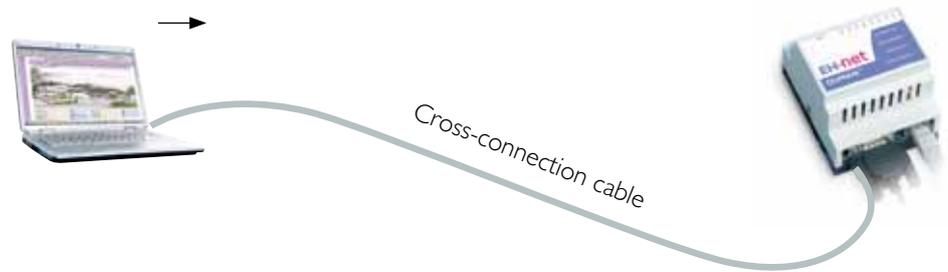
EH-60 and EH-686 devices are connected to Modbus via an external DIN-rail Modbus adapter. Devices from the EH-105 and EH-200 series, as well as Geopron and Lämpöässä devices can be connected to Modbus either by using a special DIN-rail Modbus adapter or Modbus adapter card that is installed in the case. If an adapter card is used, the controller is added to Modbus via the "A" and "C" terminals of the device. When an external Modbus adapter is used, the device is always connected to Modbus via MC- and MA+ connections. In addition, a 24VAC supply voltage must be brought to Modbus adapter. The supply voltage can be brought from the EH-200 and EH-105 series' devices from connection 41.

Modbus connection diagram:



Installing the Modbus master device

You have connected Ouman control devices and systems and the EH-net server to the Modbus. At this point you must connect the EH-net server to the Modbus as a master device using a cross-cable connection and make settings that are important to the function of EH-net.



1. Connect the EH-net server to your computer using a cross-connection cable.
2. Make sure that you have connected your EH-net server to operating voltage (9-32 VDC/1.7W or 24VAC/4VA)
3. When steps 1 and 2 have been completed, the EH-net server "device status" LED will be green and the network speed LED will be green or orange (see indicator lights p. 7).
4. Turn off the computer and then start it up again to get the IP address onto the computer !
5. After the PC has been started up select:
"Start" → "Run"
6. Enter "cmd" in the command prompt and select "OK"
7. Enter "ipconfig" in the command prompt and press "Enter".
8. Write down the following information:
 - IP-address, for example 10.2.74.146
 - Subnet mask, for example 255.255.0.0

IP-address: _____
(Subnet mask: _____)

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [versio 5.1.2600]
(C) Copyright 1985 - 2001 Microsoft Corp.
U:\>ipconfig

Windows IP-määritykset

Ethernet-sovitin Langaton verkkoyhteys:

    Laitteen tila . . . . . : Ei kytketty

Ethernet-sovitin Lähiverkkoyhteys:

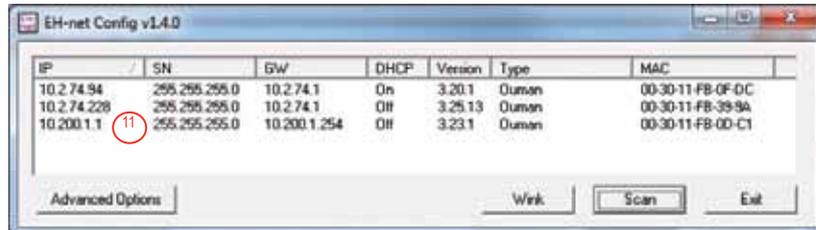
    Yhteyskohtainen DNS-liite . . . . . :
    IP-osoite . . . . . : 10.2.74.146
    Aliverkon peite . . . . . : 255.255.255.0
    Oletusyhdyskäytävä . . . . . : 10.2.74.1

U:\>
```

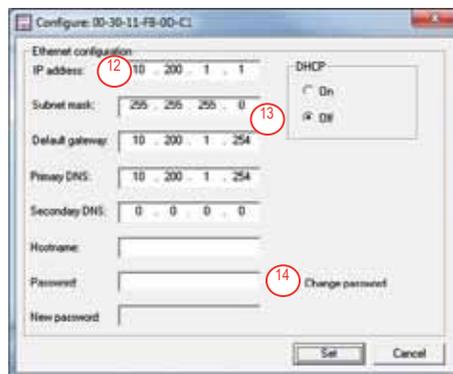
9. Close command prompt or write exit.

If you have several EH-net Config programs open at the same time, the program will not find any EH-net servers from the network.

- Start the EH-net Config.exe program on your computer. For security reasons the changes with EH-net Config program (network settings and password) can only be made with cross cable connection. If the EH-net Config program can not find the EH-net server, then the reason can be, that the firewall of the anti-virus program interferes with the functioning of the program. To solve the problem, click "allow all network traffic" in the firewall settings.



- Double click the EH-net server address that has to be changed. (in the above example the server address 10.200.1.1), to open the editing window.



- In item 8 write the IP-address which you have memorized on the "IP-address" row of the Configure window. Add one to the last number series. row. (e.g., the changed IP-address is $10.274.146 + 1 = 10.274.147$) This address becomes the EH-net server IP-address during installation. (do not lose this address!)
- In item 8 write the subnet mask which you have memorized on the "'subnet mask'" row of the Configure window. The example in the picture 255.255.255.0. Also make sure that the DHCP is OFF.
- Write admin on the "Password" row (notice small letters) and select "Change password". Write the new password at "New password". (This password is only for EH-net Configi. eh-EH-net has own username and password). It is recommendate to change the password. Press the "Set" button and then press x or write exit to close the EH-net Config program.
- Open the browser (Internet explorer or Mozilla FireFox) and enter the EH-net server IP-address to the address field. After giving the address the EH-net server locking dialog will be seen on the display. Note! The outer appearance of the log in dialog will change with different browsers.



Default settings

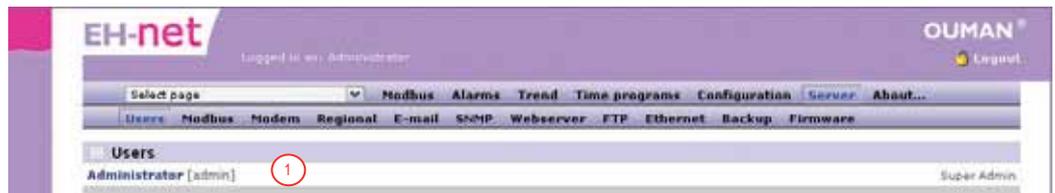
Press "login" button.

Super administrator settings

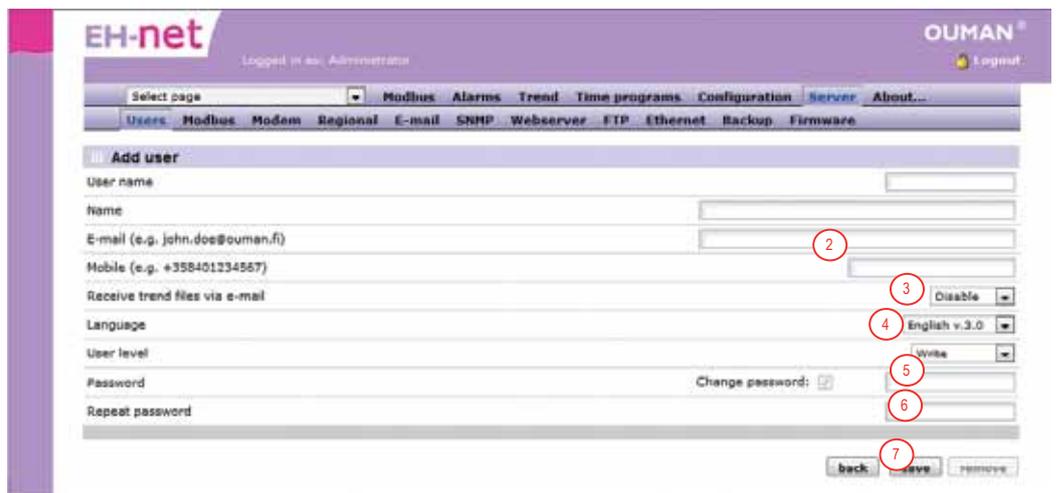
Selecting the super administrator alarm group and language / changing the super administrator password.



Server → Users



1. Click on the "Administrator" user name in the user list. This will bring up the "Modify user" page.



If the super administrator wants to receive alarms or test them in conjunction with configuration, the e-mail address and /or GSM number must be entered. (GSM modem must be connected to the EH-net)

It is important to take precautions and file the password in a secure place. Do not give your password to anyone else. If you forget the super administrator ID, you will not be able to access EH-net server settings. If this happens, the server must be reset at the factory and you will lose all the information on it. Also, you cannot recover a backup copy created with forgotten user IDs!

2. If you want EH-net to send alarm information to your e-mail address and/or GSM phone, give your e-mail address and/or GSM number.
3. If you want to receive a trend file via e-mail select enable in the section "Receive trend files via e-mail".
4. Change the language of the pull-down menu.
5. The user name **admin** is permanently set on the EH-net server and the name cannot be changed. The default setting for password is **admin**. This password must be changed the first time you log in! This occurs in the following manner: Enter your (own) new super administrator password in the "Password" field.
6. Confirm the new password in the "Repeat Password" field.
7. Click the "Save" button to save all the changes you have made.

Creating user IDs

SECTION 2:
pages 12-19 are designated for persons having administration or super administration rights.

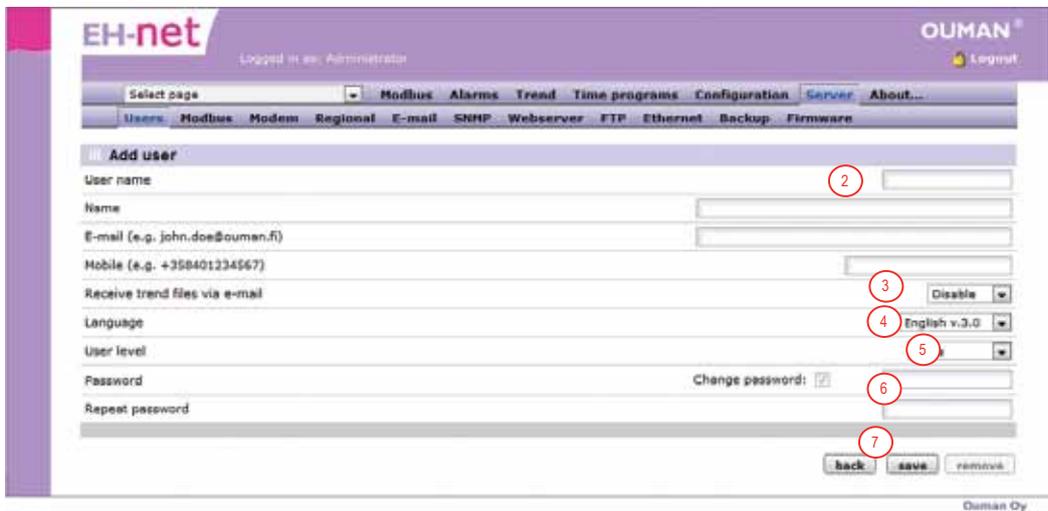
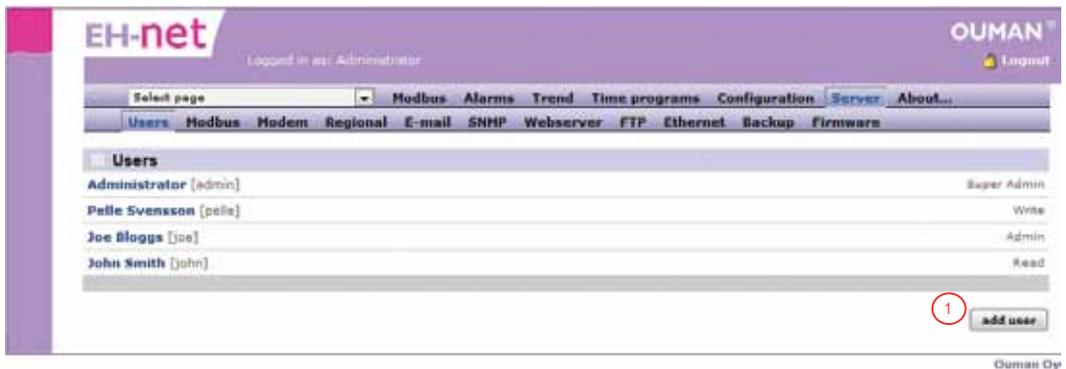
The Ouman EH-net system has four separate user levels:

- Super administrator** = all rights
- Administrator** = the administrator can add users having write and read rights, but cannot change or check other server settings.
- Write** = Access to alarms and time programs as well as Modbus and log overviews.
- Read** = Only access to page overview, alarms and time programs. Cannot change settings or time programs and cannot acknowledge alarms.

I. Log in to the system using your super administrator settings.



Server → Users → click the “add user” button



Only the super administrator or administrator can add new passwords.

2. Create a new user ID and specify an e-mail address and phone number to which the alarms received by this user are sent to.
3. Select whether or not the user receives log files via e-mail.
4. Select the user's language.
5. Define the user level: whether the person has super administrator, administrator, write or read rights.
6. Enter the user's password into both fields.
7. Save

Modbus settings

The Modbus settings of the EH-net server (serial traffic and Ethernet) can be viewed and changed. Usually these settings do not need to be changed. If EH-net has an Ounet or Ouflex connection, enable the Modbus TCP/IP traffic.

• • → **Server** → **Modbus**

Modbus defaultinställningar visas i diagrammet nedan.

The screenshot shows the EH-net web interface with the following settings:

- Serial settings (Modbus RTU/ASCII):**
 - Transmission mode: RTU
 - Slave response timeout: 2500 (highlighted with a red circle and '1')
 - Physical interface: RS-485
 - Baudrate: 9600 bps
 - Character format: No parity, 1 Stop bit
 - Extra delay between messages: ms: 0
 - Character delimiter: (0 = Standard Modbus 3.5 Chars) ms: 0
 - Use function code 15 when writing single bits (coils): Disable
 - Use function code 16 when writing single registers: Disable
- Ethernet settings (Modbus TCP):**
 - Transparent Modbus/TCP to Modbus/RTU: Disable
 - Port number: 502
 - Gateway registers: Enable: Address:
 - Server idle timeout: Enable: Seconds: 60
 - IP authentication: Enable: IP number: ... Mask: ...

Buttons: save settings

1. If the measurements or settings on the page blink, increase the slave response timeout. They may blink especially when TCP/IP is used. Problems may occur if there are many points to be read or if information is read from an Ouflex device or a device behind another EH-net.
2. Ethernet settings means the settings between the device trafficking EH-net and TCP/IP network. By default in EH-net, the Modbus TCP/IP traffic is disabled. If there is a connection to either an Ouflex-device or Ounet in the EH-net, enable the Modbus TCP/IP traffic.

Modem settings

EH-net makes it possible to relay alarms to a GSM phone if a GSM modem is connected to the EH-net. EH-net server modem settings can be inspected and changed if necessary. These settings usually do not have to be changed. The default baudrate is 9600 bps.

• • → Server → Modem

The Modbus default settings appear in the diagram below.

1. Set GSM for the modem type and 9600 bps for the baud rate.
2. After this save settings. EH-net must be rebooted.
3. Enter the PIN code of the SIM card in the GSM modem. (EH-net default is 0000).
 - Changing the PIN code: First place the SIM card in the GSM phone. Change the PIN code and activate the PIN code inquiry. Place the SIM card back in the modem.
 - Enter the new PIN code onto the EH-net at the item "PIN code"
4. Click "Save settings". After this EH-net has to be rebooted.
5. After this click the "initialize modem/test PIN code button. If you have succeeded in changing the code you will receive a confirm message.
6. Click the "Modem information" button and the EH-net will search for and display information of the modem connected to it.
7. You can test the text message function (after saving settings) by sending a text message to some number, e.g., your own mobile phone.

GSM/GPRS Modem Information	
Manufacturer	Siemens Wireless
Model	
Revision	R7.45.0.201102230653.WMP100.3200
IMEI	354374041943078
PIN status	READY
Network status	Registered on home network
Signal strength	

Settings for time and location

The EH-net server's settings for date and time must be checked in conjunction with configuration, and if necessary, they must be reset. This is important because alarms are relayed to the user based on the time and day of the week.

•• → Server → Regional

The screenshot shows the 'Regional' settings page in the EH-net web interface. The page is titled 'EH-net' and 'OUMAN'. It shows various configuration options for time and date, including date, time, time zone, network time protocol, NTP server, update interval, decimal separator, and module information. Red circles with numbers 1 through 8 highlight specific fields and buttons:

- 1: Date (yyyy-mm-dd) field
- 2: Time (hh:mm:ss) field
- 3: Time zone dropdown menu
- 4: Network time protocol radio buttons (Enable/Disable)
- 5: NTP server text input field
- 6: Decimal separator and log file value separator dropdown menu
- 7: Site name text input field
- 8: Save settings button

1. Enable automatic time updating from the network. The time will be updated when you select "Enabled" and "Save".
2. Set the NTP-server address (time server, from which the time is checked) and the updating interval. By default the updating interval is 2 hours.
3. If automatic time updating from the network has not been enabled, set the date, time and time zone. In Finland (GMT+02:00 Europe/Helsinki)
4. Select if a comma, semicolon or point and comma should be used as the decimal separator of trend data.
5. The text in the location field of the device information section can be showed as the subject of an alarm e-mail from the EH-net and in the top bar of the EH-net page on your browser.
6. Save the settings and restart EH-net.

E-mail settings

Configuration of alarms sent by e-mail as follows:

• • → Server → E-mail

The screenshot shows the 'SMTP settings' page in the EH-net web interface. The page is titled 'SMTP settings' and includes the following fields and controls:

- SMTP server (IP-number or domain name) [1]
- Port number [25] [2]
- SMTP authentication: Enable (selected) / Disable [3]
- Authentication method: auto [3]
- User name [4]
- Password [4]
- Sender (Name of sender) [4]
- Reply path (e.g. john.doe@ouman.fi) [5]
- Send test e-mail (e.g. john.doe@ouman.fi) [7]
- save settings [6]

If your e-mail connection does not work after selecting the SMTP identification "Disable," check your e-mail provider's SMTP settings.

If you want to take e-mail alarms into use you must have an e-mail account and the IP address or domain name of the outgoing mail server.

1. At item SMTP server, enter the address of the server of the service provider's outgoing mail. The address of the server of the 3G connection's outgoing mail obtained from Ouman is smtp.dnainternet.net.
2. The SMTP server's port number is 25, and it usually doesn't have to be changed.
3. Select disable SMTP identification.
4. The user name can be freely set. The name appears to the receiver as the e-mail sender.
5. The reply path cannot be empty! If the alarm message does not reach the receiver designated in Eh-net server settings, a message is sent to the reply path informing about the send fail. Enter e.g., the administrator's e-mail address for the reply path.
6. Save settings.
7. Note! You can test the e-mail function only after you have connected the EH-net system to the Internet/Ethernet network (see page 34). You can test the e-mail function by sending an e-mail to an e-mail address of your choice.

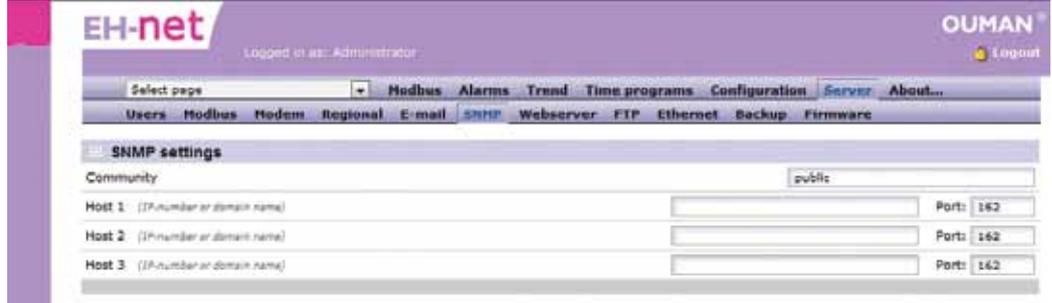
Make sure that your service provider does not filter messages!

SNMP

EH-net can transfer alarms to another system by using SNMP protocol. Information can be transferred to a maximum of three different IP-addresses. Here the master device's address/addresses, where the alarm information will be transferred to, is/are given. The information is transferred in one direction and works from EH-net to another system. It is not possible to acknowledge EH-net alarms from another system with SNMP.



Server → SNMP

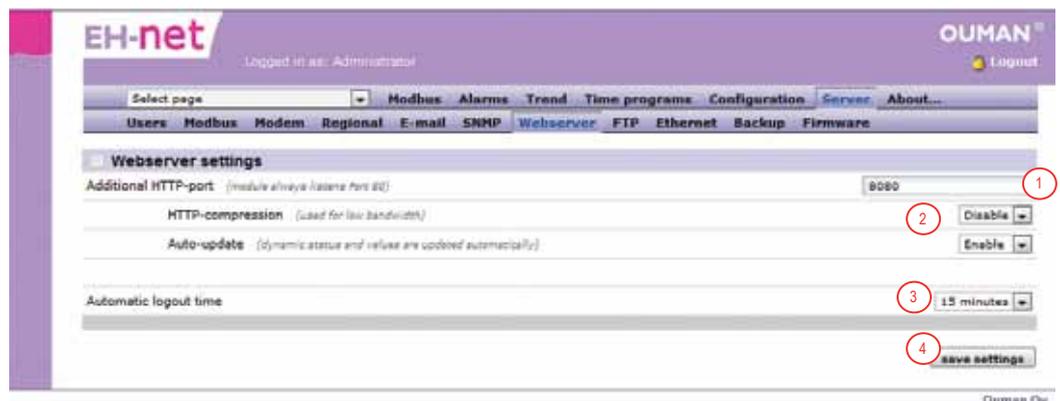


Web server settings

Web server settings usually do not have to be changed. If you have a slow internet connection or an internet connection whose cost is based on the amount of information transferred, it is a good idea to use packed files or deactivate the automatic page update. The automatic log out delay is a default setting of 15 minutes. If nothing has been done when the time is up the system logs the user out of the EH-net.



Server → Webserver



If automatic page update is not in use, EH-net updates the page when you press the  button.

1. With slow server connections or internet connections whose cost is based on the amount of information transferred, HTTP packing is usually used and pages are not automatically updated. To do this, add this port number, e.g., `http://10.2.74.106:8080` to the IP address.
2. If you have a slow internet connection, select http compression "disable" or "force" If you select "disable" EH-net checks whether the server supports transfer of packed information and packs it only if this function is supported. If you select "force", EH-net does not check whether the server supports packed information transfer but always uses compression. If you select not to use automatic page update, EH-net updates the page only after you have pressed the update button. It is a good idea to select manual page update if you have a slow internet connection. Note! when automatic page update is not in use, activated alarms do not come automatically to the EH-net user interface.
3. You can change the automatic log out delay.
4. Save settings.
5. You can test e-mail alarms only after you have connected the EH-net system to the Internet/Ethernet network. (see page 22).

FTP

EH-net makes it possible to collect a number (we recommend max. 8) of logs or measurement history information and show them all at the same time as a graph. Logging can be saved on a computer's hard drive as an Excel file sent via a FTP server to a selected address as a CVP file for later examination.

FTP information transfer settings:



Server → FTP

1. Enter the FTP server address. (e.g., ftp.johndoe.net).
2. Enter the user ID.
3. Enter the password.
4. Enter server path, where the file is updated.
5. Enter the name of the file without the csv extension.
6. Save settings.
7. Test if the file was sent to the FTP server.

Ethernet, EH-net server network settings

The EH-net server can be connected to the internet or local intranet.

If you are connecting the device to the internet, Ouman recommends always using an Ouman internet and information security solution (Ouman 3G or Ouman Access product) or some other comparable firewall device because of information security risks. When using an Ouman 3G or Ouman Access product, install the network settings according to the product's installation guide. Do not edit network settings after installation. The IP address reserved for the EH-net server cannot be reserved for any other network device at the same time.

In order for configuration to continue, you must have the following information:

- Is the EH-net being installed only to local intranet use or also to internet use?
 - + When installing to internet use, information security must be taken care of according to the above instructions.
- Does the internet access have a static or dynamic address?
 - + If the address is dynamic, EH-net installation occurs in a consumer friendly and sure manner with the help of the 3G product's name service. (see 3G STD/3G PRO/ Access) installation guide)
 - + If you have a static address, you need the following information:
 - IP address
 - Subnet mask
 - Default gateway
 - Primary and Secondary DNS

The firewall of the anti-virus program may interfere with the functioning of the EH-net Config program. If this happens, then for the time of the network scan, select "allow all network traffic".

1. Open the EH-net Config program. The program searches for EH-net servers in the network under the same switch and shows address and version information of all servers that have been found. If there are several EH-net servers in the network, you can make sure you have the correct device by checking the MAC code on the type plate on the right side of the device.

2. Double click on the EH-net server address row.

3. Leave the DHCP in the "off" mode.

4. Enter the network on the address row.

5. You can freely name the EH-net server (do not use special characters, spaces, â, ä, ö, etc)

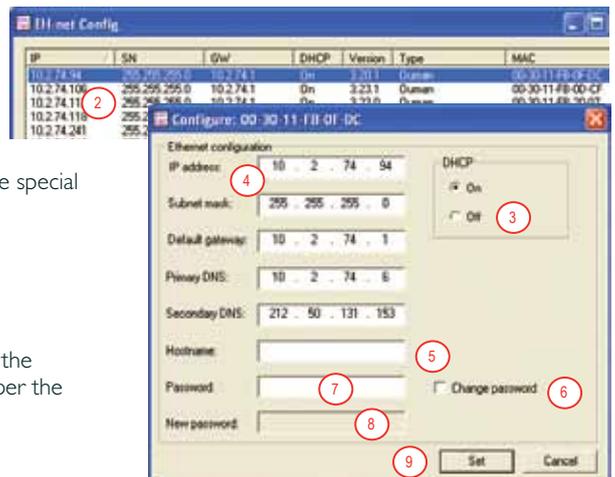
6. Select "Change password"

7. Enter the password "admin" under "Password" (default password which must be changed)

8. Enter the password for the super administrator of the network address under "New Password". Remember the changed password!

9. Click the "Set" button to confirm changes.

10. Click the "Exit" button to exit from the program.



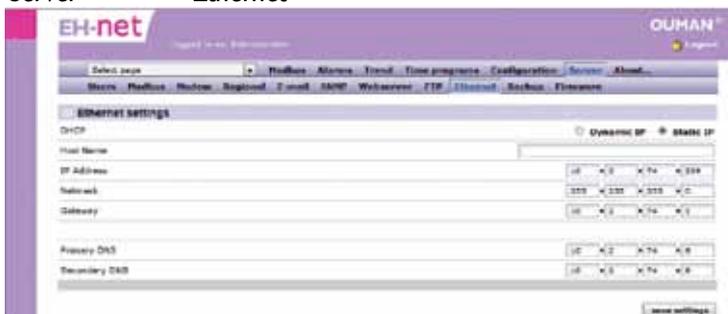
11. Reconnect the computer and the EH-net server to the facility's local network by disconnecting the cross-connection cable going from the computer to the EH-net server and reconnecting the original, normal Ethernet network cable to the computer.

12. Connect the other end of the Ethernet cable directly to the local network outlet or through the Ethernet network connector.

13. To start using the EH-net system's browser in the local intranet open the web browser and enter the EH-net server's IP address, for example, http:169.254.195.179 in the browser's address field. Before you begin using the EH-net in the public internet network make sure that you have sufficient information security. Ouman offers a ready made package of 3G internet and security solutions. If the property has an internet connection, Ouman offers Access-service as a solution (see p. 34).

EH-net server network settings can be found in server settings:

Server → Ethernet



Backup copy and program updates

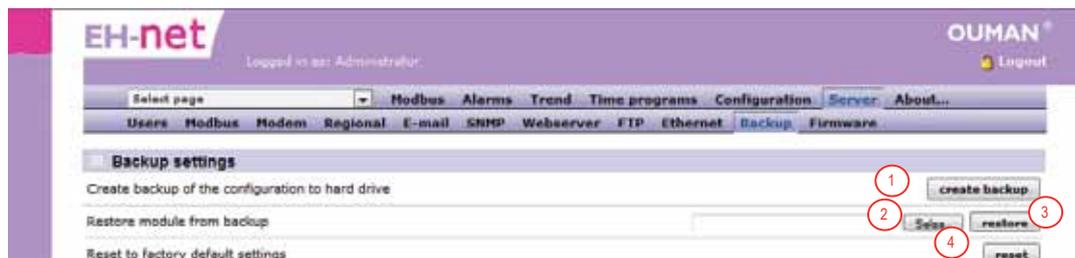
After you have created the EH-net system, you must make a backup copy for your computer. The backup copy covers all other information on the EH-net server (users, templates, pages, alarms, etc.) except for network settings and trend files.

It is of primary importance to make a backup copy in case an error occurs! If necessary, it is easy to use the backup copy to restore an already created, functioning system

The backup copy must be made and the backup copy must always be restored with a cross-cable connection (also with local intranet use). There is always a risk in making and restoring backup copies over the internet and it is not recommended.



Server → Backup



Only persons with admin IDs can log on to the net to make a backup copy or return default settings.

Creating a backup copy from the system:

1. Click the "Create backup copy" button. The EH-net starts to create the backup copy. The function lasts from a few seconds to a few minutes depending on the size of the system. Wait until the copy is complete. Do not go to any other page. The EH-net informs when the backup copy is ready. Click the "Save backup copy" to save the backup copy on your pc. Continue to use the EH-net in a normal fashion.

Restoring the backup copy:

2. Click the "Browse" button to select the backup copy you want restored from the pc.
3. Press "Restore". Restoring the backup copy takes a moment. Wait for it to finish! After the backup copy has been successfully restored the server must be restarted so that the settings will come into effect (become valid). Press "Restart".

Recovering default settings:

If necessary, default settings can be restored to the EH-net server. Restoring default settings clears the device of all original settings. Only network settings are preserved.

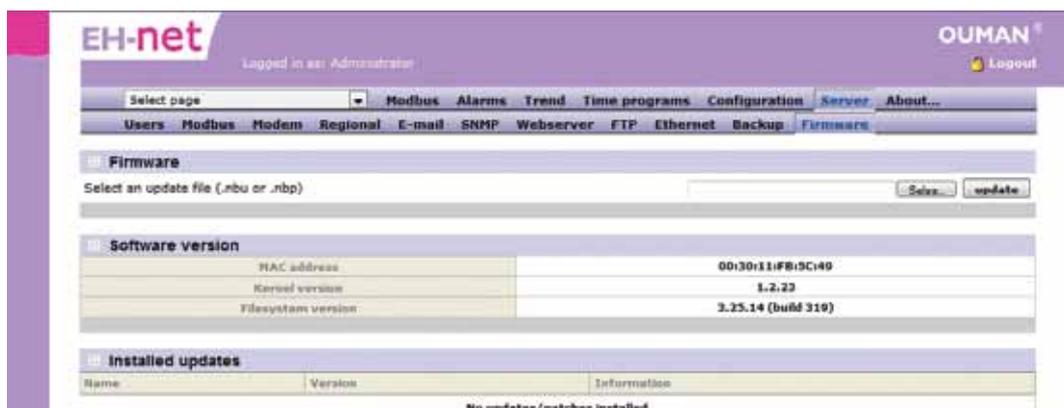
4. Press "Reset".

Create a backup of your system before updating hardware, in this way you can re-put the system to the device after the update.



The EH-net server program version information can be read from firmware.

Server → Firmware

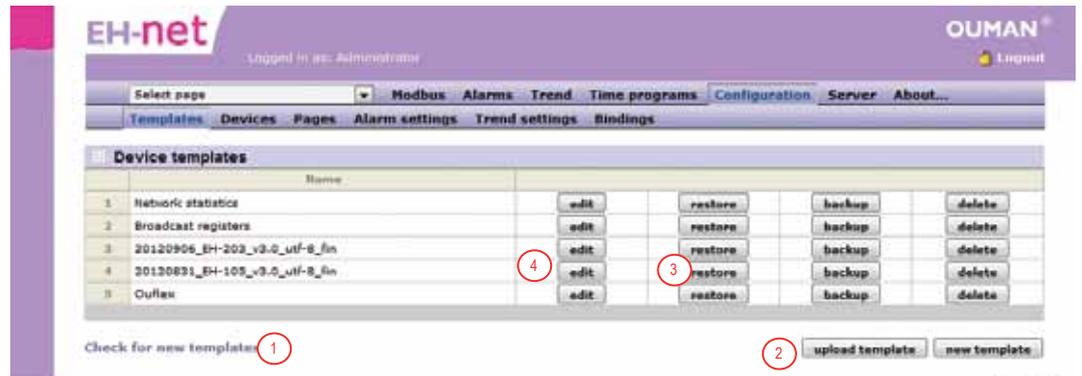


Templates

In order for EH-net to be able to communicate properly with the devices connected to it, each device must have a template. A template tells EH-net, what information can be read from the device (for example, if I change the room temperature set value in EH-net, the template transfers the information to the controller).



Configuration → Templates



1. Click "Check for new templates" to find templates for Ouman devices.
2. Save the selected template on your computer and load the template onto the EH-net.
3. Click the "restore" button to update previously saved templates.
4. Do not change templates for Ouman devices in any way except renaming information.

Ouman EH-200 series, EH-105, EH-60 and Ouflex C devices templates

You can save the Ouman EH-200 series, EH-105, EH-60 and Ouflex C devices templates from Ouman's home pages and load them onto the EH-net.

Ouflex devices templates

Ouflex template is created with OuflexTool tool program.



Configuration → Templates → Click "Check for new template"

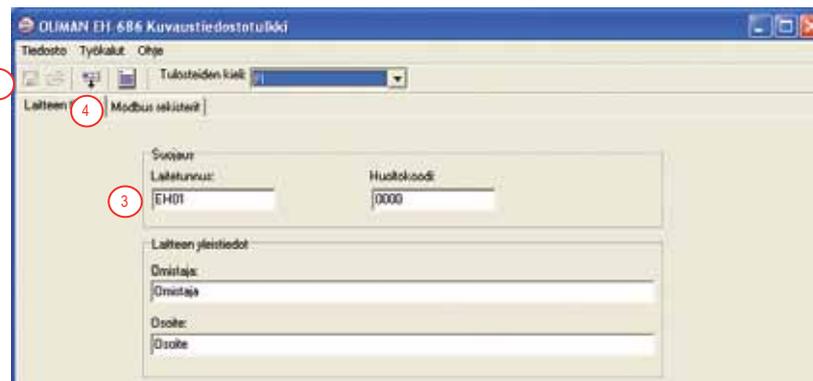
EH-686 device's templates (only in Finnish)

If EH-686 devices are connected to the system, a template has to be created for each device. The template is created using the EH-686 Manager program's template translator. The created template is loaded onto the EH-net server manually.

EH-686 must be completely configured before creating templates. Whenever configuration is changed, the template must be created again. The template can be created in conjunction with configuration.

Creating an EH-686 template:

Connect the EH-686 device directly to your computer's serial port with an 0-modem cable and switch the EH-686's switches (next to the RS-connector) to the TOP, PC position. (EH-686 configuration).



1. Open the EH-686 Manager program (version 1.6.0.0 or newer). The program can be loaded/updated at www.ouman.fi/ehnetohjelmat
2. Click the 'EH-NET kuvaustiedostotulkki' (=EH-net template translator) button.
3. Enter the device ID and maintenance code.
4. Click the "Search for device configuration" symbol 
5. Click the diskette picture to save the template and determine the path where you want to save the template. Label the template so that you can differentiate the templates of the different EH-686 devices from each other!
6. Turn the switch next to the EH-686 RS-connector from the TOP to the BOTTOM position. Exit from the EH-686 Manager.
7. Log onto the EH-net system and load the templates that you have just saved.



Configuration → Templates → click the "upload template" button.

If other than Ouman devices are connected to the EH-net, you must create templates for those devices. The template is created with the template editor. You can enter the editor by clicking "create new". With the editor it is possible to create different groups in the template (e.g. measurements, set values) and desired points in them (e.g. outdoor temperature measurement, room temperature set value). The finished templates can be loaded to the computer. Note! In order for the template creation to be successful, you need information concerning the Modbus interface of the device.

Adding devices to the EH-net

When a new device is added to the EH-net, the template of the device in question is linked to the device. When the device connections have been made, select "autodetect." In this case, the EH-net to scan the network and identify the connected equipment there and add them to the EH-web. At the same time all of the device's alarms, general alarm and no response alarm can be added to the EH-net.

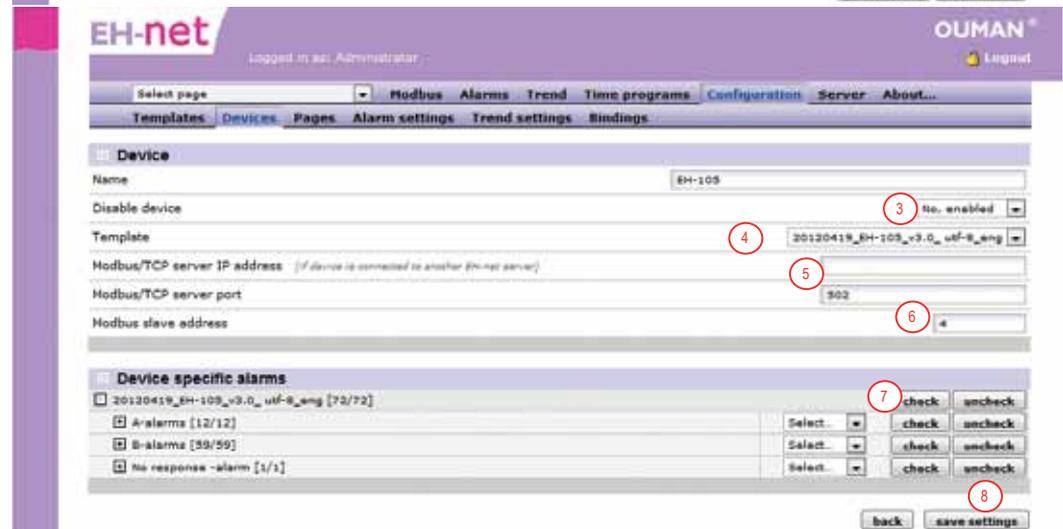
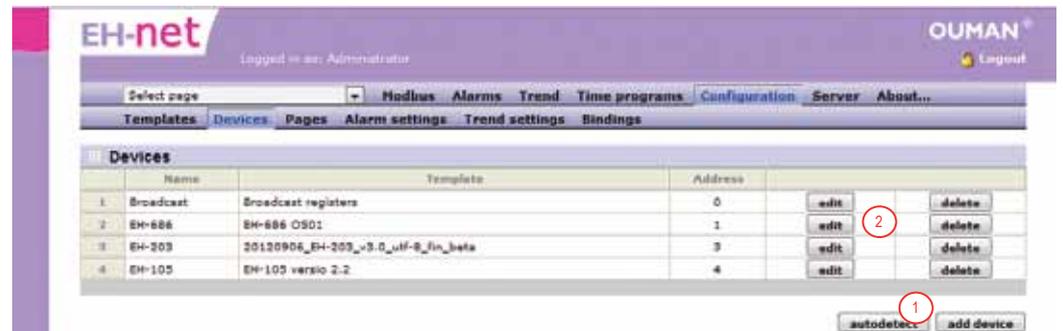


Configuration → Devices → press "autodetect" button

EH-net gives a no response alarm if no connection is made with a device within a certain time period.

The purpose of the general alarm function is to ensure that the EH-net receives alarm information even if an alarm point has not been added. When an alarm is activated at a device, a general alarm is also activated. The general alarm does not indicate which alarm is activated at the device.

"Autodetect" function does not scan the Modbus TCP / IP bus.



1. Press "autodetect", then EH-net will scan the RTU-canal and detect devices connected to it. This takes several minutes, because during the scan, all possible device addresses are checked. If the device address is known, a faster way is to add the device manually, by selecting "Add device".
2. When a device has been added, you can edit the device settings by pressing "edit". The device name is selectable (for example, TC02 Ouflex).
3. Normally, the "Disable device" section has been selected "No, enabled". If the device fails, you can deactivate the device, select "Yes, disabled". In this case, the device does not ring for nothing and does not communicate at all. After the maintenance, the device is activated again activated by selecting "No, enabled."
4. Select the template that corresponds with the device from the pull-down menu.
5. You can also read information from another device connected to the EH-net. To do this you must determine its EH-net IP address and modbus/TCP port to which the device has been connected.
6. Enter the address into the command prompt that you have set for the Modbus card of the device in question with the DIP switches (see page 8). You can check the address from the EH-net system form.
7. With one click you can bring to the EH-net all the alarms found on the device's template and select which group the alarms belongs to.

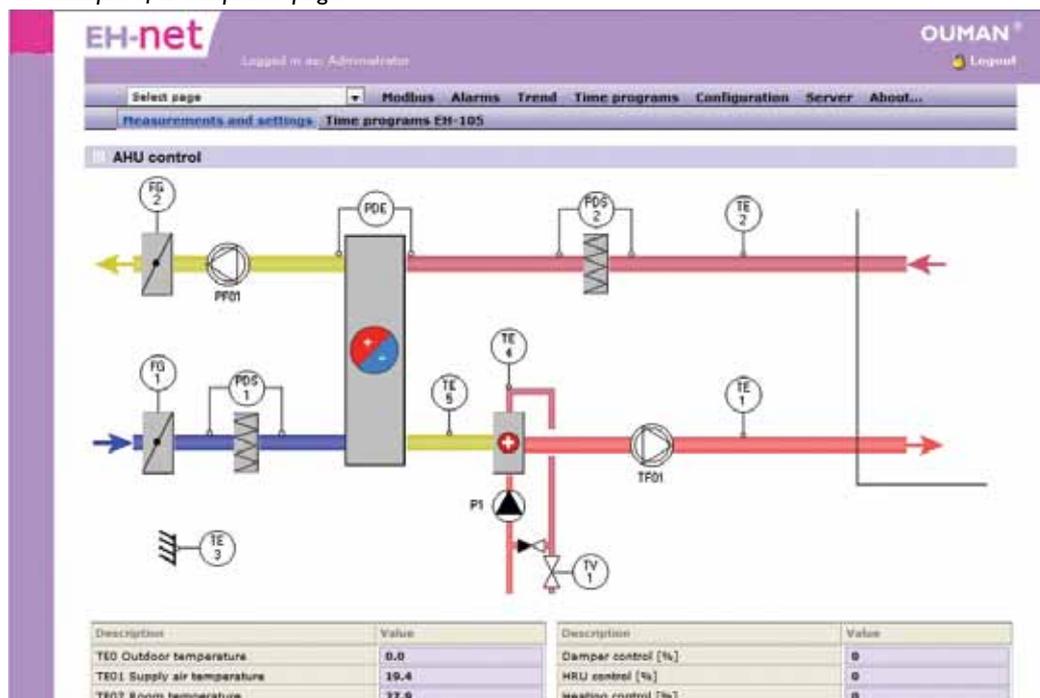


8. Click "Edit" to change individual alarm settings. You can rename alarms or change alarm groups (see p. 29, alarm settings, numbers 4-9).
9. Click save settings to activate the new settings.

Pages/ creating pages

The pages display information from the devices connected to the system, for example, measurement and contact information as well as settings. There can be 30 pages. The pages having an overview are for all user groups and the pages having an advanced overview are for super administrators and administrators. You can place the settings that are more rarely used in the advanced overview. Created pages are displayed in the “Select page” pull-down menu.

An example of a completed page.

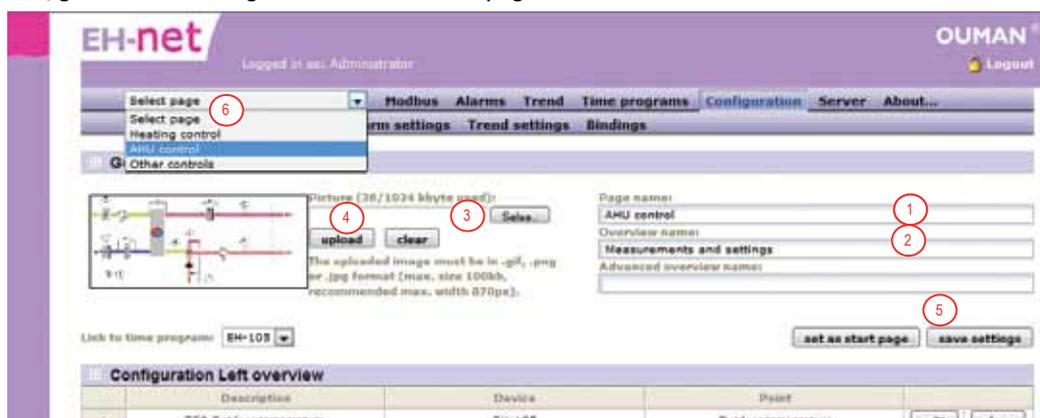


Load the easy to use Ouman EH-net Process Designer program from www.ouman.net/ehnetohjelmat. and make a diagram for your page.

You can set a background picture for the page, e.g., a diagram of the process connected to the EH-net system. The diagram can easily be obtained from CAD program using a “print screen” function. Change the diagram to the proper format (gif, png or jpg, (max. width 870 px and max. size 100 kt)! The total size of the diagrams cannot exceed 1024 kt.

Adding new pages:

Configuration → Pages → Click the “add page” button



1. You can freely name the page and save. The name of the page is displayed in this field
2. You can name the overview and advanced overview.
3. Click browse to select a background diagram from your pc.
4. Load the diagram. When the diagram is loaded it appears in miniature on the left side of the page.
5. Save settings.
6. New pages are displayed in the pull-down menu.

Editing pages

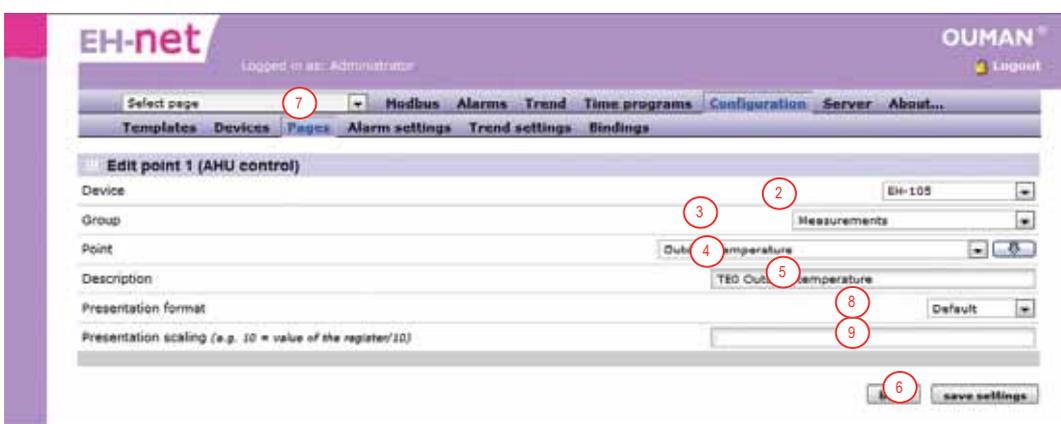
Displaying new information in a field



Configuration → Pages



1. Click the “edit” button on the page. The rows are empty if no information has been added to them.



2. Next, select the device whose information you want displayed in the row.
3. The item “Group” is information from the selected device divided into groups. Select the group you want.
4. The item “Information” contains information from the above mentioned group. Select the information you want.
5. The field description can be freely named. You can also transfer the name of the original information by clicking the arrow button from the previous item.
6. Save the row you have created.
7. When you go to the page, where you just added a row to, the information you added appears now on that page. Select the page from the pull-down menu .
8. The presentation format for Ouman devices is a default. If you are also interested in knowing the binary value or hexadecimal, add the same information two/three times to the row and select the default format for the first row, binary for the second and hexadecimal for the third.
9. Scaling can only be used when default has been selected for the display format. Scaling can be used to change the scale. For example, if the energy consumption information from the device is in kWh's and you want to receive the information in MWh's, set the numerical value for scaling at 1000. If the device gives you the information in MWh's and you want it the information in kWh's, set the numerical value for scaling at 0.001.

Displaying settings from EH-60/EH-686 devices (only in Finland) on the page



Configuration → Pages → press "edit" button

The top screenshot shows the 'General page configuration' page. A table titled 'Configuration Left overview' has the following data:

Description	Device	Point	Function selection	edit	clear
Function selection	EH-686	Function selection		edit	clear
Setting 1	EH-686	Setting 1		edit	clear
Setting 2	EH-686	Setting 2		edit	clear

The bottom screenshot shows the 'Edit point 1 (Other controls)' page. A dropdown menu for 'Function selection' is open, showing options: Setting 1, Setting 2, Setting 3, Setting 4, Setting 5, Setting 6, Setting 7, Setting 8, Setting 9, Setting 10, Setting 11, Setting 12.

1. Click the page's "edit" button of the field you want to edit to go to the Edit point display. (select the point to be displayed on the page).
2. Select the device whose settings you want displayed on the page.
3. If you want to display settings, select a group field "Toimintokokonaisuuden asetusrvot" (=function settings).
4. First select "Toimintokokonaisuuden valinta" (=Function selection) at "point".
5. Save the settings.
6. A new line, "Toimintokokonaisuuden valinta" (=Function selection), will appear on the page.
7. After this all the settings (Asetusarvo1, Asetusarvo2, etc.) belonging in functions will be displayed on the page in a pull-down field. Go to an empty row and press the field's "edit" button.
8. Select the device whose settings you want displayed on the page.
9. Select "Toimintokokonaisuuden asetusrvot" (Function settings) for the group field.
10. Select "Asetusarvo 1" (=Setting 1) for the "Point" field.
11. Save settings. Repeat steps 7-10 until all the settings have been brought to the page.

Now all EH-686's groups and their settings have been brought to the page. The user can select a group from the page whose settings he wants to check or adjust.

12. Select the page to which you have just added groups.

The screenshot shows a table with the following data:

Function selection	Car heating	set
Setting (C)	5.00	set
Hysteresis (C)	0.50	set

13. Settings will appear grouped into functions on the page that opens.
14. Select a function (=toimintokokonaisuus) and click set.
15. The settings of the selected function will be updated on the page (f.ex. outdoor lightning).

Alarm settings

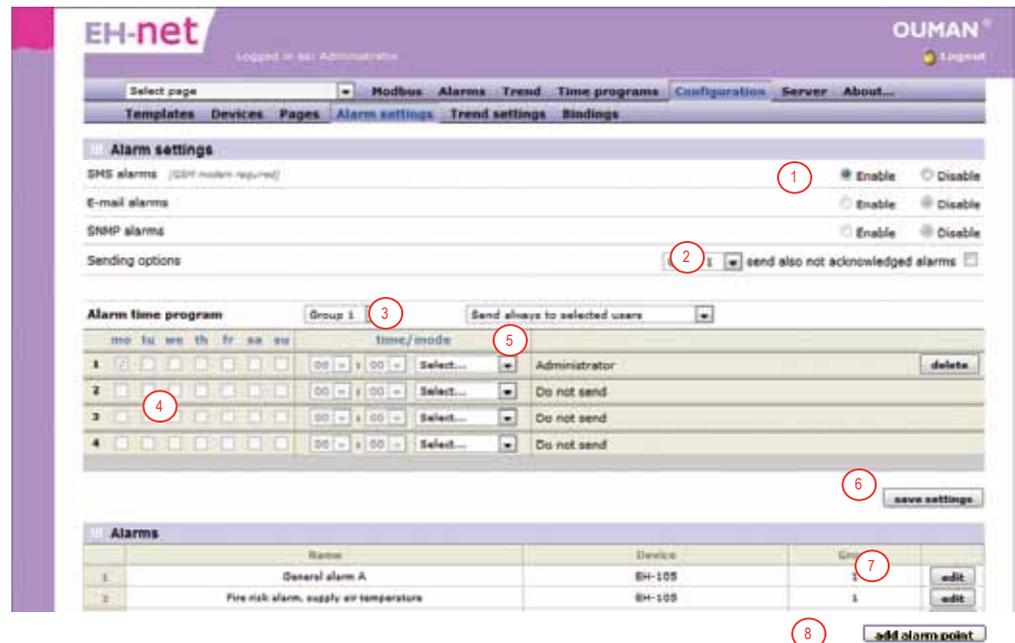
The more alarms brought to EH-net the more EH-net becomes loaded. Always make sure that EH-net is working.

EH-net makes it possible for alarms to be sent by e-mail or via text message to a GSM phone (requires a GSM modem). In addition, alarms can be transmitted to another system as an SNMP.

Alarms are divided into ten alarm groups. The alarm groups are used when alarms are routing. A time program can be made for each alarm group (1-10) so that alarms can be transmitted to designated users. (E.g., during office hours alarms are transmitted to users A and B, but at other times the alarms are not transmitted at all.) If the time program does not let the alarm be routed when it is activated, it is sent as soon as the time program permits it to be sent if it has not been acknowledged. (e.g., if the alarm is sent only during office hours and the alarm is activated on Thursday at 7 p.m., it is sent to the user on Friday at 8 a.m. Alarms can be easily designated to be sent to selected persons. All activated alarms always come to the EH-net user interface regardless of the state of the time program and they can be acknowledged there at any time.

Sending alarms from the EH-net:

Configuration → Alarm settings



SNMP alarms are always transmitted regardless of the state of the time program

- Alarms can be transmitted as a text message (requires a GSM modem), e-mail or an SNMP. A GSM number and e-mail address is given to each user personally. (Server -> Users). SNMP settings can be found under the SNMP menu (Server -> SNMP; see configuration and administration manual p. 20). If, for example, SNMP settings have not been determined.
- Alarms from a certain alarm group can be designated to be sent whenever they are activated whether or not they have been acknowledged. Select the group from the pull-down menu and put a check at the group whose alarms you want transmitted whenever they are activated.
- A time program can be made for each alarm group so that the alarm is transmitted to the designated users. Select the alarm group for which to make the time program.
- Select the day(s) of the week and time after which alarms are/are not transmitted to designated users. If you do not want to create a time program but want to always send alarms, select "Send always to selected persons" (weekday and time fields become non-active).
- Select to whom alarm information is sent during connection. If the user has not been given a GSM number and SMS alarms are in use, the user does not appear in the menu. Users are added and information is edited in server settings. (Server -> Users).
- Save settings.
- All alarms brought to the EH-net appear in the alarms section. Click the Edit button to edit alarms. If the alarm group does not have defined routing (the alarms in the group are not transmitted as SNMP or e-mail) (see see configuration and administration manual p. 26).
- Instructions for adding an alarm point on the next page.

Programmed alarm

When adding a new alarm to EH-net, click once to bring all the alarms on the page of the device in question to the EH-net to select which group the alarms belong to. You can also make new programmed alarms by designating new alarm points in the EH-net.

Adding programmed alarm points.

Settings → Alarm settings → click the "Add alarm point" button



Do not use programmed alarms in place of alarms for Ouman devices

1. Select from which device you want the alarm brought.
2. Select from which group you want the programmed alarm.
3. Select the setting for which you want to make the programmed alarm.
4. Set activation conditions.
5. Set the alarm delay in minutes. Alarm information will be transmitted after the delay. A precise delay depends on the size of the system.
6. Select to which alarm group the alarm belongs.
7. Specify the urgency of the alarm with an SNMP transmission. If the alarm is sent via e-mail or to a GSM phone, disregard the above.
8. Enter the name of the alarm under "Name" (the alarm point you selected being the default). The contents of the "Subject/heading" field will become the subject in the e-mail and will appear in the beginning of the message in a text message alarm (the device giving off the alarm is the default).
9. Enter the alarm message text in the "message" spot. If there is no text in the field, the default text of the template will appear in the alarm message. Note! The message cannot be very long (the text message can only have a max. of 160 characters).
10. Click the "save settings" button at the end.

When you create programmed alarms you can select any group.

Alarm from external digital input:

Go to Settings> Alarm Settings> Add alarm point. Select the device Internal registers and function group **Digital Inputs**. Select an entry in the use of the most appropriate option (normally open / closed). Enter the appropriate alarm conditions, title, subject, and message. Finally test that the alarm is working as desired. (Digital input configuration is presented on page 6)

Trend settings

You can create a maximum of 10 trend groups and make group-based settings as to what percentage each group can use of the trend storage space. There is about 2 Mb of trend storage space in use. You can also set an individual sampling interval for each group. Logging information can also be saved on a computer's hard drive in an Excel table as a CSV file so it can be inspected later. Log files can also be sent via e-mail and to an FTP server. The log interval is the same for them all. Measurement history information can be used e.g., to monitor a facility's energy and water consumption.

Adding trend points:

Settings → Trend settings



If you want a more detailed log file and want to illustrate collected information, load the Ouman Trend and Report Manager programs from www.ouman.fi/ehnetohjelmat. With the Report manager you can get daily, weekly and monthly reports. e.g., about water and energy consumption.

When you add a new trend point you must first stop trend collection. When you do this old log information will be deleted. You can save old trend files before stopping. Restart trend collection after adding a new point.

1. Select the trend group to which you want to add a trend point
2. Add trend points belonging to this trend group. Click the "add trend point" button.
3. Select the device from which you want to collect measurement history.
4. Select the group that has the information you want.
5. Select point from the pull-down menu and click the arrow button to add points.
6. If the "Delta collection" is enabled, the information about changes in the measurement value between sequential measurements is saved to the trend. For example, if the first measurement is 10 and the other is 7, the saved data is -3.
7. You can change name of the point.
8. Save the settings. Repeat numbers 2-8, until all points desired for this trend group have been added to the trend group.
9. Make group settings. Set, how much of the trend storage space in use can be used by this trend group. If you have two trend groups in use and you want to divide the storage space equally, give both trend groups 50% of the storage space.
10. Set also the sampling interval and select the trend collection mode.
11. Select, if the trend file is sent forward automatically. If the trend file is sent to an e-mail or FTP server, select when the file is to be sent. If you select weekly, the file is sent on Sunday, at 00.00. If you select daily, the file is sent every day at 00.00. The log file can be sent to an e-mail or FTP server only if you have done the email settings and FTP settings. The file is sent to all users who have the "receiving trend file to email" function in use.
12. Press the "Start" button.

Bindings

With the help of the EH-net you can create measurement and status information transfers via the bus to other devices connected to the bus. There can be a maximum of 64 bindings. In Broadcast transmissions measurement information from a certain Modbus register is sent simultaneously to all devices connected to the bus. EH-net has outdoor temperature, emergency-stop-switch, main pump running information and heating network water pressure and also date and time switch that can be selected for Broadcast transmissions.

Adding bindings



Configuration → Bindings → click the "add bindings" button

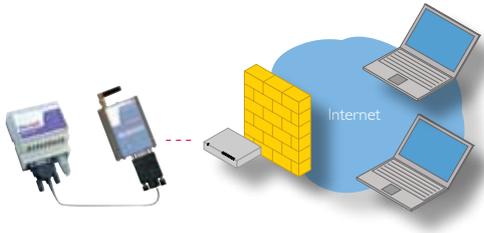
1. Select the device from which the information is to be transferred.
2. Select the binding group and information to be transferred.
3. Select the device to which the binding information is to be transferred.
4. Select bus measurements for the destination group and then select the information you need.
5. You can select the time period for the transfer from the pull-down menu.
6. Save settings.
7. You can later edit the bindings or eliminate the use of the binding.

	Device	Group	Point	
1	Source EH-105	Measurements	Outdoor temperature	edit
	Destination Broadcast	Default registers	Outdoor temperature	delete

add binding

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Network and information security packages



Ouman has turned connections needed for internet use and data security solutions to products. Ouman 3G STD, Ouman 3G PRO and Ouman Access are wireless network solutions to connect building technology and process automation to the internet and where all information transferred over the internet is encrypted in both directions. When the user acquires a 3G-STD, 3G-PRO or Ouman Access package, a web address and if needed also a portal ID (user name and password) will be set up for him/her. By writing a web address to the browser and logging to the system with the administrator portal ID, the user can communicate with all terminals connected to the router without a specially logging in. If administrator ID is not used during log in, then the user logs in with his/her own user ID separately to both EH-net and EH-800 device.

Ouman 3G STD and 3G PRO packages include 3G interface. Ouman Access is suitable for locations, where the customer has an internet connection. Access functions with all internet connections, where outgoing traffic is not separately blocked.

Terminals can be remote controlled either from the internet (encrypted traffic) or by connecting directly to the router at the location. Wireless 3G package includes a modem, a network device with firewall and an opened 3G-interface. 3G always uses the best possible network connection. (3G 2100 MHz, Edge, GPRS and in 3G PRO in addition 3G 900 MHz). It is possible to connect EH-net starting from version 3.23.1 to Ouman 3G and Ouman Access. Previous EH-net versions can be updated to 3.23.1 version.

The user can combine several web-addresses to an "internal network", which means that it is possible to access main units in different locations with one portal ID. One Ouman 3G router can connect up to 10 devices to the network, when a specific additional connection is used.

As additional supply, Ouman offers an extra outdoors antenna, antenna adapter and 10 m extension cable for 3G antenna for weak 3G coverage areas such as underground locations.



Ouman 3G-PRO



Ouman 3G-STD



Ouman Access

Additional equipment



MODBUS-ADAPTER CARDS:

MODBUS-600: Modbus adapter that is used to connect EH-60 and EH-686 to the Modbus.

MODBUS-200: Adapter card for EH-200 series controllers.

MODBUS-100: Adapter card for EH-105 controllers.



The GSM modem makes it possible to relay alarm information as a text message from the E-net to a GSM phone.

GSM modem without a GSM connection

The package includes a GSM modem with a DIN connector, network device, separate electric cable, data cable and a bag of connector parts.



External antenna

Antenna with an FME connection. Antenna with a small magnetic stand.

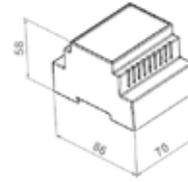
Cable length 2.5m

Antenna's extension cable

Cable length 10m, FME connection

Technical information

Casing:	PC UL94-VD (self-extinguishing)
Attachment:	DIN-rail
Measurements (mm):	width 70 mm, height 58 mm, depth 86 mm
Weight:	110 g
Operating temperature:	0...+60°C
Storing temperature:	-25...+75°C
Moisture limits:	5-93% relative moisture
Protection class:	IP20
Ethernet interface:	10/100 Mbs Ethernet-interface (RJ-45)
Serial interfaces:	DSUB-9 serial interface (RS232), (2400 – 115 200bps) Modbus interface (RS-485), (2400 – 115 200bps)
Electrical connection:	9-32VDC/1.7W or 24VAC/4VA
Ethernet protocols:	Modbus TCP, HTTP, SMTP and SNMP
Approvals:	
-interference tolerance	EN 61000-6-2
-interference emissions	EN 50081-2
Equipment requirements for a pc:	Pentium 133 MHz or more powerful 5Mb of free hard disc space Windows98 and Windows7/ME/2000/XP/Vista operating system Network card Internet Explorer 8.0 (or newer) or Mozilla Firefox 3.0 (or newer) + Java plug in
Requirements for devices connected to the system:	EH-686: Program version 2.4.6 or newer EH-60: Program version 2.4.6 or newer EH-105: Program version 1.60 or newer EH-203: Program version 1.45 or newer EH-201/L: Program version 1.45 or newer EH-201/V: program version 1.27 or newer Ouman Plus Ouflex Ouflex w with Oulink Third party equipment: Modbus devices having templates.
System dependence	Connected to Ounet. Modbus TCP/IP support
Warranty:	2 years
Manufacturer:	Ouman Oy, Voimatie 6 FIN-90440 KEMPELE Tel. +358 424 8401, Fax: +358 8 815 5060



We reserve the rights to make technical changes.