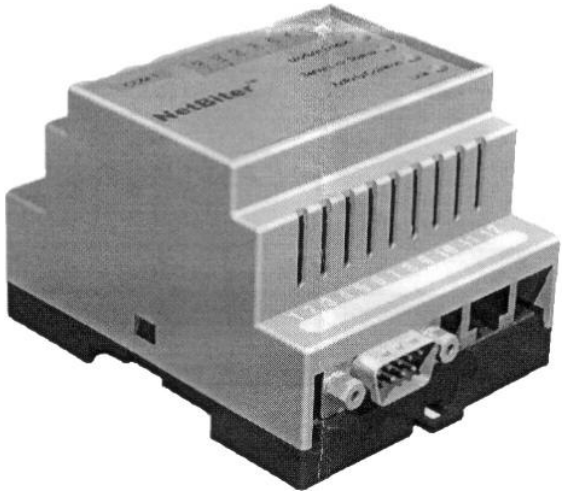
OWNER´S MANUAL

# FreeWay

NetBiter™ Ethernet

TCP/IP and Modbus TCP -Gateway for Enervent AC-series

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# Safety Instructions

### Overview

This chapter states the safety instructions that must be followed when installing and operating FreeWay NetBiter™ Ethernet Gateway.
The material in this chapter must be studied before attempting any work on, or with, the unit.

### General Safety Instructions

**WARNING!** All electrical installation and maintenance work on the ventilation unit should be carried out by qualified electricians.

Do not attempt any work on a powered unit. After switching off the mains, always allow the fans two minutes to stop and heater in ACE-models to cool down before working on the unit. There can be dangerous voltages inside the ventilation unit from external control circuits (COH cooker hood, CVC central vacuum cleaner) even when the unit mains power is shut off.

# Introduction

### Overview

This chapter contains a description of the User´s Manual for the FreeWay NetBiter™ Ethernet Gateway.

### Intended Audience

The guide is intended for people responsible for installing, commissioning, and using FreeWay Ethernet Gateway. The reader is expected to have a basic knowledge of:

- electrical fundamentals and wiring practices
- the Enervent AC ventilation unit and control panel
- Ethernet bus practices
- Internet practices

### Terms and abbreviations

FreeWay NetBiter™ Ethernet is one of the FreeWay system Gateways that can connect Enervent AC units to Ethernet Local Area Network or to Internet.

# Overview

## Overview

This chapter contains a short description of the FreeWay NetBiter™ Gateway a delivery checklist and warranty information.

## FreeWay NetBiter™ Ethernet Gateway

FreeWay NetBiter™ Ethernet Gateway is an optional device for Enervent AC series ventilation units. Through the gateway it is possible to connect the AC ventilation unit to Ethernet Network (Modbus TCP) and to Internet. The Gateway is connected to internal Network (LAN, Intranet). By use of PC and a Webb browser it is possible to supervise ventilation units. The system contains a flowchart with all data on PC screen. Through the Gateway it is possible to do almost all the same functions as from AC-control panel.

### Compatibility

FreeWay NetBiter™ Ethernet Gateway can be connected to every Enervent AC ventilation units from software version C1.37 and newer.
If the unit has an older software version it must be updated before installing the Gateway.

### Delivery check

Ethernet Gateway option package contains:
- FreeWay NetBiter™ Ethernet Gateway
- A special connection cable for connecting the AC control panel to the Gateway
- Owner´s manual

### Warranty

Enervent Oy Ab warrants the equipment supplied against defects in design, materials and workmanship for a period of twelve (12) months after installation. A new product will be delivered for a defected product and the defected product must be sent to the dealer.

The manufacturer is not responsible for

- Any costs resulting from a failure if the installation, commissioning, repair, alternation or ambient conditions of the gateway do not fulfil the requirements specified in the documentation delivered with the gateway and other relevant documentation
- Gateways subjected to misuse, negligence or accident
- Gateways comprised of materials provided or designs stipulated by the purchaser

In no event shall the manufacturer, it´s suppliers or subcontractors be liable for special, indirect, incidental or consequential damages, losses or penalties.

# Mechanical installation

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**WARNING!** Follow the safety instructions given in this manual and in the ventilation unit manual.

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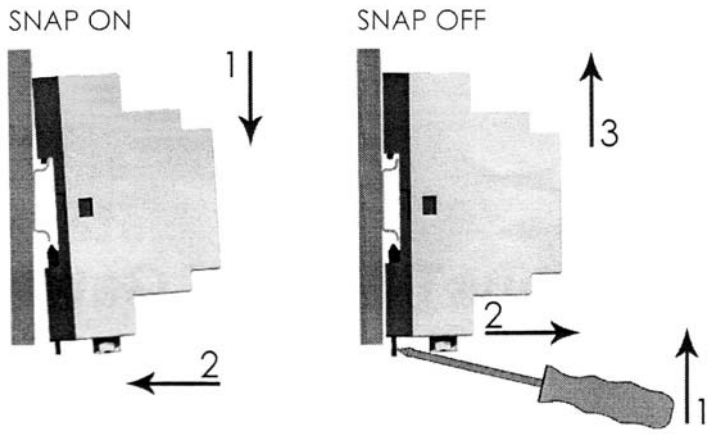
FreeWay NetBiter™ Ethernet Gateway is possible to be mounted at the factory inside some models of the ventilation units or in other models outside the unit. The ambient condition shall be dry and the temperature must be between +5...+55°C. Relative humidity must be between 5...95% RH without condensing.

The Gateway shall be installed on a DIN rail (EN 50022).




# Electrical installation

### Overview

This chapter contains:

- Cabling instructions
- FreeWay NetBiter™ Ethernet Gateway connection instructions

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**WARNING!** Before installation, switch off the ventilation unit power supply. Wait for two minutes for the fans to stop. The AC-model´s electrical heater can also be hot. Switch off all dangerous voltages connected from external control circuits (COH cooker hood/ CVC central vacuum cleaner) to the inputs of the AC ventilation unit.

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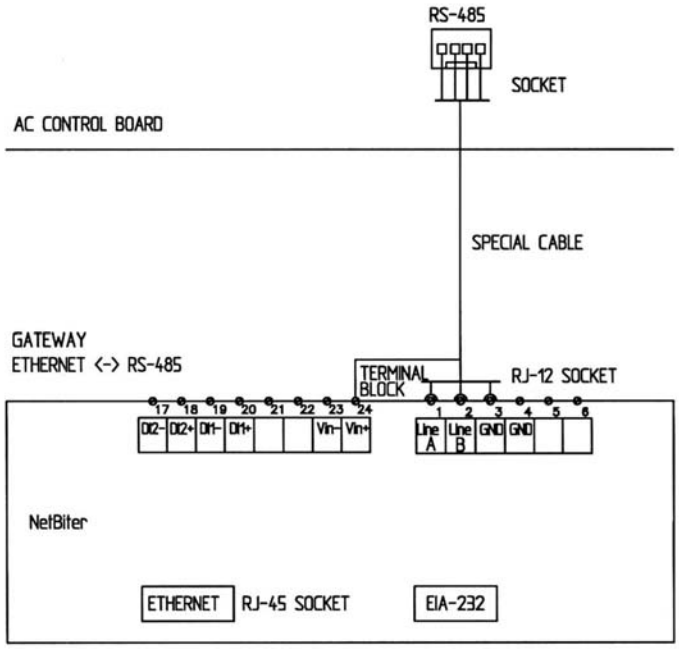
### Cabling

Arrange the bus cables as far away from power cables. Avoid parallel runs. Use bushings at cable entries.

## FreeWay NetBiter™ Ethernet connections

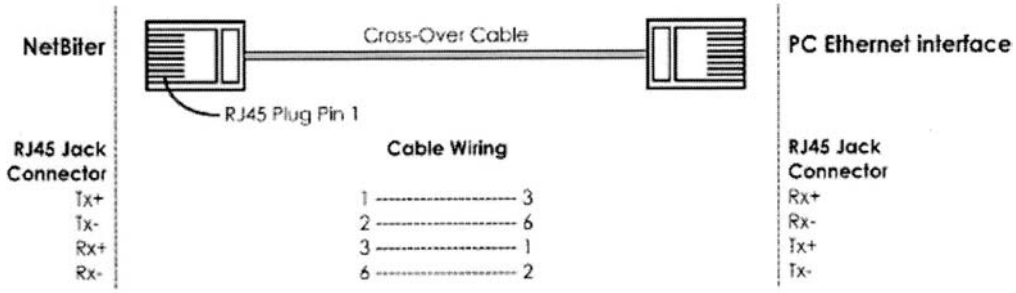
### Connection to Enervent AC ventilation unit

Gateway is connected to the AC control board with a special cable. Cable is connected to RS-485 socket on the AC control board. Line A, Line B and GND is connected to Gateway with a plug RJ-12. Vin+ (supply voltage) is connected to the Gateway terminal block.



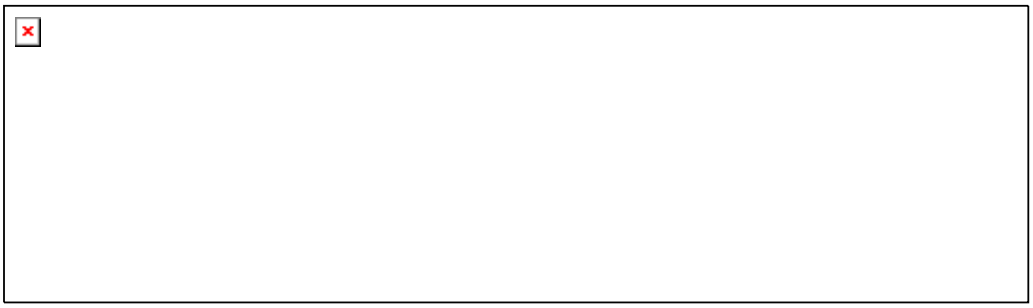

### Connection to a computer

Connect the NetBiter™ Ethernet Gateway to Enervent AC ventilation unit with a special cable and to a computer Ethernet network socket with a cross-over Ethernet RJ-45 cable.



### Connection to LAN Ethernet network and a ADSL modem

Connect the NetBiter™ Ethernet Gateway to Enervent AC ventilation unit with a special cable and with a straight-through Ethernet RJ45 cable to LAN Ethernet network or to a ADSL modem.



### Connection to a GSM modem

GSM modem is connected to FreeWay NetBiter™ Gateway RS-232 port with a 9-pin serial cable.

# Configuration

## Overview

This chapter gives information on configuring the FreeWay NetBiter™ Ethernet Gateway to an Ethernet network.

## NetBiter Config configuration tool

When NetBiter™ Ethernet Gateway is installed mechanically and electrically according to instructions it must be configured to work properly in Ethernet network.

For configuration is a tool NetBiter Config needed. You can download it from website www.enervent.fi .

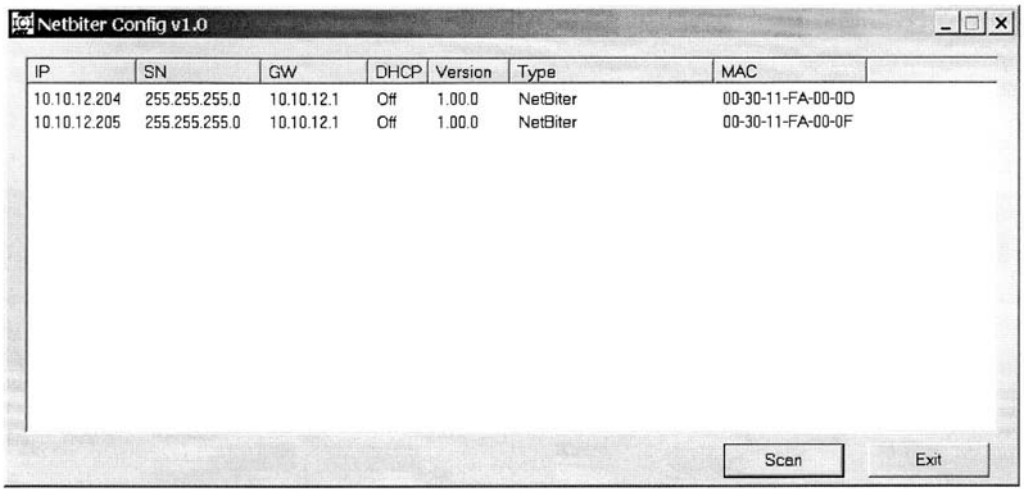
System requirements:

- Pentium 133MHz or higher
- 5 Mb of free space on the hard drive
- Win 95/98/ME/NT/2000/XP
- Network Interface Card (Ethernet)

The NetBiter Config is a PC based configuration utility to set TCP/IP network settings in the NetBiter™ Ethernet Gateway. This utility has the ability to scan the Ethernet network for connected NetBiter™ devices and let the user set IP-address, net mask, gateway, DNS and hostname for each unit.

## Scanning for connected NetBiter™ Ethernet Gateways

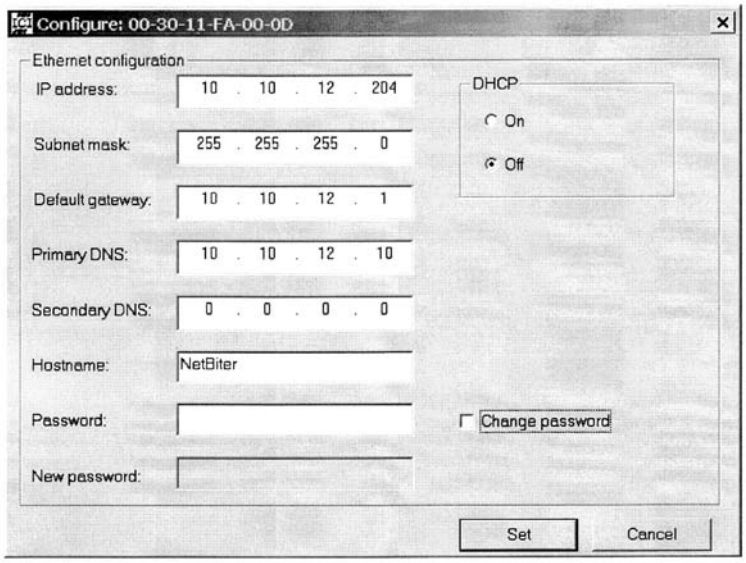
First ensure that you have connected the NetBiter units you want to install on the same Ethernet network as the PC is connected to. Use standard Ethernet bus cables, straight through or crossover cable depending on how you connect to the device. When the NetBiter Config utility is started, it will scan the Ethernet network for NetBiter devices. All detected devices will be presented in a list in the main window. If you want to force a new scan for devices, you can press the ´scan´ button.




## Changing IP settings

To change the IP settings on a detected device, double-click on the device you want to configure in the list of devices. This will open up a dialog where you can enter the desired IP configuration. To obtain necessary information about IP address, Subnet mask etc. Please contact your network administrator.

Note! Do not select the DHCP option if you don´t have a DHCP server available on the network.



### FreeWay NetBiter™ connected directly to a PC

Power up the NetBiter™ Gateway and start the NetBiter Config utility on the PC. Change the three first IP address numbers on the NetBiter™ Gateway to same as in IP address on the PC. The last number in IP-address must be different than in PC. Choose DHCP off.
You can enter a hostname of the device. The default password for authentication of the new settings is ´admin´. The password can be changed. Pressing ´Set´ will cause the NetBiter device to reboot and after that the new settings will be enabled. Close the NetBiter Config utility.

### FreeWay NetBiter™ in LAN Ethernet network

First ensure that you have connected the NetBiter units you want to install on the same Ethernet network as the PC is connected to.

Power up the NetBiter™ Gateways and start the NetBiter Config utility on the PC. Change the three first IP address numbers on the NetBiter™ Gateway to same as in IP address on the PC. The last number in IP-address must be different than in PC. Choose DHCP off.
You can enter a hostname of the device. The default password for authentication of the new settings is ´admin´. The password can be changed. Pressing ´Set´ will cause the NetBiter device to reboot and after that the new settings will be enabled. Close the NetBiter Config utility.

### FreeWay NetBiter™ in Internet

To connect Enervent AC ventilation units to Internet with NetBiter™ needs a contract with some Internet operator (e.g. TeliaSonera).

NetBiter™ Gateway can be connected via an ADSL modem to Internet.

### GSM modem

To send alarm information from Enervent AC ventilation units via NetBiter™ Gateway as SMS or e-mail needs a contract with some tele operator (e.g. TeliaSonera).

The cell phone SIM card is installed to the modem. The modem is configured with it´s own configuration software tool to so called AutoPin state. Then the SIM card doesn´t ask the PIN code.
The rest of the alarm configuration is made at FreeWay AC web page, Alarm Configuration and Users.

# FreeWay AC web page

## Overview

This chapter gives information on FreeWay AC web page.

## Log in

After configuration open the web browser on PC (e.g. Internet Explorer) and enter the IP address you have set on the NetBiter unit with the NetBiter Config utility. For example, if you entered the address 10.10.12.204 then you should enter the text below in the address field of the browser and press enter.

http://10.10.12.204

Now you should see the login screen:


Enter user name ´admin´ and password ´admin´. Press ´OK´.
To change user name and password is recommended. This is described in Network.

## Main

On the Main page you can see the ventilation unit flow chart and a toolbar.

In the flowchart you can see following information on supply air side:

- Outside air damper status, open/ closed
- Filter reminder
- Outside air temperature
- Heat recovery efficiency
- Supply air temperature after heat recovery
- Need for after heating, on/off
- Water heater return water alarm or electrical heater overheating alarm
- Cooling output in %
- Supply air temperature after heating and cooling
- Supply air cold alarm
- Supply air fan speed
- Supply air duct pressure (a pressure difference transmitter is required)

In the flowchart you can see following information on supply air side:

- Exhaust air duct pressure (a pressure difference transmitter is required)
- Exhaust air pressure difference (a pressure difference transmitter is required)
- Filter reminder
- Exhaust air temperature
- Exhaust air cold alarm
- Heat exchanger status, rotating/ not rotating
- Heat exchanger fault alarm
- Waste air temperature
- Exhaust air fan speed
- Waste air damper, open/ closed

In the flowchart you can see following information in the room:

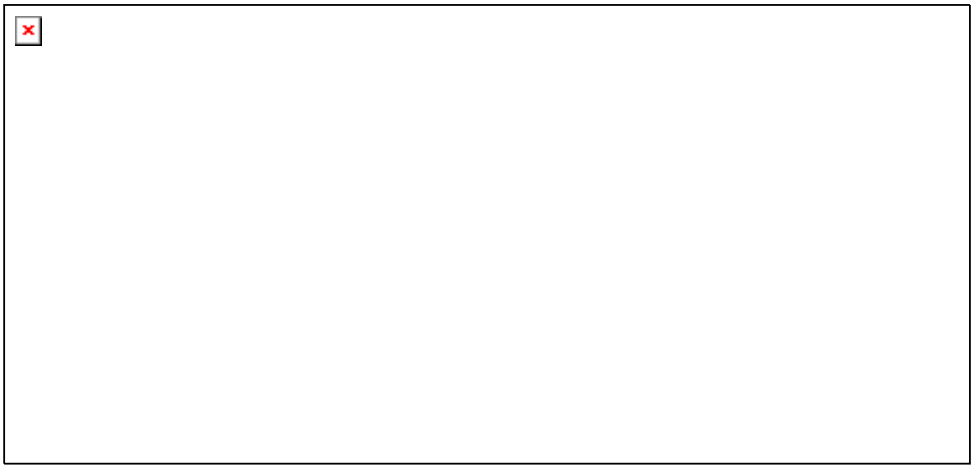
- $CO_2$ (carbon dioxide) concentration (a $CO_2$ transmitter is required)
- %RH (relative humidity)
- room air temperature
- cooker hood status, on/off (cable connection is required)
- central vacuum cleaner status, on/off (cable connection is required)

In the flowchart you can start following functions:

- emergency stop
- extended time for fans (in office mode)
- boosting
- over pressure (in home mode)

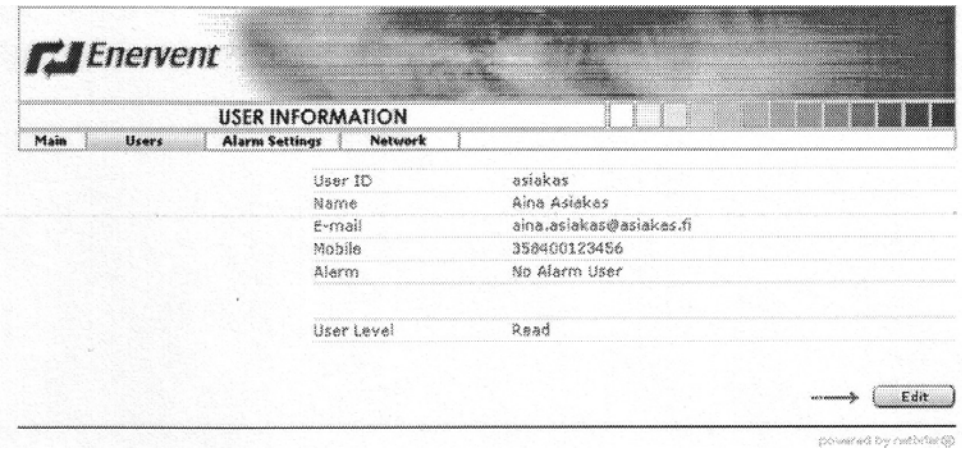
**Users**

Users are configured here.

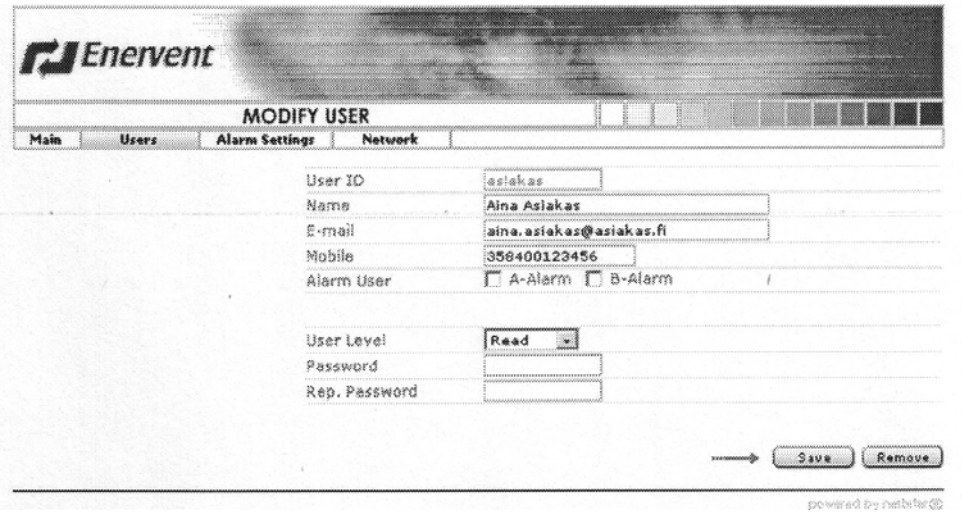


Users can be added by pressing ´add´.

User information can be seen by pressing on a person.




You can edit user data by pressing ´edit´.

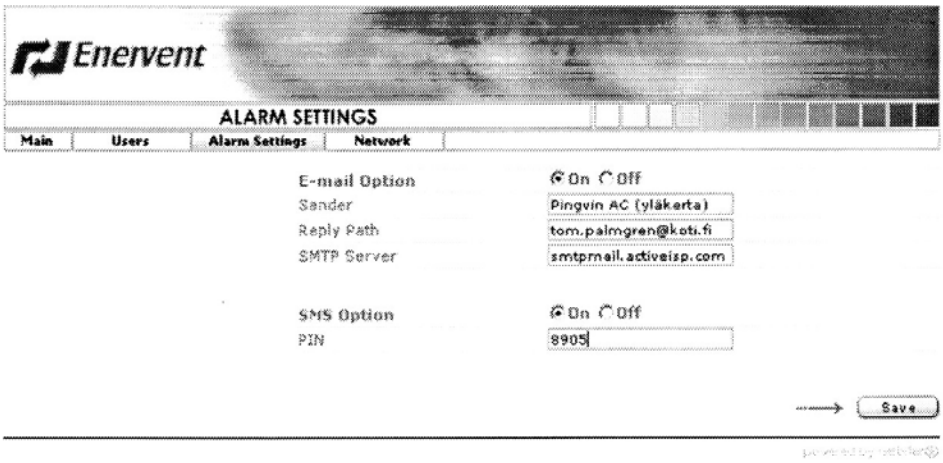



| | |
|---|---|
| User ID | |
| Name | Person´s name |
| E-mail | User´s e-mail address |
| Mobile | Users mobile phone number (international form without + sign) |
| Alarm User | Alarm type (nothing, A, B or both)<br>A-alarm: heat recovery wheel, water heater return water, electrical heater overheating<br>B-alarm: Filter, exhaust air cold, supply air cold, supply air hot |

The changed data must be saved by writing the password twice and by pressing ´Save´. A user can be removed by pressing ´Remove´.

## Alarm Settings

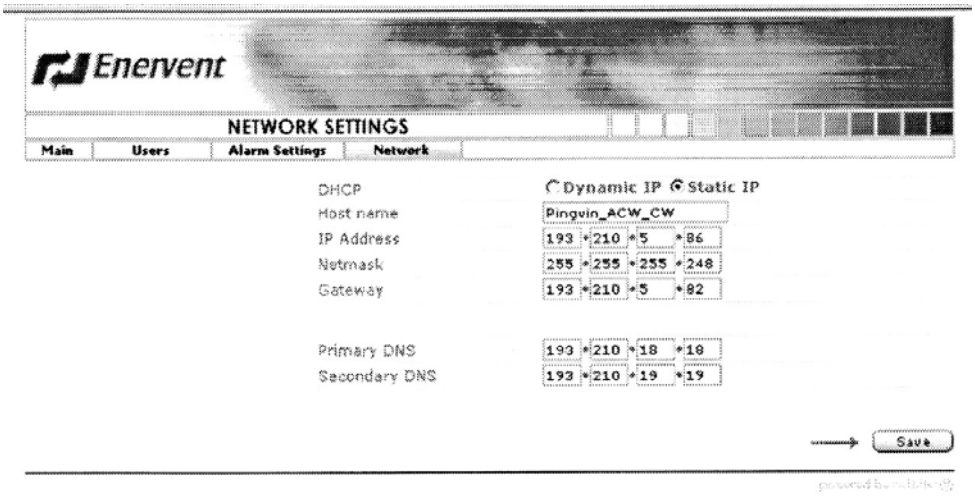
E-mail and SMS configuration for alarms.




| | |
|---|---|
| E-mail Option | Choose ´on´ if you want NetBiter send alarms by e-mail |
| Sender | Name of the ventilation unit that sends e-mail |
| Reply Path | If the e-mail fails to go to user address it will be sent to this address. |
| SMTP Server | Outgoing mail server |
| SMS Option | Choose ´on´ if you want NetBiter send alarms by SMS. |
| PIN | GSM modem SIM card PIN code. |

## NetWork

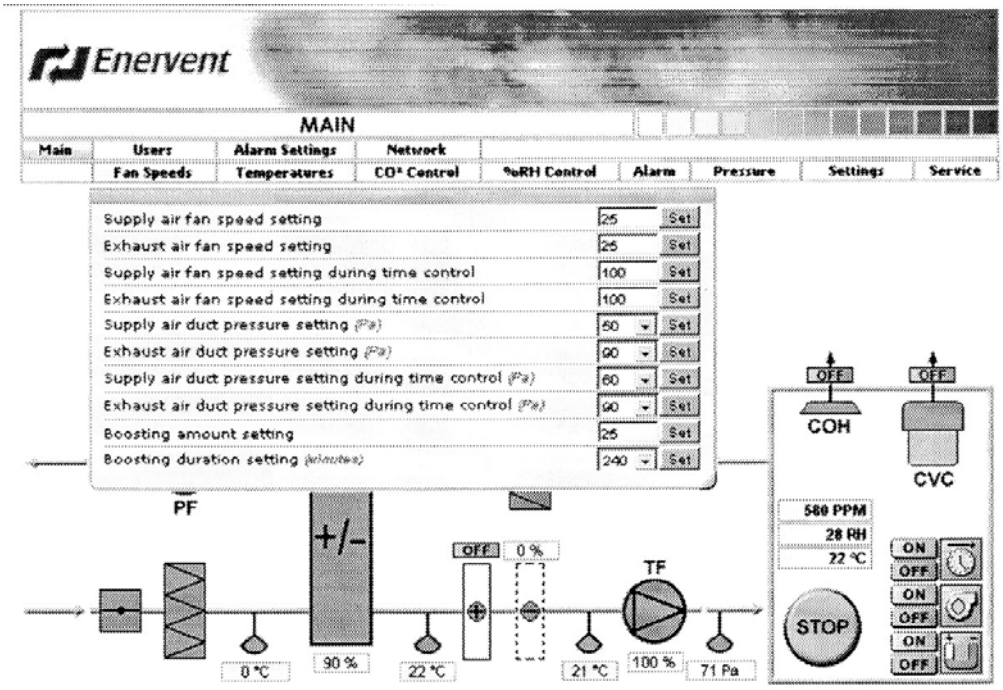
The IP settings can be configured here.




| | |
|---|---|
| DHCP | DHCP is a standard protocol that automates the process of configuring network hosts by allowing hosts to obtain IP addresses and configuration parameters. Don´t use it if you don´t have a DHCP server.<br>Static IP uses an IP address given by operator. |

## Fan Speeds

The fan speed, duct pressure and boosting settings are made here.




Supply air fan speed setting

Supply air fan speed is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Speed control´.

Exhaust air fan speed setting

Exhaust air fan speed is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Speed control´.

Supply air fan speed setting during time control

Supply air fan speed during time control is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Speed control´. When the ´Environment Mode Setting´ in ´Service´ window is set to ´Home´, speed 0 can´t be chosen.

Exhaust air fan speed setting during time control

Exhaust air fan speed during time control is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Speed control´. When the ´Environment Mode Setting´ in ´Service´ window is set to ´Home´, speed 0 can´t be chosen.

Supply air duct pressure setting (Pa)

Supply air duct pressure is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Constant duct pressure control´ (a pressure transmitter is required).

Exhaust air duct pressure setting (Pa)

Exhaust air duct pressure is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Constant duct pressure control´ (a pressure transmitter is required).

Supply air duct pressure setting during time control (Pa)

Supply air duct pressure during time control is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Constant duct pressure control´ (a pressure transmitter is required). When the ´Environment Mode Setting´ in ´Service´ window is set to ´Home´, speed 0 can´t be chosen.

Exhaust air duct pressure setting during time control (Pa)

Exhaust air duct pressure during time control is set here when ´Control mode for fans setting´ in ´Service´ window is set to ´Constant duct pressure control´ (a pressure transmitter is required). When the ´Environment Mode Setting´ in ´Service´ window is set to ´Home´, speed 0 can´t be chosen.

Boosting amount setting

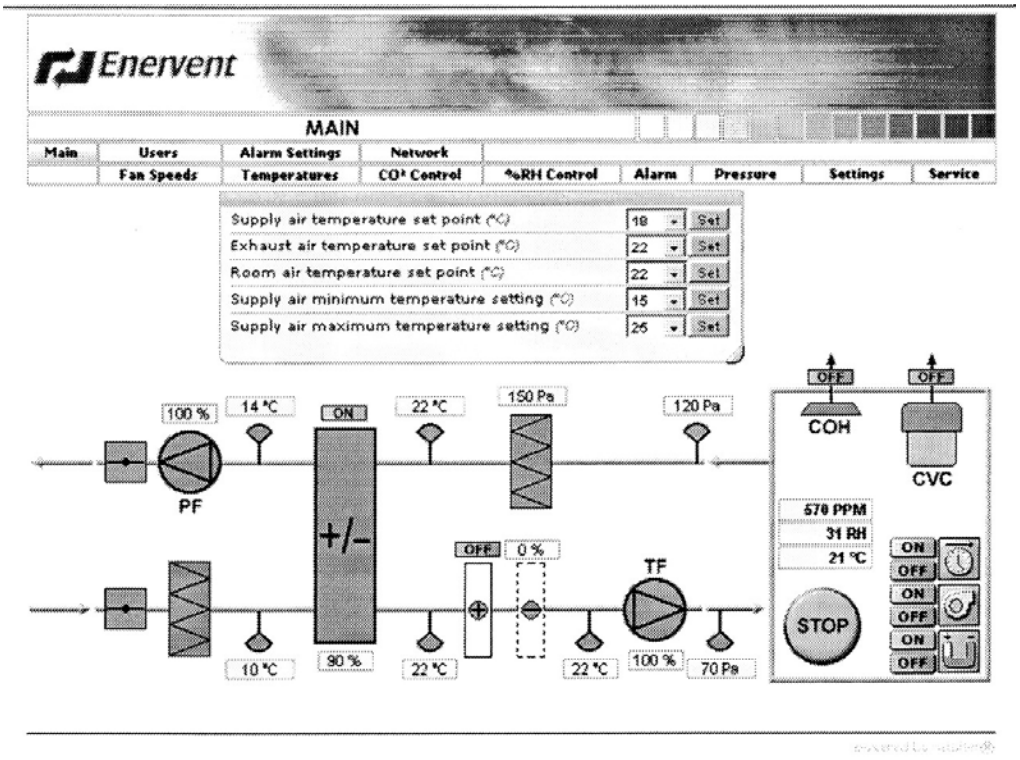
Defines how much the fan speeds are increased in case of boosting.

Boosting duration setting (minutes)

Defines the boosting time.

**Temperatures**

The temperature settings are made here.



Supply air temperature set point

Set point for supply air in case of constant supply air temperature control.

Exhaust air temperature set point

Set point for exhaust air temperature in case of constant exhaust air temperature control.

Room air temperature set point

Set point for room air temperature in case of constant room air temperature control.

Supply air minimum temperature setting

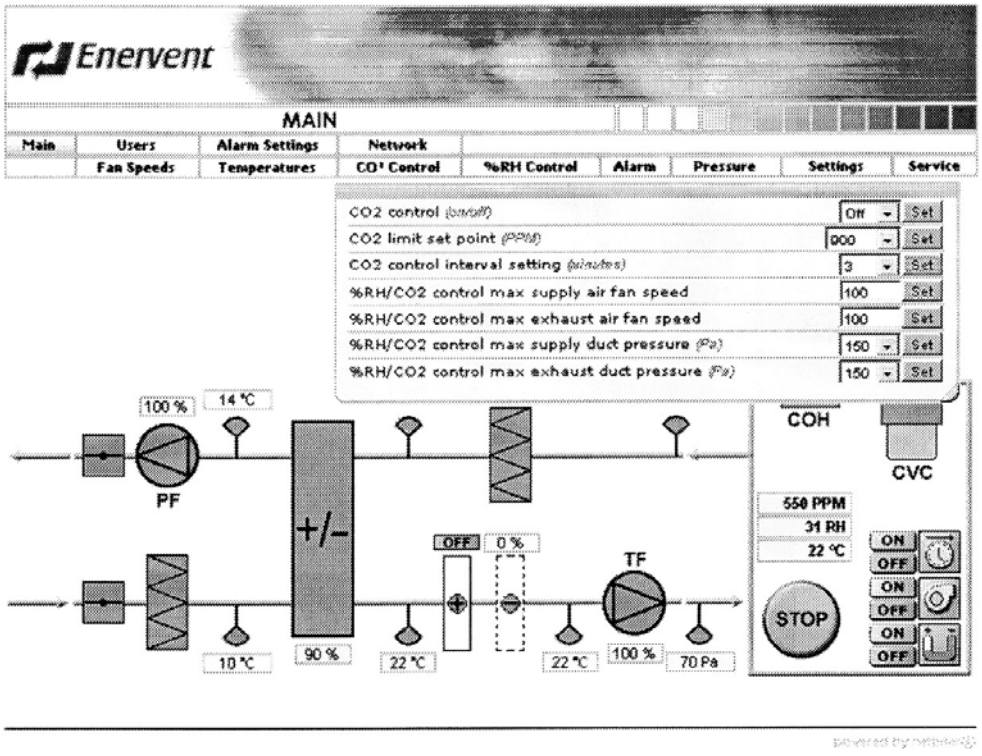
Supply air minimum temperature in case of constant exhaust air or constant room air temperature control.

Supply air maximum temperature setting

Supply air maximum temperature in case of constant exhaust air or constant room air temperature control.

## CO2 Control

$CO_2$ (carbon dioxide) control settings are made here.




$CO_2$ control (on/off)

Choose On if $CO_2$ control is allowed ($CO_2$ transmitter is required).
Choose Off if $CO_2$ control is not allowed.

$CO_2$ limit set point (PPM)

$CO_2$ control boosting limit. The control will boost fan speeds up when $CO_2$ concentration increases above the limit.

$CO_2$ control interval setting (minutes)

The change interval for fan speeds during boosting.

%RH/$CO_2$ control max supply air fan speed

The maximum supply air fan speed during boosting.

%RH/$CO_2$ control max exhaust air fan speed

The maximum exhaust air fan speed during boosting.

%RH/$CO_2$ control max supply duct pressure (Pa)

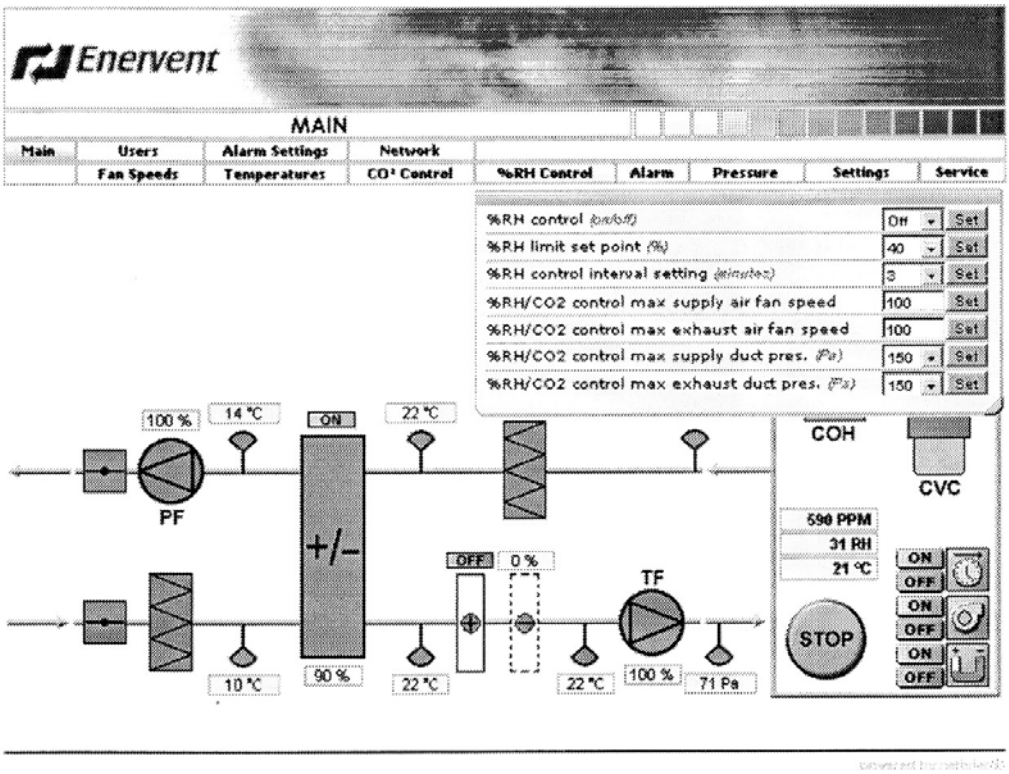
The maximum supply air duct pressure during boosting.

%RH/$CO_2$ control max exhaust duct pressure (Pa)

The maximum exhaust air duct pressure during boosting.

## %RH Control

%RH (relative humidity) control settings are made here.




%RH control (on/off)

Choose On if %RH control is allowed (%RH transmitter is required).

Choose Off if %RH control is not allowed.

%RH limit set point (%)

$CO_2$ control boosting limit. The control will boost fan speeds up when $CO_2$ concentration increases above the limit.

%RH control interval setting (minutes)

The change interval for fan speeds during boosting.

%RH/$CO_2$ control max supply air fan speed

The maximum supply air fan speed during boosting.

%RH/$CO_2$ control max exhaust air fan speed

The maximum exhaust air fan speed during boosting.

%RH/$CO_2$ control max supply duct pressure (Pa)

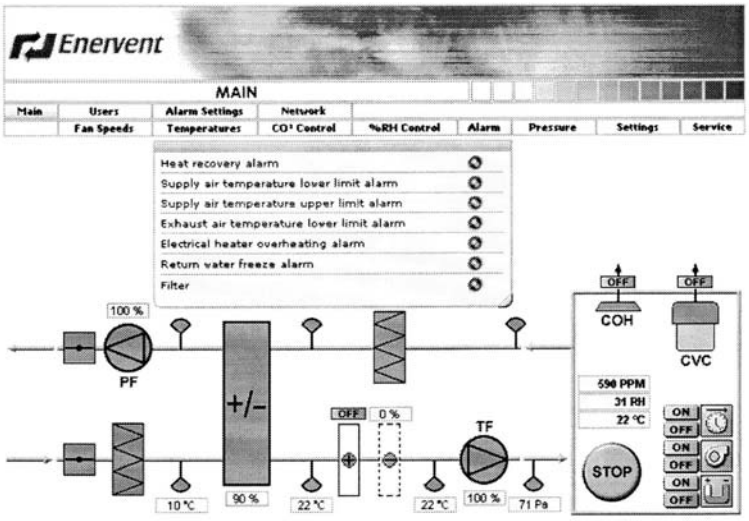
The maximum supply air duct pressure during boosting.

%RH/$CO_2$ control max exhaust duct pressure (Pa)

The maximum exhaust air duct pressure during boosting.

**Alarm**

Alarms will be seen in the Alarms window. Active alarms are flashing red. Alarms can be reset from the operating panel.




Heat recovery alarm, A-alarm

Supply air temperature lower limit alarm, B-alarm

Supply air temperature upper limit alarm, B-alarm

Exhaust air temperature lower limit alarm, B-alarm

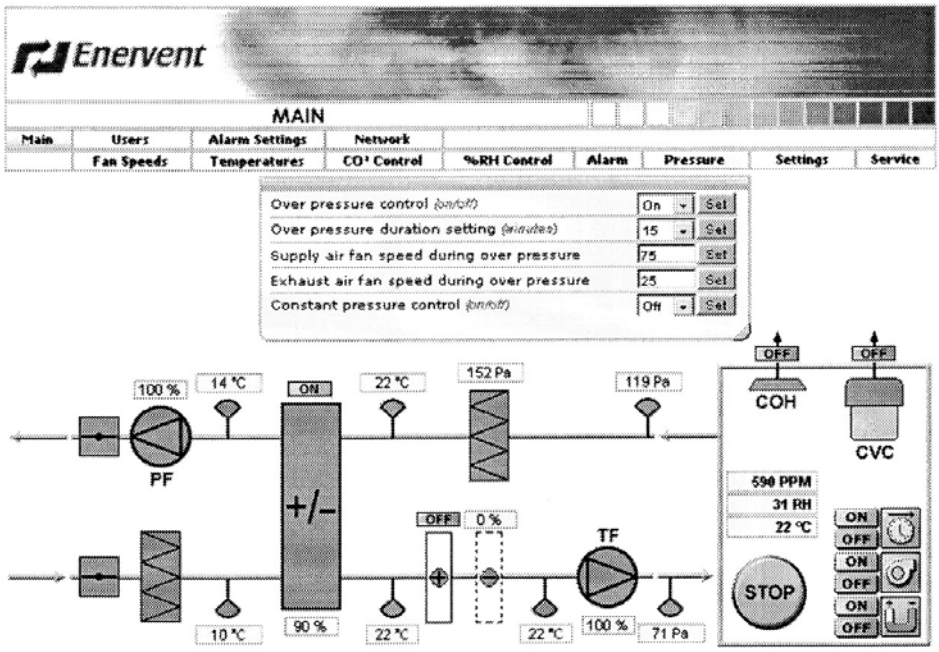
Electrical heater overheating alarm, A-alarm

Return water freeze alarm, A-alarm

Filter, B-alarm

## Pressure

The over pressure and constant pressure configurations are made here.




Over pressure control (on/off)

Choose ´On´ if over pressure control is allowed.
Choose ´Off´ if over pressure control is not allowed.

Over pressure duration setting (minutes)

Supply air fan speed during over pressure

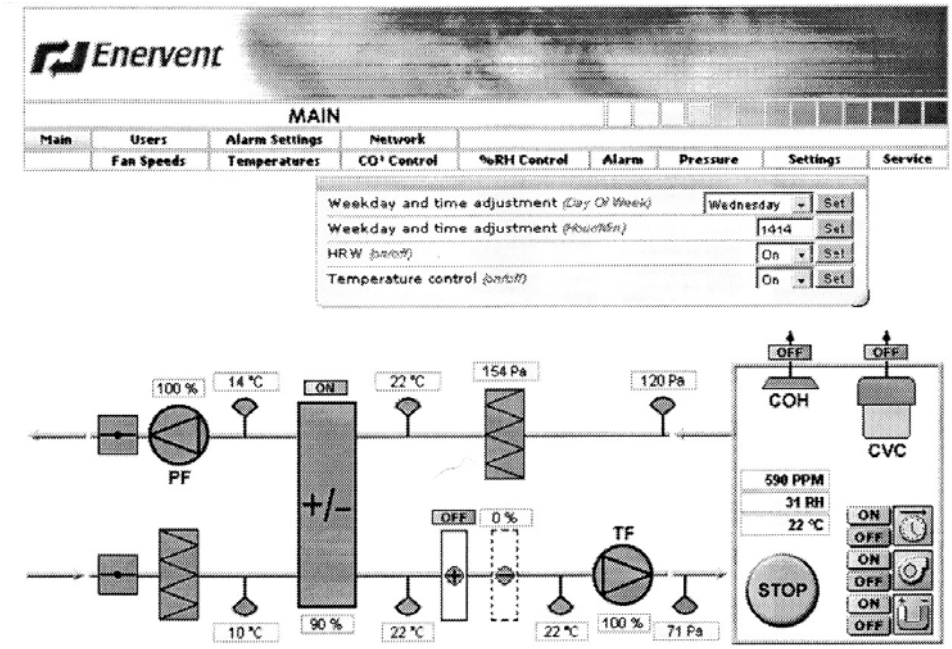
Exhaust air fan speed during over pressure

Constant pressure control (on/off)

Choose ´On´ if it is allowed to force fan speeds during cooker hood and central vacuum cleaner action.
Choose ´Off´ if it is not allowed to force fan speeds during cooker hood and central vacuum cleaner action.

## Settings

Day of week and hours/minutes are adjusted in Settings. Heat recovery and temperature control can also be manually switched on and off.




Weekday and time adjustment (Day Of Week)

Weekday and time adjustment (Hour/Min)

HRW (on/off)

Manual switch for heat recovery.
Choose ´On´ if heat recovery is allowed.
Choose ´Off´ if heat recovery is not allowed.

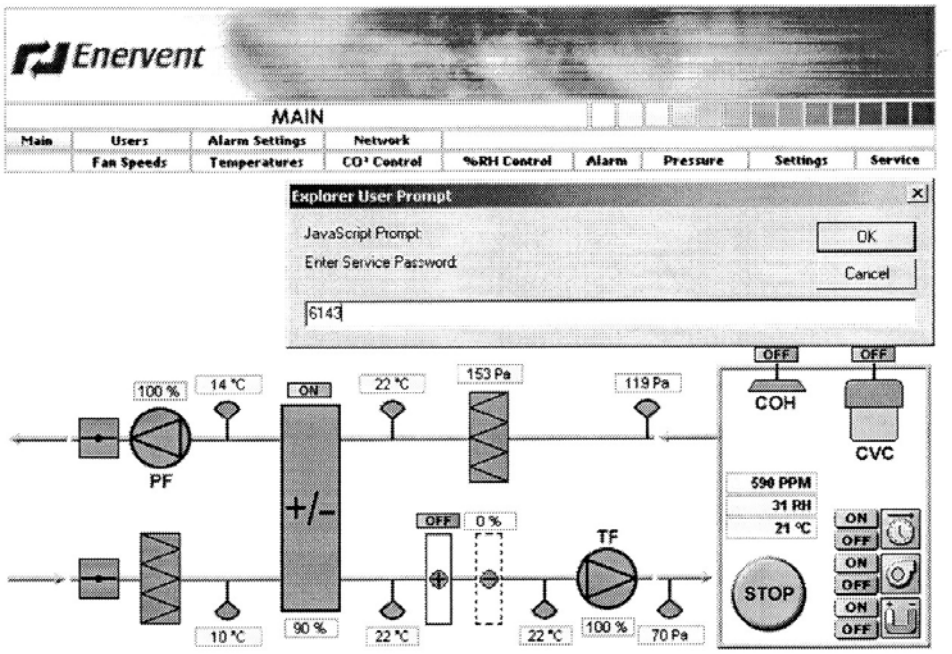
Temperature control (on/off)

Manual switch for temperature control.
Choose ´On´ if after heating/cooling is allowed.
Choose ´Off´ if after heating/cooling is not allowed.

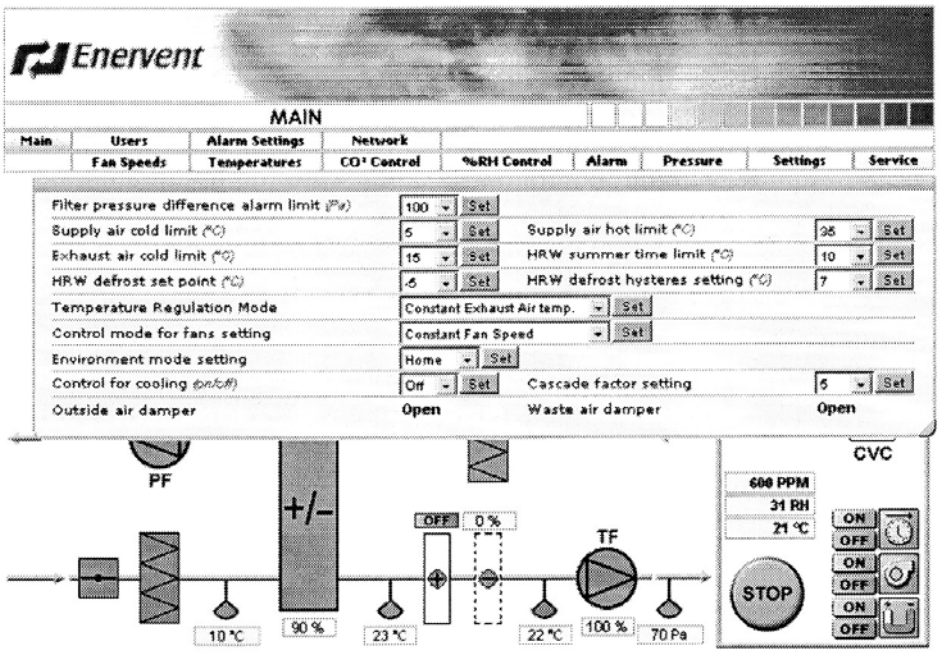
## Service

In Service window service and control parameters can be configured.

A log in window will open when the Service is pressed. Enter service password 6143. Password can not be changed.




When log in is done you can configure the parameters.



Filter pressure difference alarm limit (Pa)

Once a week the control compares the filter pressure drop to the alarm limit with fans on maximum speed.

Supply air cold limit (°C)

Exhaust air cold limit (°C)

Supply air hot limit (°C)

HRW summer time limit (°C)

The heat recovery can be turned off manually when outside air temperature exceeds this limit. The heat recovery is always turned on when outside air temperature is below this limit.

HRW defrost set point (°C)

Supply air fan will stop and starts to run periodically when waste air temperature is below HRW defrost set point and control allows defrosting. Heat recovery defrost function can´t be turned on when the set point is in ´Off´ position.

HRW defrost hysteres setting (°C)

Supply air fan will start when waste air temperature has rised the value of HRW defrost hysteres setting above the HRW defrost set point.

Temperature Regulation Mode

Constant supply air, constant exhaust air or constant room air temperature.

Control mode for fans setting

Speed control or constant duct pressure control.

Environment mode setting

Home or office.

In home mode the fan time program controls fans between two speeds and HS on the control board is ment for over pressure push button.

In office mode the fan time program controls fans ´on´ and ´off´ and HS on the control board is ment for extended time push button.

Control for cooling (on/off)

Choose ´On´ if cooling is allowed.

Choose ´Off´ if cooling is not allowed.

Cascade factor setting

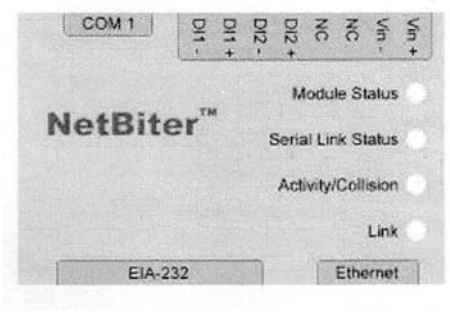
Cascade factor defines the change in supply air temperature compared to the change in exhaust or room air temperature depending on the temperature regulation mode.

For example: Constant exhaust air temperature control. Exhaust air temperature drops one degree. Cascade factor is 5. Then supply air temperature will rise 5 degrees.

# Fault tracing

## LED indicators

FreeWay NetBiter™ Gateway has four LED indicators. The description of the LEDs is presented below.




| Name | Colour | Function |
|---|---|---|
| Module Status | OFF | No power |
| | Green | Module is running in normal mode |
| | Orange | During boot-up |
| Serial Link Status | Flashing Green | Serial Packet receive |
| | Flashing Red | Serial Packet transmit |
| | Orange | During boot-up |
| Ethernet Activity/ collision | Flashing Green | Ethernet Packet received |
| | Flashing Red | Ethernet Collision detected |
| Link | OFF | No Ethernet link detected |
| | Green | Ethernet network detected, 10Mbps |
| | Orange | Ethernet network detected, 100Mbps |

# Technical data

## FreeWay NetBiter™ Ethernet Gateway

**Ethernet connection:**
10Base-T or 100Base-TX (IEEE 802.3) RJ-45 connector.

**Outer dimensions:**
57,5mm x 70mm x 86mm

**Mounting:**
DIN 35 rail (EN 50022)

**Degree of protection:**
IP20

**Cover material:**
Grey plastic, LEXAN 940, self-extinguishing acc. to UL94-V0

**Temperature range:**
Operating 5...55 °C
Storage -25...75 °C

**Humidity range:**
5...95% RH, non-condensing

**Connectors:**
- 8-pole terminal block
- EIA-485, 6-pole connector RJ12
- Ethernet, 8-pole connector RJ45
- EIA-232, 9-pole DSUB connector

**Current consumption:**
25mA, 24V AC from the AC control board

**Power supply:**
9-32V AC/DC (1.2VA)

**General:**
- Complies with EMC standards EN 50081-2:1993, EN 61000-6-2:1999