USER MANUAL

Netbiter® WS100/WS200

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This product contains ESD (Electrostatic Discharge) sensitive parts that may be damaged if ESD control procedures are not followed. Static control precautions are required when handling the product. Failure to observe this may cause damage to the product.

Table of Contents

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1 Preface

1.1 About This Document

This manual describes how to install and configure the Netbiter WS100 and WS200 gateways.

For additional related documentation and file downloads, please visit the Netbiter support website at www.netbiter.com/support.

1.2 Related Documents

Table 1 Related documents

Document	Author
Netbiter WS100 Gateway Installation Guide	HMS
Netbiter WS200 Gateway Installation Guide	HMS
Netbiter Argos Administration Manual	HMS

1.3 Document history

Table 2 Summary of recent changes

Change	Where (section no.)
New document replacing the previous WS100 and WS200 User Manuals.	—

Table 3 Revision list

Version	Date	Author	Description
1.00	Sep 2015	ThN	Initial release

1.4 Conventions

Unordered (bulleted) lists are used for:

- Itemized information
- Instructions that can be carried out in any order

Ordered (numbered or alphabetized) lists are used for instructions that must be carried out in sequence:

1. First do this,
2. Then open this dialog, and
   a. set this option...
   b. ...and then this one.

Bold typeface indicates interactible parts, such as connectors and switches on the hardware, or menus and buttons in a graphical user interface.

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Monospaced text is used to indicate program code and other
kinds of data input/output such as configuration scripts.
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This is a cross-reference within this document: *Conventions, p. 4*

This is an external link (URL): www.hms-networks.com

This is additional information which may facilitate installation and/or operation.

This instruction must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.

Caution

This instruction must be followed to avoid a risk of personal injury.

2 Installation

Netbiter WS100 and WS200 are supplied ready for mounting on a DIN rail.

Mounting

1. Hook the unit onto the upper lip of the rail.
2. Press the unit towards the rail until it snaps into place.

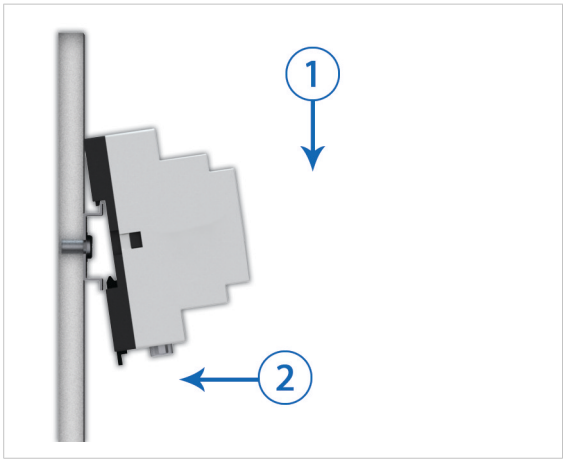


Fig. 1 Mounting on DIN rail

Removing

1. Insert a flat-head screwdriver into the slotted tab on the bottom of the unit and pull the tab gently downwards.
2. Pull the bottom end of the unit free of the rail and lift the unit from the rail.

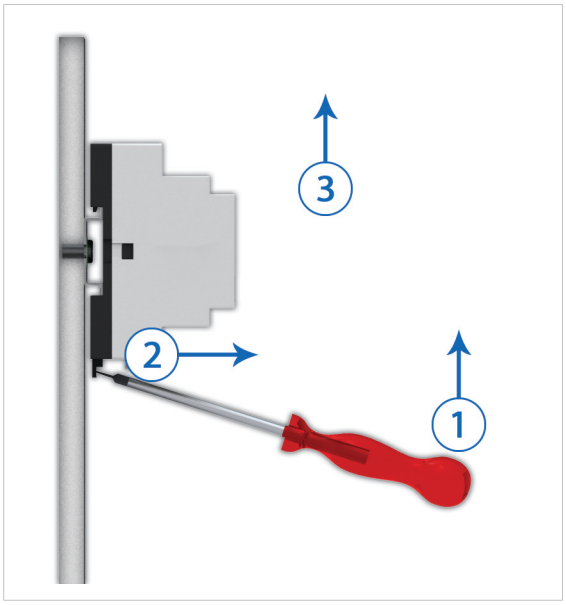


Fig. 2 Removing from DIN rail

3 Connections

3.1 D-sub Connector

The 9-pin D-sub connector provides an RS-232 interface for connecting Modbus RTU slave units or an external modem.

Table 4 D-sub connector pin layout

Pin	Function
1	CD (Carrier Detect)
2	Rx (Receive)
3	Tx (Transmit)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicator)

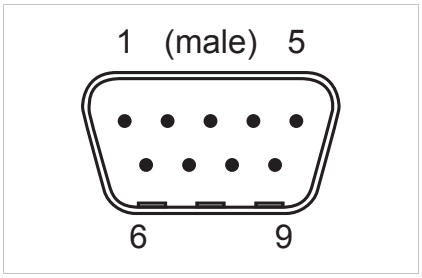


Fig. 3 D-sub connector

3.2 Ethernet Connector

The RJ-45 socket provides Ethernet network connection. It also supports Modbus TCP via Ethernet, which can be used at the same time as Modbus RTU units on another interface.

Table 5 Ethernet connector pin layout

Pin	Function
1	TD+
2	TD-
3	RD+
4, 5, 7, 8	Termination
6	RD-

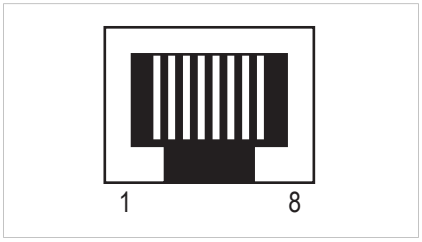


Fig. 4 Ethernet connector

3.3 Terminal Block (WS100)

The 12–pin terminal block on the top of the WS100 is used for connecting the power supply and communication interfaces.

Use minimum wire size 24 AWG for the power supply and digital input.

The RS-485 and RS-232 terminal block interfaces cannot be used at the same time.

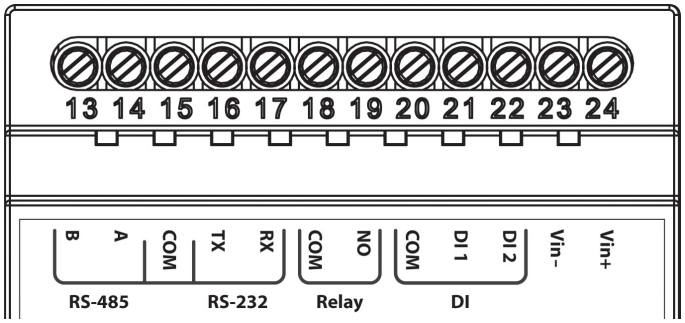


Fig. 5 Terminal block (WS100)

Table 6 Terminal block connections

Pin	Label	Function	Note
24	Vin+	Power 9–24 VDC/VAC	WS100 can optionally be powered by 9–24 VAC.
23	Vin-	PE ground	
22	DI:DI 2	Digital input #2	Low = 0–2 VDC, High = 10–24 VDC
21	DI:DI 1	Digital input #1	Low = 0–2 VDC, High = 10–24 VDC
20	DI:COM	Digital input common	
17	RS-232:RX	RS-232 Receive	
16	RS-232:TX	RS-232 Transmit	
15	COM	Serial interface common	Shared between RS-232 and RS485
14	RS-485:A	RS-485 Line A	
13	RS-485:B	RS-485 Line B	

AC Power Supply Connection (WS100)

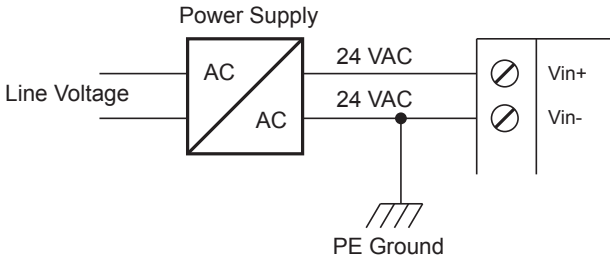


Fig. 6 Connecting AC power to WS100

*PE ground must be connected to the **Vin-** terminal.*

3.4 Terminal Block (WS200)

The 12–pin terminal block on the top of the WS200 is used for connecting the power supply and communication interfaces.

Use minimum wire size 24 AWG for the power supply and digital input.

The RS-485/422 and RS-232 terminal block interfaces cannot be used at the same time.

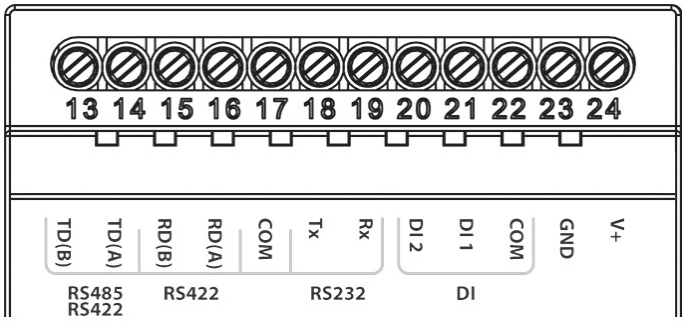


Fig. 7 Terminal block (WS200)

Table 7 Terminal block connections

Pin	Label	Function	Note
24	V+	Power 9–24 VDC	
23	GND	PE ground	
22	DI:COM	Digital input common	
21	DI:DI 1	Digital input #1	Low = 0–2 VDC, High = 10–24 VDC
20	DI:DI 2	Digital input #2	Low = 0–2 VDC, High = 10–24 VDC
19	RS-232:RX	RS-232 Receive	
18	RS-232:TX	RS-232 Transmit	
17	COM	Serial interface common	Shared between RS232/422/485
16	RS-422:RD(A)	RS-422 Receive A	
15	RS-422:RD(B)	RS-422 Receive B	
14	RS-485:TD(A) RS-422:TD(A)	RS-485 Line A RS-422 Transmit A	
13	RS-485:TD(B) RS-422:TD(B)	RS-485 Line B RS-422 Transmit B	

3.5 Digital Input Wiring Example

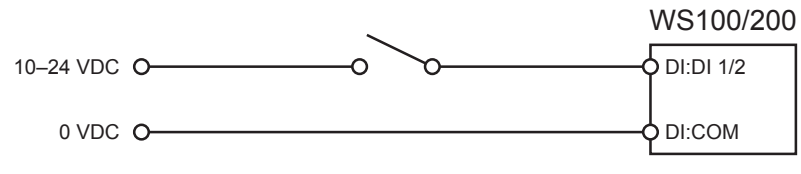


Fig. 8 Digital input wiring example

3.6 SIM Card (WS200)

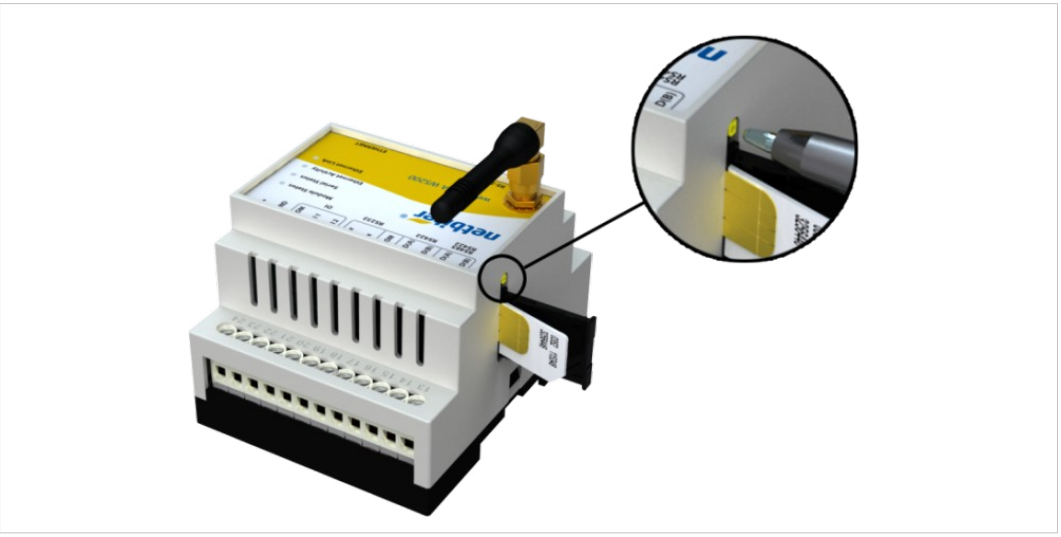


Fig. 9 WS200 SIM card

Inserting a SIM Card

1. Push the small yellow tab next to the SIM card holder and remove the holder.
2. Place the SIM card in the holder and insert the holder into the Netbiter as shown in the figure. Observe the position of the cut-off corner and the contact surfaces.

3.7 Antenna Connector (WS200)

The antenna connector is a standard female SMA screw connector. Optional external antennas are available from your supplier.

4 LED Indicators

4.1 LED Indicators (WS100)

Fig. 10 WS100 LED indicators

Name	Color	Meaning
Module Status	OFF	No power
	Steady green	System is operating normally
	Steady red	Hardware fault
	Flashing red	Error during initialization
Serial Link Status	Flashing green	Receiving serial packet
	Flashing red	Transmitting serial packet
Activity/Collision	Flashing green	Receiving Ethernet packet
	Flashing red	Ethernet collision
Link	Steady green	10 Mbps Ethernet network detected
	Steady orange	100 Mbps Ethernet network detected

4.2 LED Indicators (WS200)

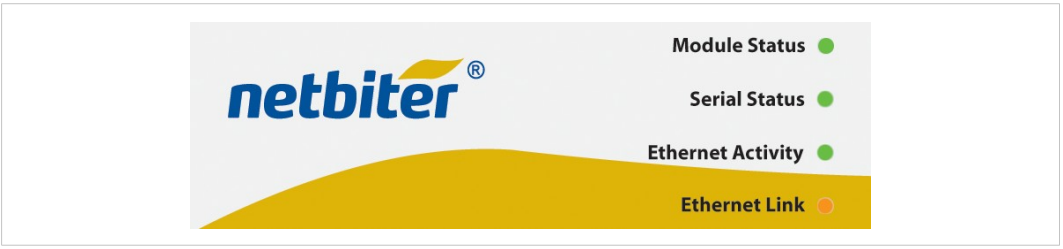


Fig. 11 WS200 LED indicators

Name	Color	Meaning
Module Status	OFF	No power
	Steady green	System is operating normally
	Flashing red	Error during initialization
Serial Status	Flashing green	Receiving serial packet
	Flashing red	Transmitting serial packet
Ethernet Activity	Flashing green	Receiving Ethernet packet
Ethernet Link	Steady green	10 Mbps Ethernet network detected
	Steady orange	100 Mbps Ethernet network detected

5 IP Configuration

5.1 Installing the IPconfig Utility

IPconfig is a Windows-based configuration utility for TCP/IP network settings in Netbiter gateways. It detects connected Netbiter gateways and lets the user set the IP address, netmask, default gateway, DNS and hostname for each unit.

1. Download IPConfig from www.netbiter.com/support.
2. Extract the contents of the zip archive in a folder on your computer and double-click the executable file to run it.

5.2 Scanning for Connected Devices

Make sure that the Netbiter gateways to be installed are connected on the same Ethernet subnet as the computer running IPconfig. Use standard Ethernet cables.

When the IPconfig utility is started it will scan the Ethernet network for Netbiter gateways. All detected units will be presented in a list in the main window. To refresh the list, click on **Scan**.

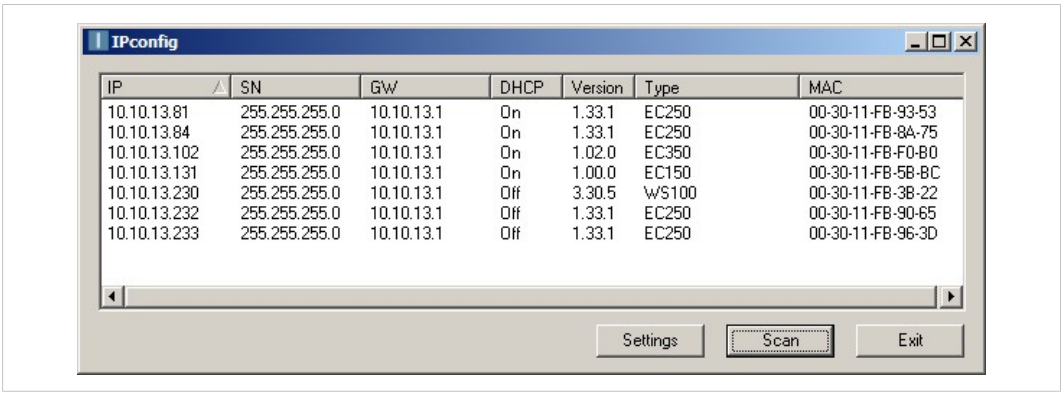


Fig. 12 IPconfig main window

Main window columns

IP	IP address of the Netbiter gateway
SN	Subnet mask
GW	Default gateway
DHCP	Automatically managed IP configuration
Version	Firmware version
Type	Netbiter model name
MAC	Ethernet MAC address (System ID)

5.3 Changing IP settings

To change the IP settings for a unit in the list, either double-click on it or select it and click on **Settings** to open the configuration window.

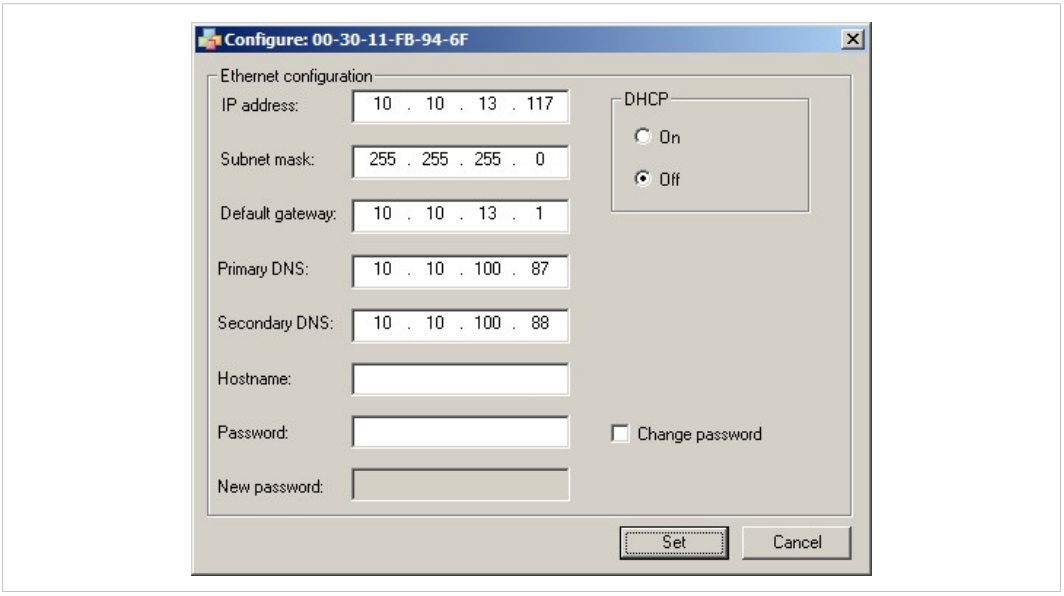


Fig. 13 IPConfig settings

Notes

- Do not enable DHCP if there is no DHCP server available on the network.
- You can add a name for the Netbiter gateway in the **Hostname** field. Only characters a-z, A-Z, 0–9 and _ (underscore) are allowed.
- The default password for authentication of the new settings is *admin* for Netbiter EC150, EC250, and WS series gateways. For Netbiter EC300 series gateways the default password is the activation code.

  To change the password, check the **Change password** box and enter the current password in the **Password** field and the new password in the **New password** field, then click on **Set**.

For security reasons, the password "admin" should always be changed.

*Changing the password in IPconfig will **not** affect the password for logging in to the local configuration pages.*

Click **Set** to save the new settings and restart the Netbiter gateway. Please note it that may take some time before the gateway is online again after a reboot.

6 The Web Interface

6.1 Browser Support

The web interface in Netbiter WS100/WS200 will work with most modern web browsers. This includes IE 6 and later, Firefox 2.0 and later, and all versions of Google Chrome.

The log graph function requires a patch due to a Java compatibility issue. The patch can be downloaded from www.netbiter.com/support/file-doc-downloads/ws-series.

6.2 Login

Open a web browser and enter the IP address of the Netbiter in the address field to bring up the login screen. To find out or set the IP address, see *IP Configuration, p. 11*.

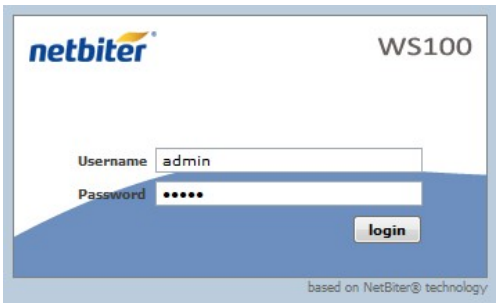


Fig. 14 Login screen

6.3 Main Menu Bar

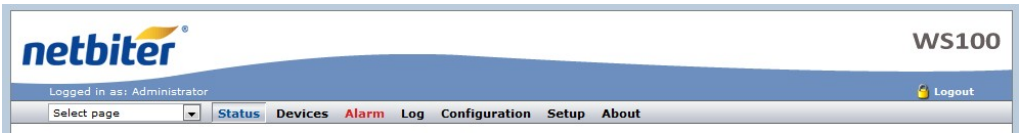


Fig. 15 Main menu

Which menus and items are available depend on the user level, see *Setup | Users, p. 14*.

Menus and submenus are usually separated with the | (pipe) character when described in this document. Example: **Setup | Firmware**.

Table 8 Main Menu Overview

Task	Use menu(s)	See section
Configuring hardware and setting up users	Setup	*Setup, p. 14*
Setting up data presentation, logs and alarms	Configuration	*Configuration, p. 27*
Everyday use	Status, Devices, Alarm, Log	*Everyday Use, p. 38*

7 Setup

This menu contains settings for configuring users and hardware and getting the Netbiter to communicate with the attached devices.

The recommended workflow is from left to right, starting with user setup.

7.1 Setup | Users

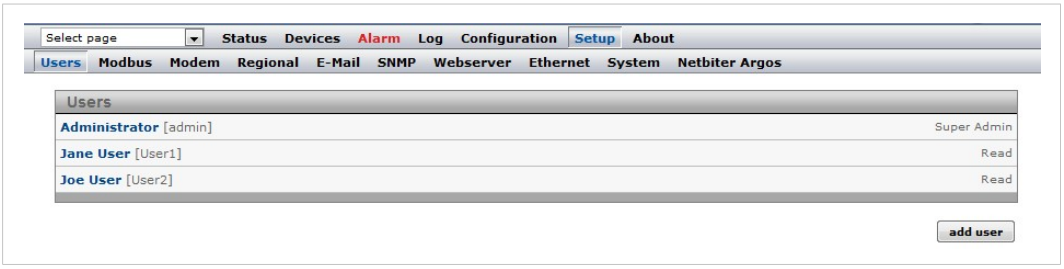


Fig. 16 Users setup page

Users can be added to the system with various access rights to logs, alarms, etc. Only users with user level *Super Admin* can add and edit users.

To add a new user, click on **Add user**. To edit an existing user, click on the user name. Click on **Save** when finished or **Back** to cancel.

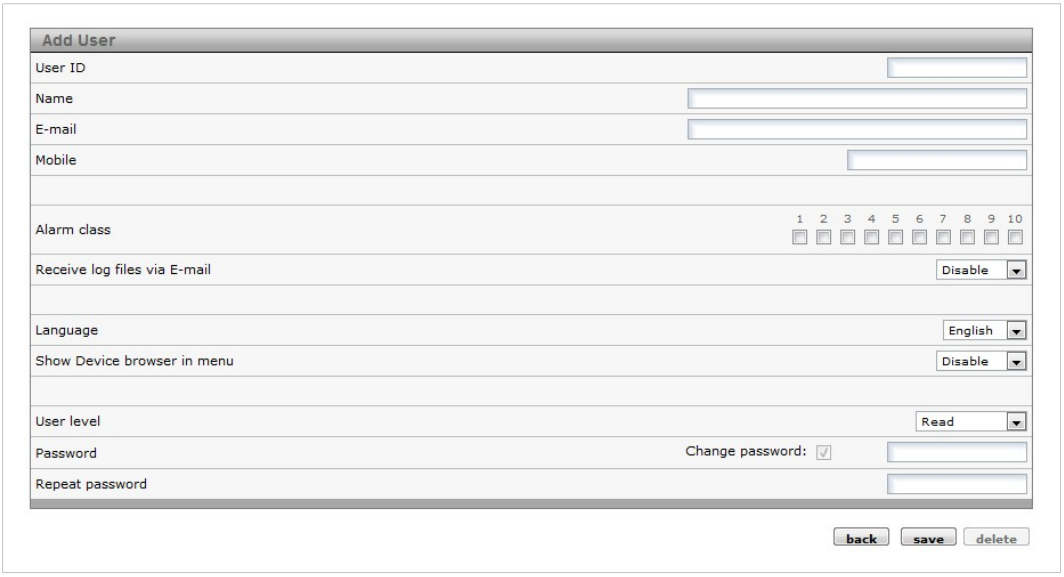


Fig. 17 Add User dialog

Add/Modify User settings

User ID	The user's login name. Must not contain spaces or special characters.
Name	Full name of the user
E-mail	Email address of the user.
Mobile	Mobile phone number. Used for sending alarm SMS text messages.
Alarm class	When adding an alarm it is given an *Alarm Class*. The user will only receive notification of an alarm if its alarm class is enabled here. A user can have multiple alarm classes

Add/Modify User settings (cont.)

Receive log files via E-mail	If enabled in the log configuration, logs will be e-mailed to the address entered in the **E-mail** field.
Language	Selects the user interface language for the user.
Show Device browser in menu	If enabled, all parameters of the device templates will be accessible from the **Devices** menu. For users with Read user level, the parameters can only be viewed, not changed.
User level	• **Read**: User can only monitor data. • **Write**: Same as Read + user can acknowledge alarms and clear logs and alarm history. • **Admin**: Same as Write + access to the **Configuration** menu. Admin users can add and change templates, devices, pages, alarms and bindings. • **Super Admin**: Same as Admin + access to the **Setup** menu. The Super Admin has full access to all parts of the system.
Password	Enter a password here when adding a new user. To change the password for an existing user: check the box **Change password** and enter a new password.
Repeat password	When adding a new password the password has to be repeated here.

7.2 Setup | Modbus

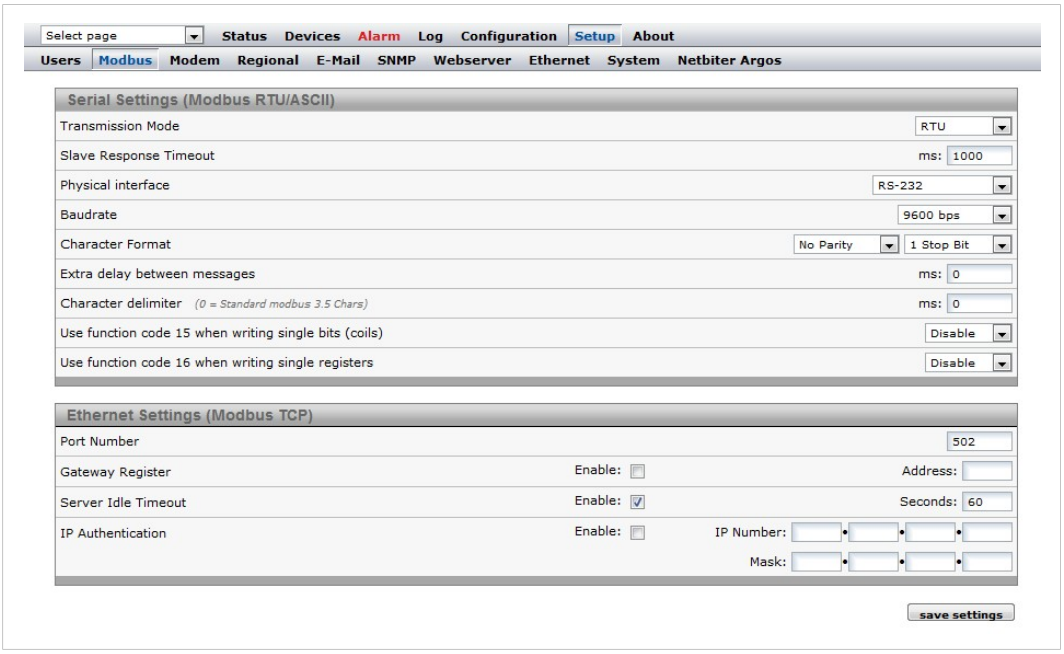


Fig. 18 Modbus setup page

Make sure that any Modbus devices are correctly connected to the Netbiter gateway before continuing, see *Connections, p. 6*. Each Modbus device must also be setup with a template and a unique slave address, see *Configuration, p. 27*.

> ⚠ *Two devices cannot have the same Modbus slave address. If this happens, the serial bus will not be able to communicate with all slaves on the bus.*

Serial Settings (Modbus RTU/ASCII)

Transmission Mode	Select Modbus RTU or Modbus ASCII transmission mode. Default = RTU.
Slave Response Timeout	The time that the Netbiter will wait for a response from a slave before Serial Timeout will occur Default = 1000. Serial Timeout can be monitored on the **Status** page
Physical interface	The physical interface used on the Netbiter. Default = RS-485.
Baudrate	Baud rate setting: 300 bps to 115200 bps. Default = 9600.
Character Format	Parity and stop bit settings. Default = No Parity, 1 Stop Bit.
Extra delay between messages	Time in milliseconds between Modbus messages. Default = 0.
Character delimiter	Time in milliseconds betweeen characters in a Modbus frame. Set to 0 (default) to use Modbus standard 3.5 characters.
Use function code 15 when writing single bits (coils)	When enabled, all writes to coils will be done with function code 15 (useful if slaves do not support function code 05).
Use function code 16 when writing single registers	When enabled, all writes to registers will be done with function code 16 (useful if slaves do not support function code 06).

Ethernet Settings (Modbus TCP)

Port Number	The TCP port to use for Modbus communication. Default = 502.
Gateway Register	When enabled, the internal registers will be available at the slave address given in the *Address*-field. The internal registers are specified in. Some of the registers can be used for pages, alarms and logs using the internal register as device. The queries sent to this Modbus address will not be sent to the Modbus RTU network, the Netbiter will respond to the queries.
Server Idle Timeout	When enabled, the idle timeout in seconds for the Modbus TCP connection can be set. If there is no response within this time the connection will be closed. Default = 60.
IP Authentication	When enabled, the IP address allowed to connect to the gateway can be configured. A range of IP addresses can be set using the Mask field. **Example:** IP Number = 192.168.0.1 and Mask = 255.255.255.0 will allow all IP addresses from 192.168.0.1 to 192.168.1.254 to connect.

*The **Status** page gives information about the Modbus connection and can be useful as a troubleshooting tool when setting up the Modbus interface.*

7.3 Setup | Modem

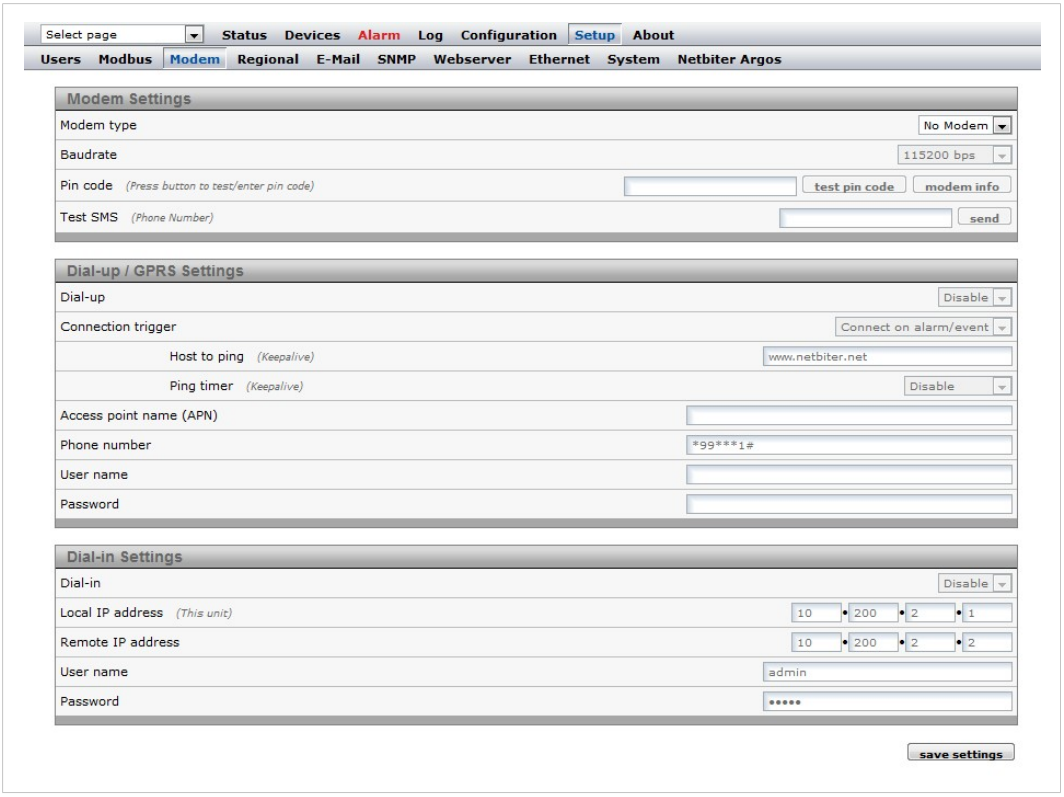


Fig. 19 Modem setup page

The Netbiter WS200 has a built-in GSM/GPRS modem that enables communication with the Internet without an Ethernet connection.

For the Netbiter WS100, an external GSM/GPRS or analog (PSTN) modem can be connected to the RS-232 D-sub interface. See also *Connections, p. 6*.

The current status of the built-in or external modem can be monitored on the **Status** page.

Modem Settings

Modem type	Modem type: Analog, GSM, GPRS or none.
Baudrate	The baud rate used by the modem. If using an external modem, see the documentation for the modem.
PIN code	If the SIM card has PIN code security enabled, enter the PIN code here and click on **test pin code**. Clicking on **modem info** will display information about the active modem, such as manufacturer, IMEI number, PIN status, and signal strength.
Test SMS	If using a GSM/GPRS modem, enter a phone number to generate a test SMS text message to that number.

Dial-up/GPRS Settings

Dial-up	Enables/disables communication with the Internet via modem.
Connection trigger	• **Always connected**: The Netbiter will be connected to the Internet as long as there is a signal. Must be selected if *Netbiter Argos* is enabled (see *Setup | Netbiter Argos, p. 26*) • **Connect on alarm/event**: The Netbiter will only connect to the Internet when required.
Host to ping	A hostname or IP address to send a ping packet to, which will keep the connection to the Internet (keep-alive message).
Ping timer	Sets the interval for the keep-alive message. Should be as long as possible to avoid unnecessary mobile data traffic.
Access point name (APN)	The name of the gateway for the SIM card operator.
Phone number	The phone number to dial to the Internet Service Provider (ISP).
User name	The user name assigned by the ISP.
Password	The password assigned by the ISP.

Dial-in Settings

Dial-in	Enables/disables the possibility to call the Netbiter from a computer using a modem (remote client). A dial-up network connection must be set up on the computer, where the phone number is the number of the SIM card used in the Netbiter, and the user name and password are those entered in this section.
Local IP address	The IP address assigned to the Netbiter. This address should be entered in the web browser after a connection is established.
Remote IP address	The IP address that will be assigned to the remote client. Must be in the same subnet as the Local IP address.
User name	A user name that the remote client should use to log on.
Password	A password required by the remote client to log on.

7.4 Setup | Regional

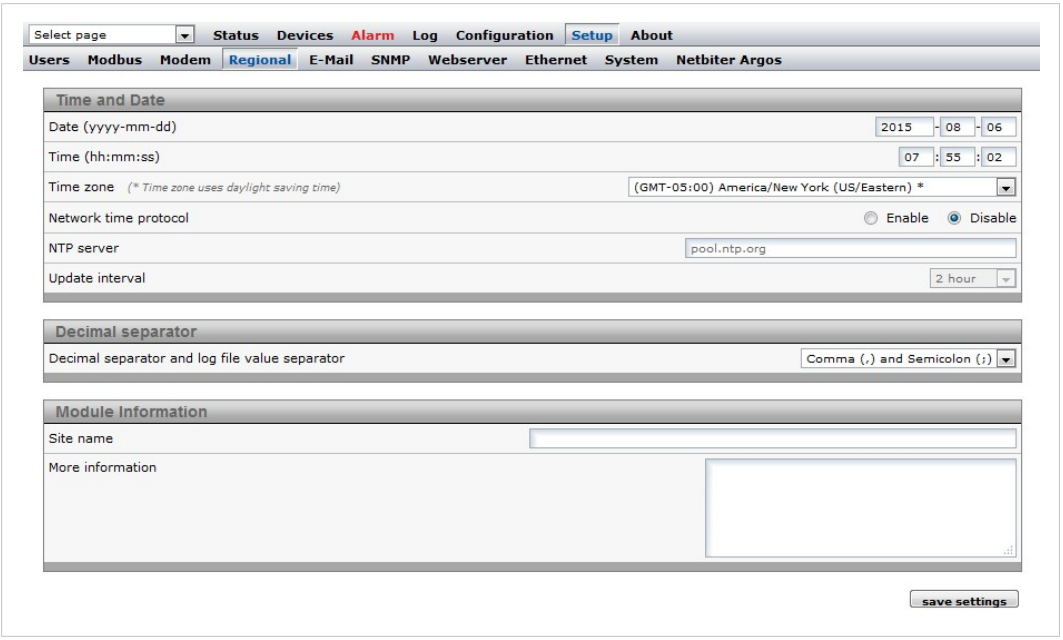


Fig. 20 Regional setup page

This page contains date/time settings, choice of separator characters, and general info about the installation. The date and time can be set either manually or automatically from an NTP (Network Time Protocol) server on the local network or the Internet.

Time and Date

Date	The current date.
Time	The current time.
Time zone	The time zone to use for the Netbiter. For time zones marked with * daylight saving will be used (the time entered should be the actual time, the Netbiter will adjust it automatically).
Network time protocol	Enables/disables automatic date/time setting from an NTP server on the local network or the Internet.
NTP server	The IP adress or host name of the NTP server to use.
Update interval	How often the date/time setting should be synchronized with the NTP server. When using a mobile connection, keep the interval as long as possible to conserve the amount of mobile data traffic.

Decimal separator

Decimal separator and log file value separator	The decimal separator and the separator character to use for CSV format log files.

Module Information

Site name	(Optional)
More information	(Optional)

7.5 Setup | E-Mail

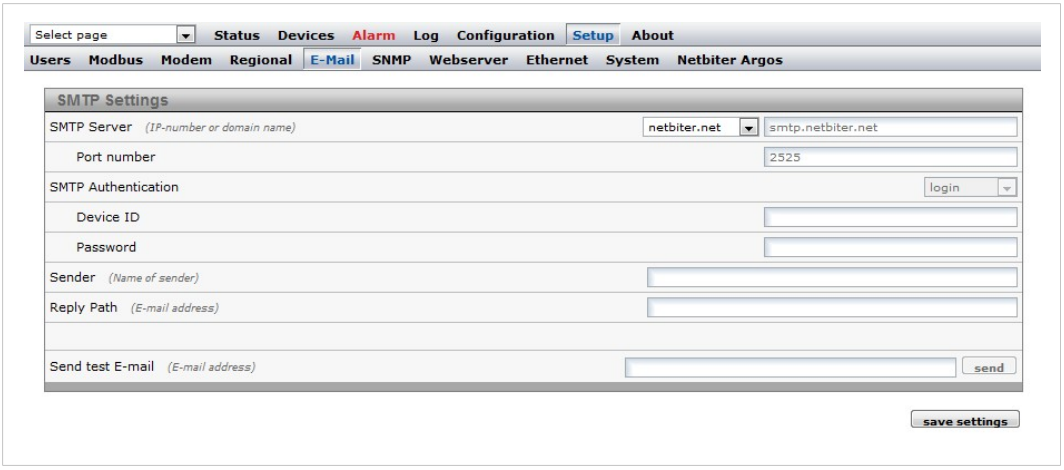


Fig. 21 E-mail setup page

SMTP settings

SMTP Server	The host name or IP address of the e-mail server. When using Netbiter Argos, select **netbiter.net**.
Port number	The port number to use when connecting to the SMTP server. This information should be supplied by the Internet Service Provider. The default port number is 25. When using Netbiter Argos the port number is automatically set to 2525.
SMTP Authentication	If the SMTP server requires a login, select the type of authentication here.
User name	User name for the SMTP server (if required).
Password	Password for the SMTP server (if required).
Sender	The name that will be shown in the FROM field in e-mails sent by the Netbiter.
Reply Path	The e-mail address to be used as the reply address in e-mails set by the Netbiter.
Send test E-mail	Enter an e-mail address and click **send** to send a test message. *Some e-mail servers may treat the test message as junk e-mail.*

7.6 Setup | SNMP

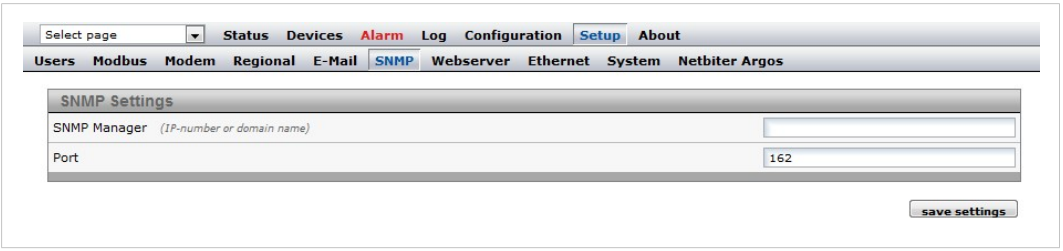


Fig. 22 SNMP setup page

For information on how to set up the sending of alarms as SNMP traps, see *SNMP, p. 45* and *Configuration | Alarm, p. 32*.

SNMP settings

SNMP Manager	The hostname or IP address of the SNMP Manager.
Port	The port number that the SNMP Manager will listen on.

If a hostname is used for the SNMP Manager, make sure that the DNS server settings for the Ethernet connection are correctly configured.

7.7 Setup | Webserver

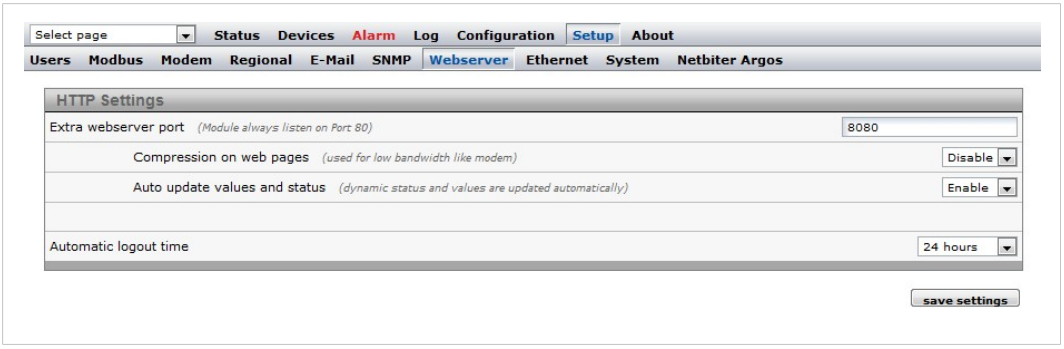


Fig. 23 Web server setup page

Settings for the internal web server in the Netbiter.

Web server settings

Extra webserver port

The web server can listen on a second port in addition to the default HTTP port (80). The extra port can be configured manually for some features that are automatically configured on the default port.

To access the Netbiter web server on the extra port, add a colon followed by the port number to the URL in the browser.

Example: http://10.10.10.30:8080 (if the extra port is set to 8080).

Compression on web pages

Compressed web pages will reduce data traffic – which may be desired for low bandwidth connections – but will also increase the workload of the Netbiter. The default setting is **disabled**.

When set to **enabled**, the web server will send compressed HTTP data to browsers that support this.

Compression support info is sometimes stripped when traffic passes through a firewall or proxy server. If set to **forced**, the web server will always compress the data even if browser support is not deteced.

This feature is only configurable for the extra web server port. On the default port, compression is automatically enabled when using a modem connection, otherwise it is always disabled.

Auto update value and status

To reduce data traffic on low bandwidth connections, the automatic updating of values on the web pages can be disabled. To refresh data on a page, the user will have to click on the refresh icon .

This feature is only configurable for the extra web server port. On the default port, it is automatically disabled when using a modem connection, otherwise it is always enabled.

7.8 Setup | Ethernet

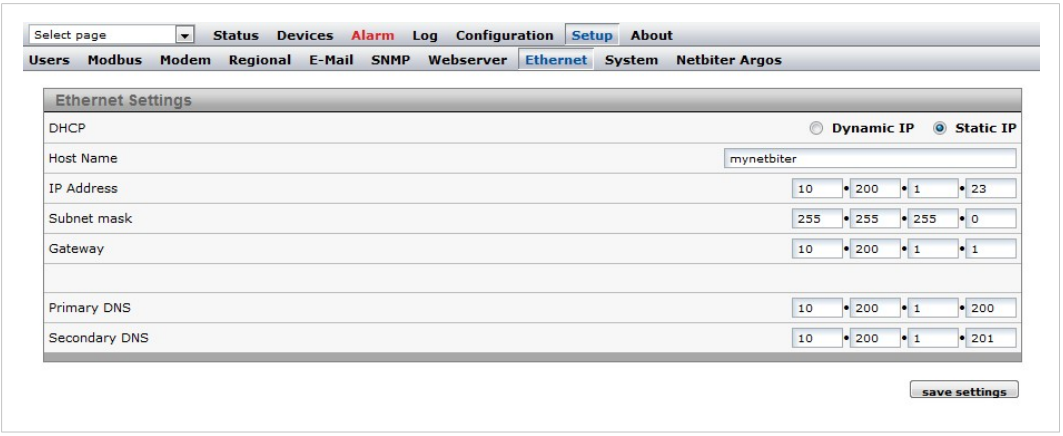


Fig. 24 Ethernet setup page

These are the same settings as those configured in IPconfig, see *IP Configuration, p. 11*.

Contact your network administrator if in doubt about how to configure these settings.

Ethernet settings

DHCP	If enabled, the Netbiter will be assigned an IP address dynamically by a DHCP server. Do **not** enable this option unless there is a DHCP server available on the local network.
Host Name	A host name for the Netbiter. Must be unique.
IP Address	Static IP address for the Netbiter. Must be unique.
Subnet mask	The subnet mask to use on the local network.
Gateway	The default gateway on the local network.
Primary DNS	Primary domain name server, needed to be able to access servers by host name.
Secondary DNS	Secondary domain name server (optional).

7.9 Setup | System

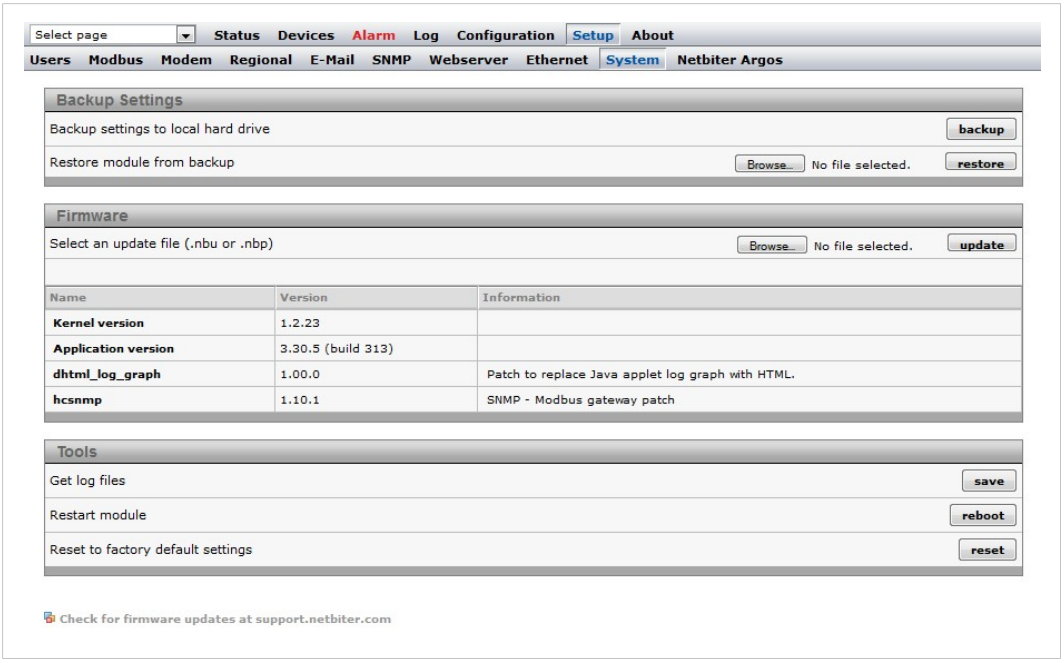


Fig. 25 System setup page

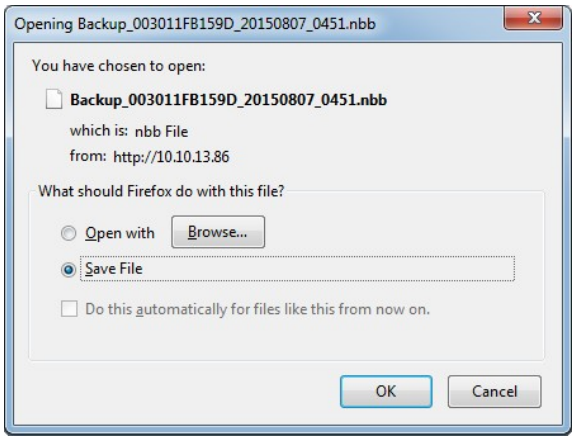
This page contains system information and settings for maintenance and backup.

A system backup will include all current settings and configurations except the Ethernet settings, which are excluded to prevent the risk of IP address conflicts.

Backup settings

Backup settings to local hard drive

Click on backup to create a system backup. When the backup file has been created you will be asked to save it to your computer.



Restore module from backup

Click **Browse** to select a previously saved backup file (*.nbb) from your computer, then click on **restore** to upload the configuration.

Restoring from backup will remove all current settings and configurations (except the Ethernet settings) and replace them with those saved in the backup file.

Firmware

Select an update file	Click on **Browse** to select a firmware file (*.nbu) or patch file (*.nbp) to upload to the Netbiter, then click on **update** to start the procedure. The web pages may be temporarily unavailable until the update is finished. The latest firmware files and patches can be found at the Netbiter WS download page www.netbiter.com/support/file-doc-downloads/ws-series. Always take a system backup before updating firmware.
Kernel version	Kernel version used in the Netbiter.
Application version	Application version used in the Netbiter.
[patches]	If any patches are installed they will be listed here including version information.

Tools

Get all log files	Click on **save** to download an archive in *.tar format containing all log files and system information.
Restart module	Click on **reboot** to restart the Netbiter.
Reset to factory default settings	Click on **reset** to remove all current settings and configurations and restore the Netbiter to the factory default settings.

A system that has patches installed must be reset to the factory default settings before uploading new firmware.

When using DHCP, the Netbiter may have been assigned a new IP address after being re-started. If you are not able to access the Netbiter in your browser after a reboot, use the IPconfig tool to check if the IP address has changed.

7.10 Setup | Netbiter Argos

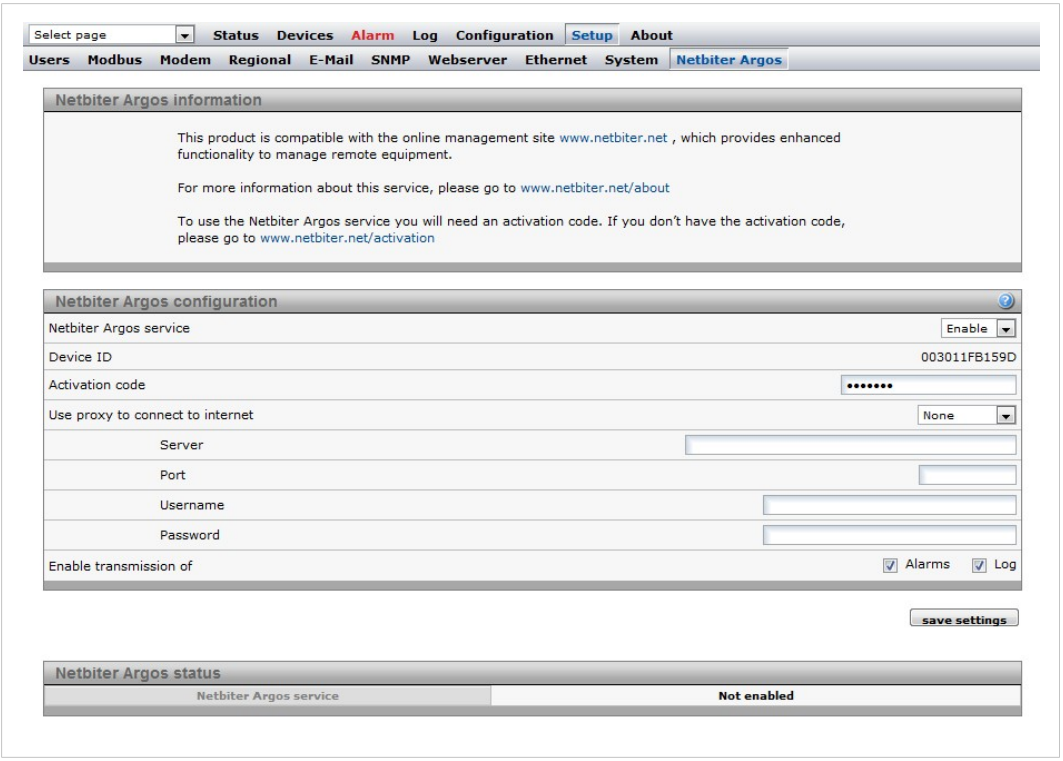


Fig. 26 Netbiter Argos setup page

Netbiter Argos is a cloud-based solution for managing Netbiter gateways. The Netbiter WS100 and WS200 gateways are able to send alarm and log data to Netbiter Argos.

For more information about Netbiter Argos, please visit www.netbiter.com.

Netbiter Argos configuration

Netbiter Argos service	When enabled, the Netbiter WS gateway can be used with Netbiter Argos remote management services.
Device ID	The System ID (MAC address) of the Netbiter.
Activation code	The activation code supplied with the Netbiter. If you have lost the activation code, please contact Netbiter support.
Use proxy to connect to Internet	If you are connecting to the Internet via a proxy server, select the type of proxy, then enter the server hostname or IP address, port number and authentication details here.
Enable transmission of alarms/logs	Check the boxes as desired to enable transmission of alarms and/or logs to Netbiter Argos.

When Netbiter Argos is enabled, the SMTP settings will automatically be reconfigured to use the Netbiter Argos SMTP server with the correct username and password.

Netbiter Argos uses port 5222 for communication.

8 Configuration

This menu is used to configure presentation and logging of data read from Modbus devices, and for setting up alarms and log messaging. The normal workflow is from left to right, starting with template setup.

To be able to read data from a Modbus device the communication interface must also be set up correctly. See Setup | Modbus, p. 15.

8.1 Configuration | Templates

A *device template* describes the parameters in a connected device and how they will be presented. It contains information about available registers and data types, configuration of scaling and offsets, enumerations, and read/write conditions.

Each Modbus device connected to the Netbiter must have an associated template. The normal workflow is to upload or create a template on the **Templates** page, then add the device and associate it with the template on the **Devices** page.

Ready to use templates for Modbus devices can be downloaded from the Netbiter support website www.netbiter.com/support.

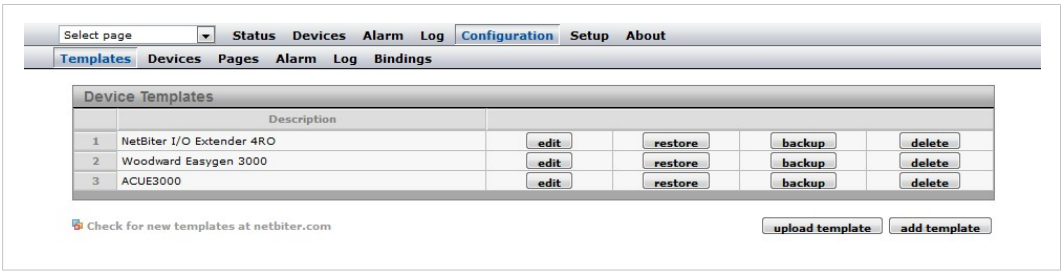


Fig. 27 Templates configuration menu

Templates

Edit	Edit the template
Restore	Overwrite any edits in the template
Backup	Create a local backup of the template
Delete	Remove the template from the Netbiter
Upload template	Upload a template file to the Netbiter
Add template	Create a new template

8.1.1 Add, Upload and Edit Template

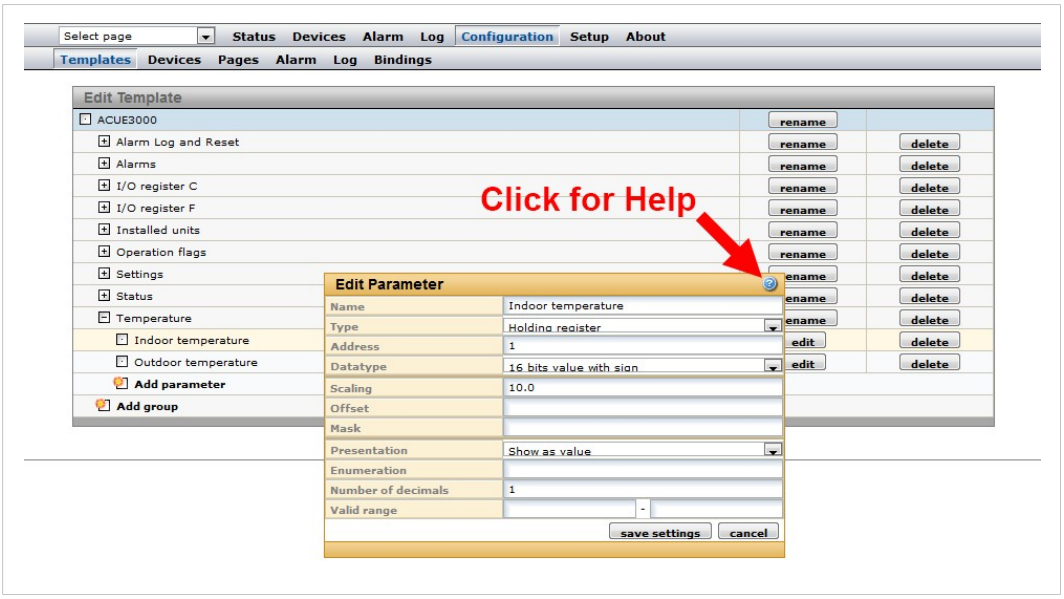


Fig. 28 Editing template parameters

A template is divided into groups of parameters. A parameter is description of a Modbus register with information about presentation, data type, etc. Parameter groups can be added, renamed and deleted as needed. A template must contain at least one group.

Deleting a group will also delete all the parameters in that group.

Edit Parameter

Name	The name of the parameter
Type	Modbus register type
Address	Modbus register address
Datatype	Data type for the register value
Scaling	Scaling factor for the register value when presented
Offset	Offset for the register value when presented
Mask	Used to mask out specific bits from the Modbus register
Presentation	How the value should be presented on the page (read only, read/write, etc.)
Enumeration	Enumeration of values to present them as text. Example: 0=OFF;1=ON;
Number of decimals	The number of decimals to include when presenting the value
Valid range	Defines max/min allowed values for a write parameter

Click on the question mark icon in the Edit Parameter dialog to view detailed help about the different options when adding and editing parameters.

8.2 Configuration | Devices

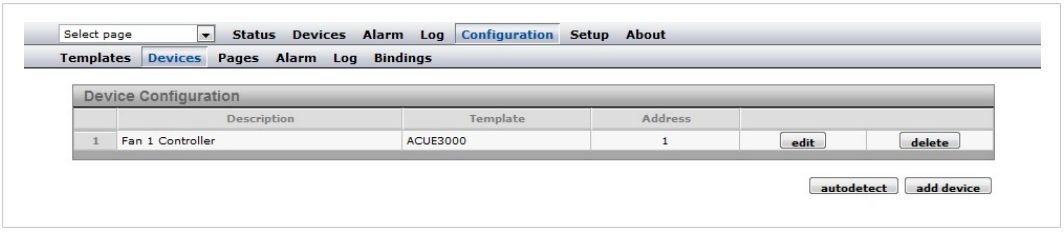


Fig. 29 Devices configuration page

Each connected Modbus device must be configured with a unique Modbus slave address and be assigned a device template.

Devices can be added automatically by clicking on **Autodetect**. The Autodetect function will scan each Modbus address in turn, using the current Modbus serial interface settings (this may take several minutes).

Fig. 30 Autodetect devices

If the templates support identification of Modbus devices the correct template will automatically be assigned to a detected device. Otherwise, the template must be assigned manually. To add a device manually, click on **Add device**.

Device

Name	The name of the device
Template	The template to use with this device
Modbus/TCP server IP address	The IP address to use for a Modbus-TCP device
Modbus/TCP server port	The port used to connect to the Modbus-TCP server. Default = 502.
Modbus slave address	The unique Modbus slave address

Some templates support device-specific pre-configured alarms. The alarm conditions are set in the template and cannot be changed.

Device-specific alarms

Set	Click **Set** to set all alarms in the alarm list or an alarm group preconfigured in the template. To set a single alarm, use the check box for each alarm. The drop-down list to select an alarm class can be applied to a whole group or a single alarm. See also *Alarm Configuration, p. 33*.
Clear	Clear all alarms for the device specific alarm list or alarm group.

8.3 Configuration | Pages

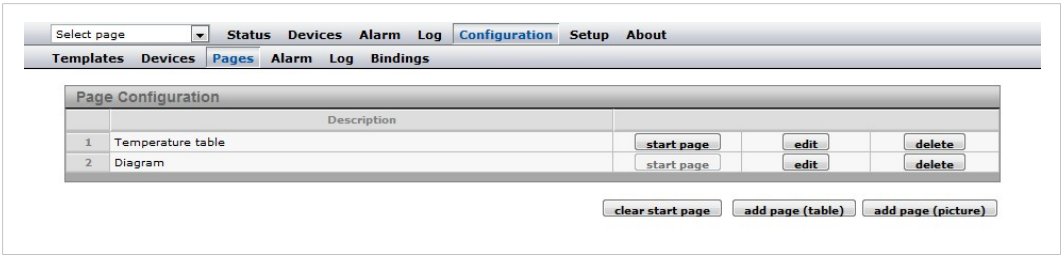


Fig. 31 Page configuration

A *page* is a customized interface for interacting with a connected Modbus device, using graphical or table representation of read data. A maximum of 30 pages can be added.

To create a new page, click on **Add page (table)** or **Add page (picture)**. Enter a name for the new page and click **OK** to save.

Click on **Edit** to edit an existing page, or **Delete** to remove it.

Click on **Start page** to make a page the first page presented when a user logs on. Click on **Clear start page** to revert to using the default start page.

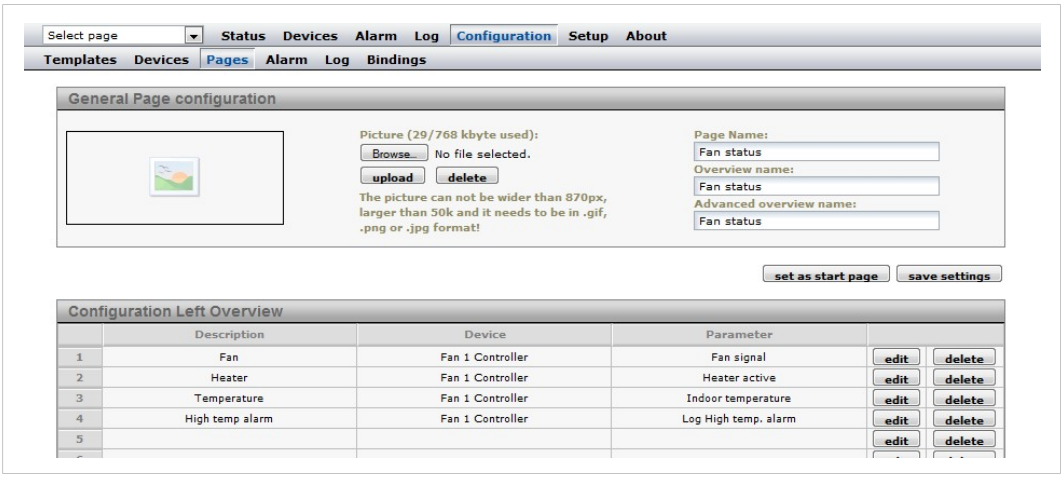


Fig. 32 General page configuration

General page configuration

Picture	An image can be uploaded which will be displayed at the top of the page. Click on browse to select an image file on your computer, then click on Upload to upload it to the Netbiter. Click Delete to remove the image. Uploaded image files will decrease the space left for log files. Keep the size of image files as low as possible!
Page name	Add a descriptive name for the page.
Overview name	The name shown in the **Select page** menu for all users.
Advanced overview name	The name shown in the **Select page** menu for administrators.
Set as start page	Make the page the first page presented when a user logs on.
Save settings	Save the settings made on this page.

After the General Configuration has been saved, it can be filled with parameters from the template. Each page can have one “normal” overview which is accessible for all users, and one advanced overview which is only accessible for admin level users. Each overview has 2 columns with 10 parameters in each column.

To add or delete a parameter in a row, click on **Edit** or **Clear**.

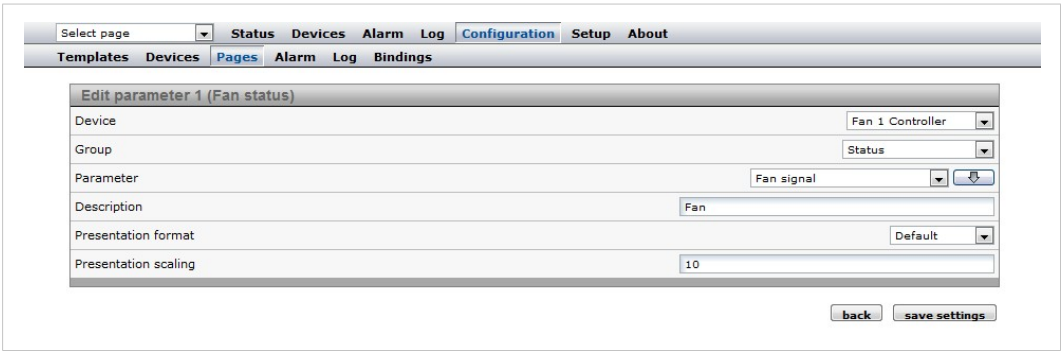


Fig. 33 Edit parameter

Configuration Left/Right Overview/Advanced Overview

Device	Select a device
Group	Select a parameter group
Parameter	Select the parameter to be displayed on the web page
Description	A description that will be displayed next to the parameter
Presentation format	**Default** = Use the value format set in the template **Hexadecimal** = Show the value in hexadecimal format **Binary** = Show the value in binary format
Presentation scaling	The Modbus register value will be divided by this value before it is shown on the web pages, and multiplied with it before written to the Modbus device. Scaling is preferably set in the template, which will include scaling for use with alarms and logging.

8.4 Configuration | Alarm

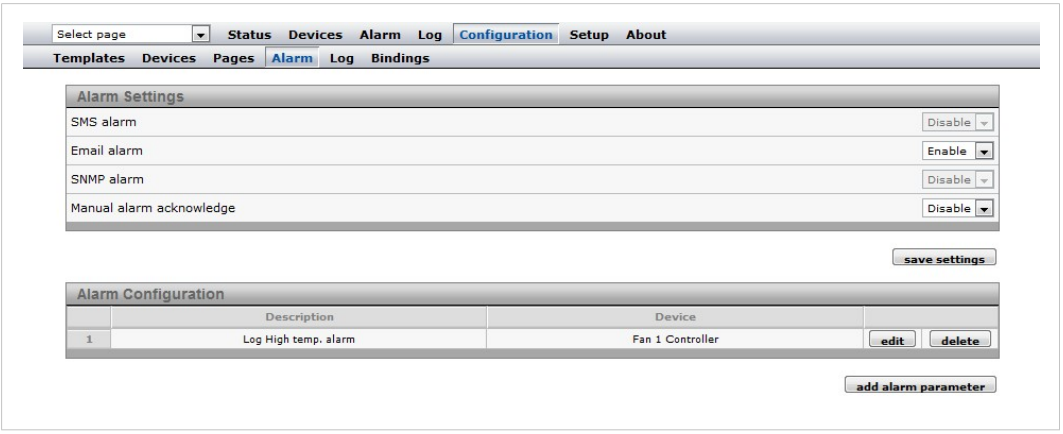


Fig. 34 Alarm configuration page

Alarm settings

SMS alarm

Enables alarm messages to be sent as SMS text messages to users set up with the correct alarm class and a valid mobile phone number.

The internal (WS200) or external (WS100) modem also has to be correctly configured with a valid SIM card.
See also *Setup | Modem, p. 17*.

Email alarm

Enables alarm messages to be sent as e-mail to users set up with the correct alarm class and a valid e-mail address.

The e-mail server settings must also be correctly configured.
See also *Setup | E-Mail, p. 20*.

SNMP alarm

Enables SNMP trap alarms if an SNMP manager has been configured.
See also *Setup | SNMP, p. 21*.

Manual alarm acknowledge

Disabled: When an alarm condition has gone back to normal and then is fulfilled again, a new alarm message will be sent.

Enabled: The user has to acknowledge the alarm before a new alarm message will be sent.

Alarms can be acknowledged from Netbiter Argos if these services are enabled.
See also *Setup | Netbiter Argos, p. 26*.

8.4.1 Alarm Configuration

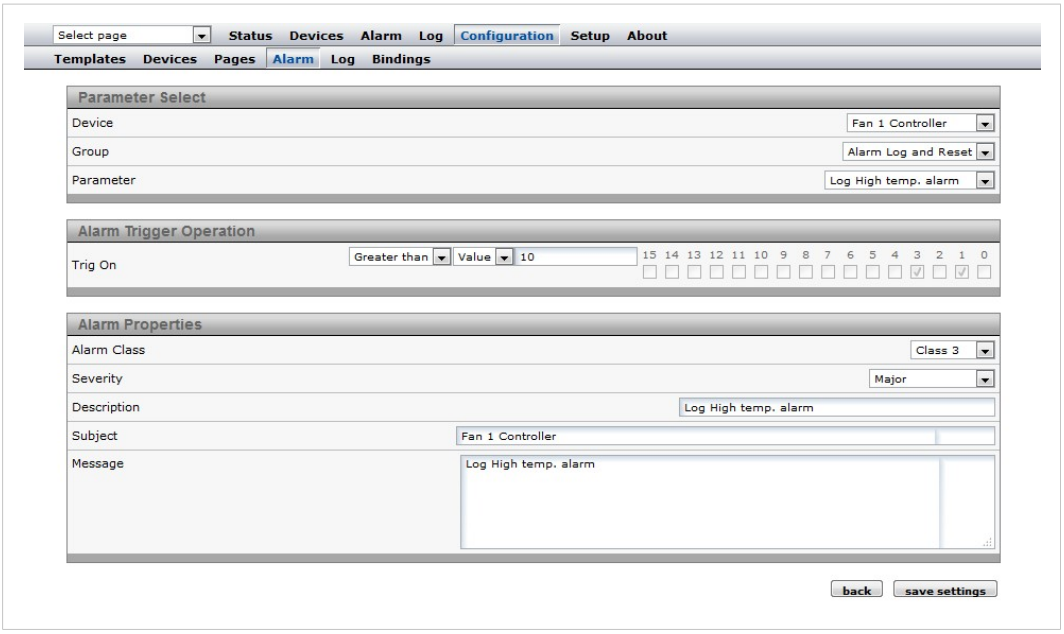


Fig. 35 Alarm parameters

The alarm configuration section contains a list of all configured alarm parameters. Each alarm can be reconfigured by clicking **edit** or removed by clicking **delete**.

Click on **add alarm parameter** to add a new alarm. A maximum of 64 alarm parameters can be configured.

The poll time for alarms is ~20 seconds.

Parameter select

Device	Select a device
Group	Select a parameter group
Parameter	Select the parameter to use for the alarm

Alarm trigger operation

Trig on

The condition that will trigger the alarm. Can be set to compare values in either decimal (**Value**) or binary (**Bit**) representation. If scaling is used in the template, the value set here will be compared to the scaled value.

For values, the conditions are:

- Greater than
- Less than
- Equal to
- Not equal to
- Change

For bit operations:

- Any
- Neither
- All

For the device:

- No response (value = number of consecutive timeouts)

Alarm properties

Alarm Class

The alarm class, used to sort which alarm is sent to which user.
See also *Setup | Users, p. 14*.

Severity

The severity of the alarm.

For SNMP the severity class *Clear* will be sent for an alarm that enters normal alarm condition.

Description

A text that will be displayed in the alarm list view and the alarm history, and sent to the SNMP manager (if configured).

Subject

The subject line of the alarm message to sent via e-mail or SMS.

Message

The message body of the alarm message to sent via e-mail or SMS.
Message length is limited to 70 characters for SMS text messages.

8.5 Configuration | Log

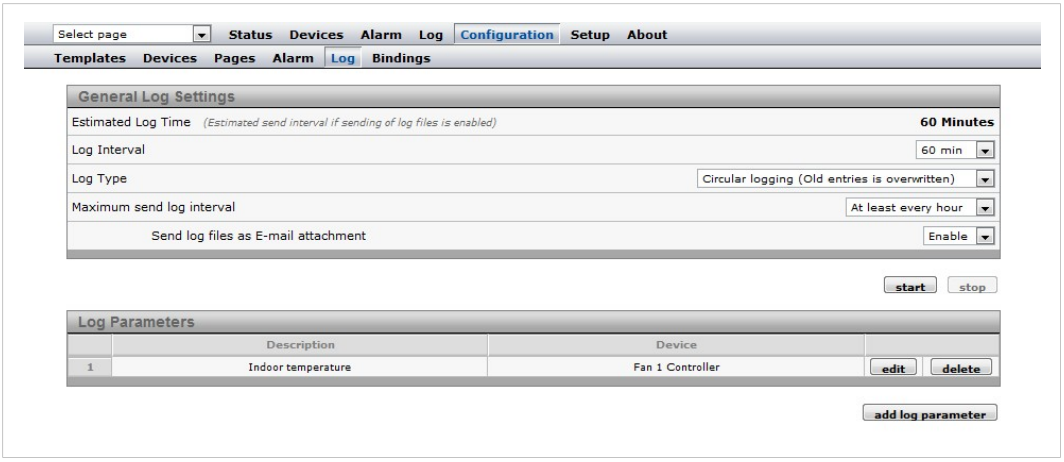


Fig. 36 Log configuration page

The log can have a maximum of 64 log parameters configured, and is stored in a csv (comma-separated values) text file. This file can be viewed on the **Log** | **Graph** page, or downloaded and opened in a text editor or spreadsheet program such as Microsoft Excel.

See also *Log, p. 41*.

General Log Settings

Estimated Log Time	Gives an estimation of the time before the log file is full. This estimation will depend on the configuration, i.e. the number of pages and parameters configured. The number and size of graphics used in the pages will also affect the log file size. If the log interval is set to a predefined time, this will show as the estimated log time.
Log Interval	Defines the time interval between the samples saved to the log file.
Log Type	Can be set to either overwrite the oldest entries as the log fills up (circular logging), or stop logging when the log space has been used up.
Maximum send log interval	This will set the time when a log should be sent. If a time period is selected the log will be sent with this interval, e.g. at the same minute for every hour when **At least every hour** is chosen. If Netbiter Argos is enabled the minute of the hour is different for each Netbiter, to spread out Ethernet traffic and server load.
Send log as E-mail attachment	If a Send log interval is specified the log file is sent as an e-mail attachment (if any users are configured to receive log e-mails).

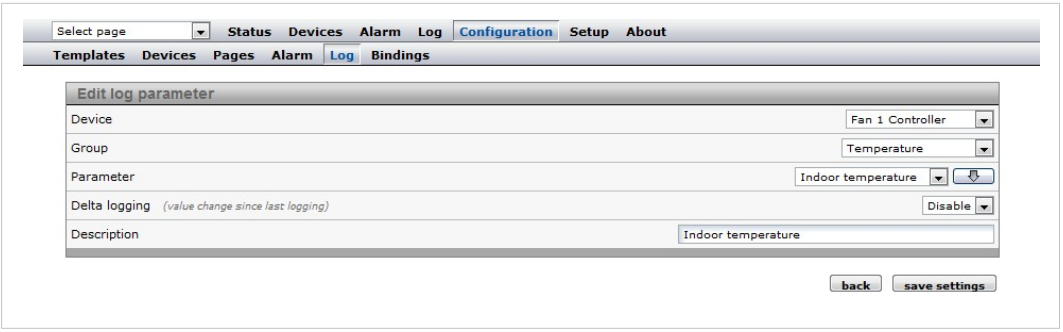


Fig. 37 Log parameters

To edit, delete or add log parameters, first click on **stop** (if the log is running) to stop the current log process.Then click on **edit** or **delete** for an existing log parameter, or click on **add log parameter** to add a new one. After you have finished adding/editing log parameters, click on **start**.

Edit log parameter

Device	Select a device
Group	Select a parameter group
Parameter	Select the parameter to log
Delta logging	If enabled, the difference between the two last samples will be logged. **Example**: The values read from a device parameter during the first 4 log cycles are: 5, 20, 32, 41. The logged values will then be: 5, 15, 12, 9.
Description	A text that will be displayed on the **Graph** page and in the downloaded log file.

8.6 Configuration | Bindings

Bindings makes it possible to copy one Modbus register to another.

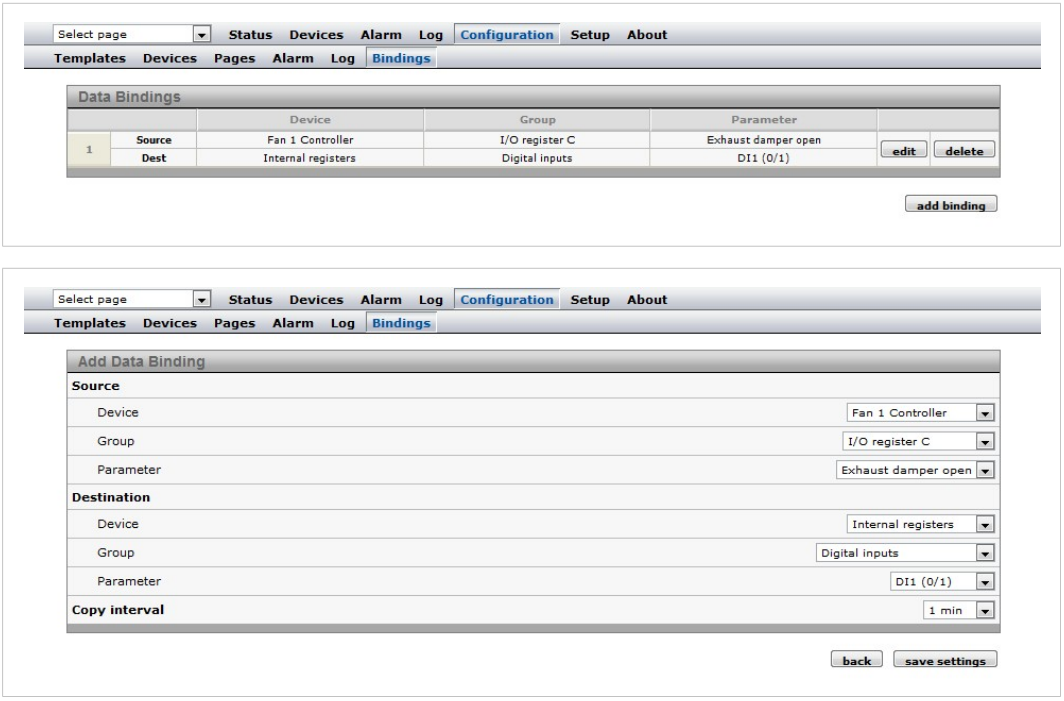


Fig. 38 Bindings configuration

Add Data Binding

Source Device/Group/ Parameter	The device parameter to be copied
Destination Device/ Group/Parameter	The device parameter that will be copied to
Copy Interval	The time interval between each copy

9 Everyday Use

After the Netbiter WS100/200 has been setup and configured the web interface is ready to be used for monitoring live data, logs and alarms.

9.1 Select page

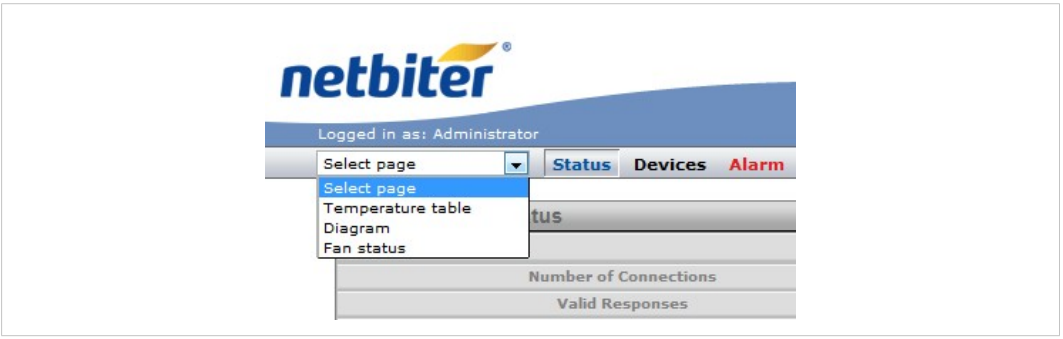


Fig. 39 Select page menu

Use the drop-down menu to select a page to display. If a page has been set as *Start Page* it will be open when you log in to the web interface. If no pages have been defined yet the Status page will be open on login.

9.2 Status

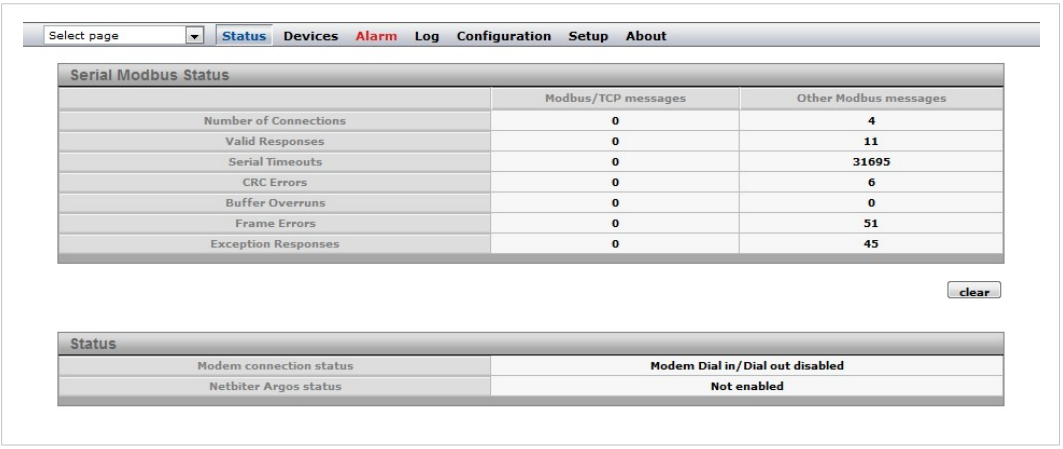


Fig. 40 Status page

The Status page shows the current status of the Modbus interface and the internal/external modem (if present).

9.3 Devices

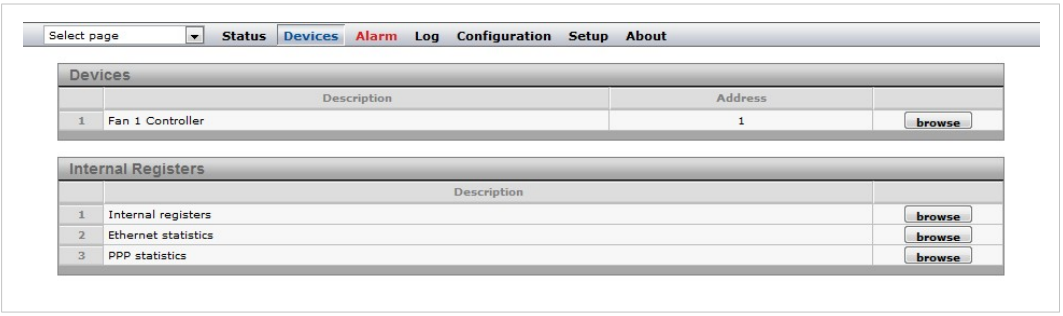


Fig. 41 Devices page

The Devices page lists all connected devices as well as the internal registers. Clicking on **Browse** will open a browser tree with all available groups and parameters for the device or internal register.

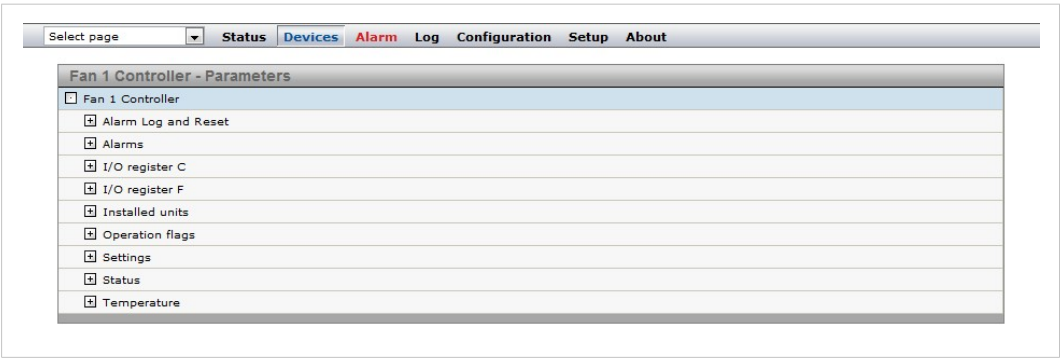


Fig. 42 Device parameter tree

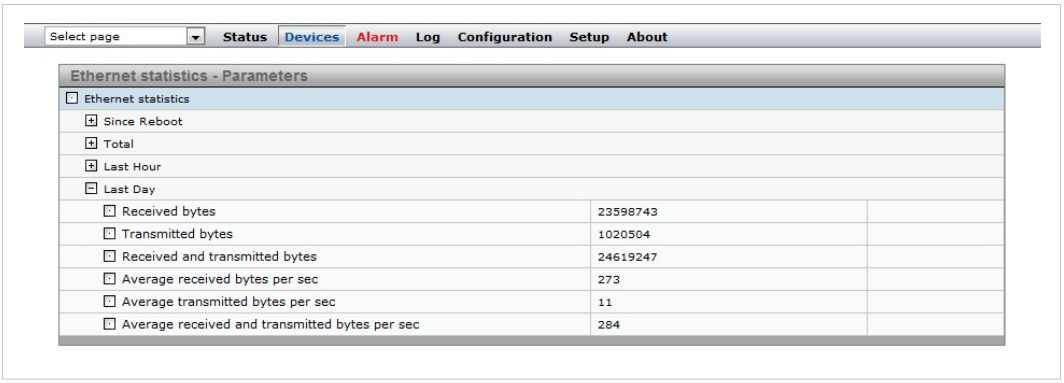


Fig. 43 Internal register parameter tree

9.4 Alarm

The Alarm page gives access to all configured alarm parameters, the current state of the alarms, and the alarm history.

When there is an active alarm the Alarm menu name will change color to red.

9.4.1 Alarm Status

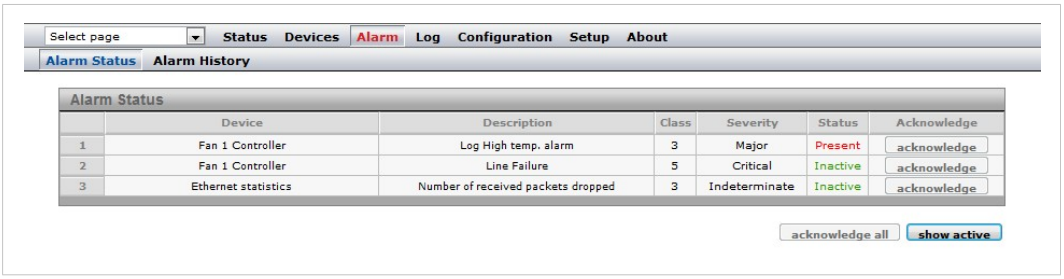


Fig. 44 Alarm status page

Show active/Show all toggles between showing all configured alarms, or only those that are present and unacknowledged.

Alarms can be acknowledged individually by clicking on **Acknowledge**, or all at the same time by clicking on **Acknowledge all**. If an alarm does not require acknowledgement the button will be grayed out.

9.4.2 Alarm History

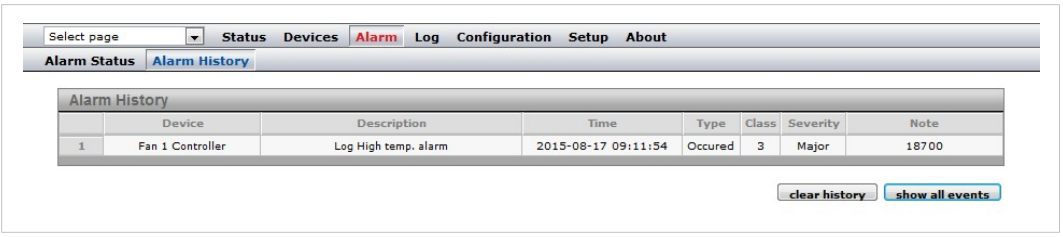


Fig. 45 Alarm history

Every status change for an alarm parameter is logged on the **Alarm History** page, along with information of the value for the parameter that triggered the alarm, and information about what alarm messages were sent by the Netbiter gateway.

The alarm history can hold a maximum of 100 entries. If the list is full and a new alarm occurs, the oldest alarm history entry will be deleted.

Show all events	All alarm events will be shown in the list.
Show occurrence	Only alarm entries of type *Occurred* will be shown.

Clicking on **Clear History** will clear the alarm history.

9.5 Log

The event log can be viewed as a trend graph on the **Log | Graph** page. It can also be downloaded as a csv (comma-separated values) text file for viewing in a text editor or spreadsheet program such as Microsoft Excel.

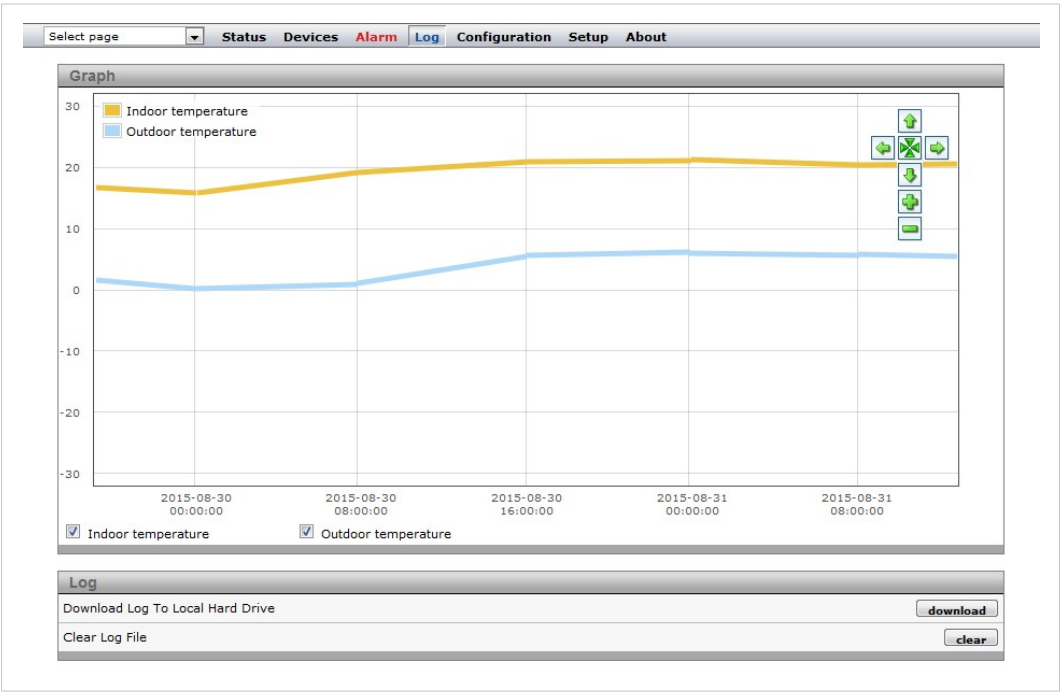


Fig. 46 Log page

The log graph function requires a patch due to a Java compatibility issue. The patch can be downloaded from www.netbiter.com/support/file-doc-downloads/ws-series.

The first 3 log parameters will be displayed in the graph as default. Use the checkboxes to show/hide additional parameters.

Left-click and drag in the window to zoom in on a part of the graph, or use the + and – buttons. Use the arrow buttons to scroll.

Scroll graph up	Zoom in
Scroll graph down	Zoom out
Scroll graph right	Reset view, view all
Scroll graph left	

Download Log To Local Hard Drive	Download the log to a local computer as a csv formatted text file. The csv delimiter character can be set on the **Setup	Regional** page.
Clear Log File	Delete the log from the Netbiter gateway.

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A Internal Registers

Holding register	Name	Values	Options	Comment
1	Digital input 1 status	0 or 1		Read only
2	Digital input 2 status	0 or 1		Read only
3	Number Active Connections MB/TCP	0-10		Read only
4	Number Active Internal Connections	0-10		Read only
	Serial Status (Modbus/TCP)			
5	Valid responses	0–65535		Can be cleared
6	Serial timeouts	0–65535		Can be cleared
7	CRC errors	0–65535		Can be cleared
8	Input Buffer overruns	0–65535		Can be cleared
9	Frame errors	0–65535		Can be cleared
10	Exception responses	0–65535		Can be cleared
	Serial Status (Buffered messages)			
11	Valid responses	0–65535		Can be cleared
12	Serial timeouts	0–65535		Can be cleared
13	CRC errors	0–65535		Can be cleared
14	Input Buffer overruns	0–65535		Can be cleared
15	Frame errors	0–65535		Can be cleared
16	Exception responses	0–65535		Can be cleared
	Serial Status (Internal requests and Webpages)			
17	Valid responses	0–65535		Can be cleared
18	Serial timeouts	0–65535		Can be cleared
19	CRC errors	0–65535		Can be cleared
20	Input Buffer overruns	0–65535		Can be cleared
21	Frame errors	0–65535		Can be cleared
22	Exception responses	0–65535		Can be cleared
	Configuration Registers			
23	Modbus/TCP Port	1–65535		Default = 502
24	Gateway Modbus address	(-1)–255		
		-1	Disabled	Default
		0–255	Enabled	
25	Modbus/TCP idle timeout	0–65535 (seconds)		Default = 60 s
		0	Disabled	
		1–65525	Enabled	
26	Baudrate	2400–115200 (bps)		Default = 9600
27	Parity	0–2		
		0	No parity	Default
		1	Even parity	
		2	Odd parity	
28	Number of Stop bits	1–2		Default = 1
29	Slave timeout time	25–65535 (milliseconds)		Default = 1000 ms
30	Physical interface	0–2		
		0	EIA-485 (RJ12)	Default
		1	EIA-232 (DSUB)	
		2	EIA-232 (RJ12)	

Holding register	Name	Values	Options	Comment
	Authentication			
31	Valid IP address 1	0–255		First byte of IP address
		0	Disabled	IP address auth disabled
		1–255	Enabled	
32	Valid IP address 2	0–255	Enabled	Second byte of IP address
33	Valid IP address 3	0–255	Enabled	Third byte of IP address
34	Valid IP address 4	0–255	Enabled	Fourth byte of IP address
35	Mask for Valid IP address 1	0–255	Enabled	First byte of mask
36	Mask for Valid IP address 2	0–255	Enabled	Second byte of mask
37	Mask for Valid IP address 3	0–255	Enabled	Third byte of mask
38	Mask for Valid IP address 4	0–255	Enabled	Fourth byte of mask

B SNMP

If SNMP Alarms are enabled all alarms will be sent as SNMP traps to the host specified on the SNMP page. See also *Setup | SNMP, p. 21* and *Configuration | Alarm, p. 32*.

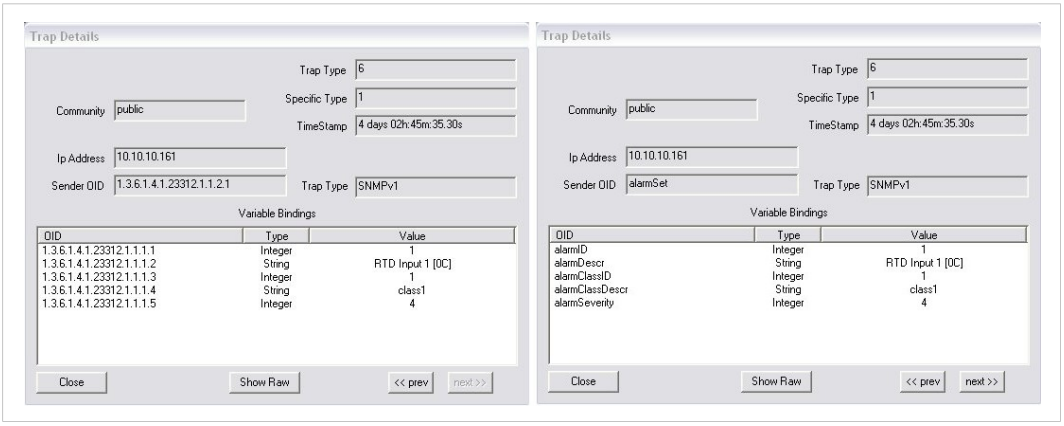

Fig. 47 SNMP trap example (high temperature alarm)

The OID is sent in the following numerical format:

`.1.3.6.1.4.1.23312.1.1.2 [IP address][event]`

`.1.3.6.1.4.1.23312.1.1.[trap_id][trap_data]`

where `23312.1.1` is the vendor/product identification.

Event 1 = Alarm set, event 2 = Alarm cleared.

The trap ID is divided into 5 messages with the following trap data:

1 Alarm ID

2 Alarm description

3 Class ID (1–10)

4 Class description

5 Alarm severity:

- 0 Indeterminate
- 1 Critical
- 2 Major
- 3 Minor
- 4 Warning
- 5 Cleared

C Technical Specifications

Model name	Netbiter WS100	Netbiter WS200
Order code	WS100	WS200
Ethernet	10/100 Mbit/s	-
GPRS	-	Quad band GPRS Class 12 850/900/1800/1900 MHz
Alarms	Email, SNMP, SMS	Email, SMS
Digital inputs (max 24 VDC)	2	2
Serial port #1	RS-232 (D-sub)	RS-232 (D-sub)
Serial port #2	RS-232/RS-485	RS-232/RS-422/RS-485
Antenna connector	-	SMA female
Protocols	Modbus RTU, ASCII, TCP	Modbus RTU, ASCII, TCP
Connected devices	32	32
Baud rates	300–115200 baud	300–115200 baud
Wall mounting	No	No
DIN rail mounting	Yes	Yes
Dimensions (WxDxH)	90 x 70 x 58 mm	90 x 70 x 58 mm
Operating temperature	-40 to +65 °C	-30 to +65 °C
Storage temperature	-40 to +85 °C	-40 to +85 °C
Housing class	IP20	IP20
Power supply	9–24 V DC or AC	9–24 V DC
Power consumption	2 W	3 W
Certifications	CE, cULus, RoHS	CE, cULus, FCC/IC, PTCRB, RoHS

D Regulatory Notices

D.1 Netbiter WS100/WS200

D.1.1 EMC Compliance (CE)

This product is in compliance with the EMC directive 2004/108/EC through conformance with the following standards:

EN 61000-6-4 (2007)
Emission standard for industrial environment

- EN 55022:2006 + A1:2007

EN 61000–6–2 (2005)
Immunity for industrial environment

- EN 61000–4–2 (2009)
- EN 61000–4–3 (2006)
- EN 61000–4–4 (2004)
- EN 61000–4–5 (2005)
- EN 61000–4–6 (2007)

D.1.2 UL/c-UL Compliance

UL 508

D.2 Netbiter WS200

D.2.1 FCC Compliance Statement

The design of this equipment complies with U.S. Federal Communications Commission (FCC) guidelines respecting safety levels of radio frequency (RF) exposure for Mobile devices.

This product contains FCC ID: **QIPPHS8-P**

RF Exposure - This device is only authorized for use in a mobile application. At least 20 cm of separation distance between the device and the user's body must be maintained at all times.

Any changes or modifications not expressly approved by HMS Industrial Networks AB could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

D.2.2 Industry Canada Statement

This product contains IC ID: **7380A-PHS8P**

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