TAHOE®

Tahoe 8210
Remote Power Management System

User Manual

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User Manual

Safety Instructions

Read the following safety notices before installing or operating the device:

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Read the installation instructions before you connect the device to its power source.

Reliable earthing of this equipment must be maintained.

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

There is no physical circuit separation if the outlet is disabled. Always disconnect the power cord before removing cover of any powered device.

Immediately disconnect the unit from the outlet and contact qualified service personnel if any of the following events are noted:
    1. The power cord has become frayed or damaged.
    2. Liquid has been spilled on to the device or the device has been exposed to rain or water.

No serviceable parts inside! Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

Do not work on the system, connect or disconnect cables during periods of lightning activity.

Contents

Preface

About this Manual

This manual contains following chapters:

Chapter 1, Introduction	An overview of Tahoe Remote Power Management System
Chapter 2, Installation	How to install Tahoe 8210
Chapter 3, Advanced Configuration and Management	The ways to access and manage the device, the list of available commands
Appendix A, Troubleshooting	Description of typical problems that may occur during use of the device
Appendix B, Technical Specification	Technical parameters of the device
Appendix C, Declaration of Conformity	Information about compliance with European standards

Document Conventions

This manual uses following conventions:

boldface font	Commands and keywords
< >	Required arguments
[ ]	Optional arguments
{ a | b | c }	Alternative arguments
[a | b | c]	Alternative optional arguments
typewriter font	Information displayed during a serial or remote connection
boldface typewriter font	Information to be entered during a management session
LCD font	Information displayed on the LCD
✐ Note	Notes contain helpful suggestions that may be worth remembering
⚠ Caution	This symbol means a situation that requires you to be careful. Otherwise equipment damage or loss of data may occur.
⚡ Warning	This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices in preventing accidents.

Introduction

Thank you for purchasing the Tahoe 8210. Tahoe Remote Power Management System increases availability of your network infrastructure by monitoring and managing power supplied to your equipment. You can switch selected outlets on and off remotely using a web-based, telnet or encrypted SSH connection. Moreover, the connected devices may be rebooted automatically in case of non-responsiveness. Each power outlet may be assigned to a separate user, which is useful in the case of dedicated hosting services where each server is assigned to a different customer.

Optional GSM access (with Tahoe 8210/GSM only) allows power control even in situations where whole network is inaccessible.

We did our best to ensure highest standard of reliability and performance of our products. Devoting many years of research and development, we are proud to provide a superior quality product unfolding new possibilities

Tahoe 8210

The Tahoe 8210 is a smaller version of Tahoe 8216 that allows management of four built-in power outlets and fits 10" cabinets.

Tahoe 8210 Front Panel
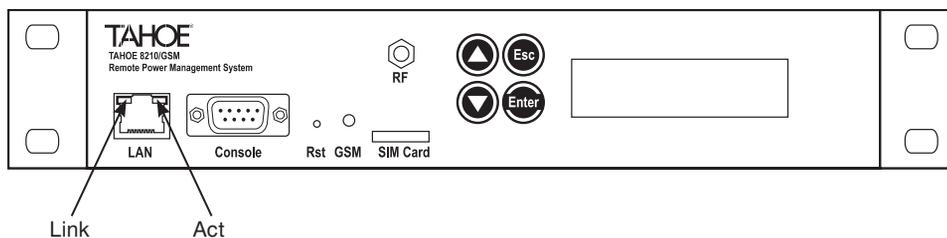
LCD/keyboard

The LCD display shows the current state of the device and the built-in keyboard allows the user to change state of outlets and gives quick access to basic settings.

LAN

The Fast Ethernet interface is used to connect the Tahoe 8210 to the Local Area Network (LAN). It may work at speeds of 10 Mbps (10Base-T) or 100 Mbps (100Base-Tx), in full-duplex or half-duplex mode. The mode of transmission is selected automatically, although a specific setting can be set.

A feature called Auto MDI/MDIX automatically detects whether it is connected to a switch or to a DTE device like PC or a router, so there's no need to use a crossed-over cable. After connecting the cable the Link LED should light up.

Status LEDs

The following status LEDs are placed on the front panel:

- LINK   lit when the device is connected to a LAN
- LAN Act   LAN activity, blinks when data is sent or received
- GSM   GSM status (off – GSM disabled, on – not registered to the network, blinking – registered to the network)

Tahoe 8210/GSM only:

SIM Card

The GSM SIM card slot.

RF

The GSM antenna Connector (SMA).

Rear Panel
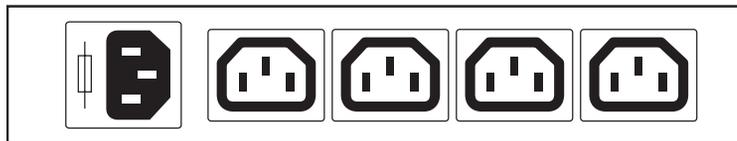
The rear panel contains one IEC 60320 C13 power inlet and four independently controlled IEC 60320 C13 power outlets.

Installation

⚠️ *Before installation carefully read and follow the Safety Instructions.*

⚠️ *Reliable earthing of this equipment must be maintained.*

Mounting
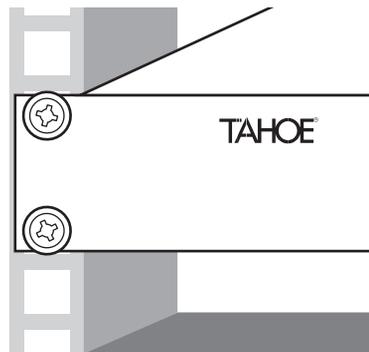
1. Position the device in the 10" rack and align holes in the mounting brackets with the holes in the rack.
2. Tighten the device to the rack using four screws.
3. Attach the power cords

GSM service (Tahoe 8210/GSM only)

Fasten the provided GSM antenna to the RF SMA connector and insert the SIM card into the *SIM Card* slot as shown:
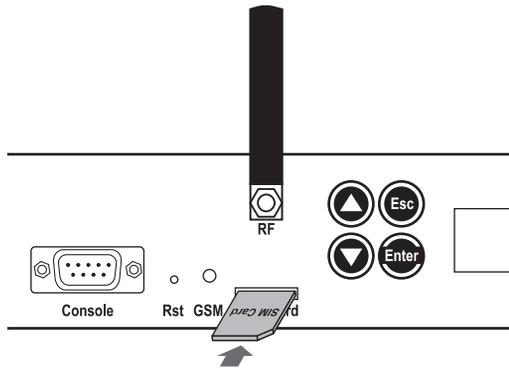
See *GSM* access section in the *Configuration and Management* chapter to configure GSM access.

Configuration and Management

Remote Power Management System is accessible in many ways either locally or remotely. The LCD display and built-in keyboard give direct control over the outlets and basic settings. The simple graphical web-based interface makes usage of the device simple and intuitive. The command line interface, accessible either remotely via telnet or an encrypted SSH connection or locally through a serial console is directed toward more advanced users and gives full control over the device. The optional GSM access enables the user to manage the device with short text messages even when network connection is unavailable.

LCD Menu

The LCD display shows the current state of the device and the built-in keyboard allows the user to change the state of outlets and gives quick access to basic settings. The default LCD screen displays outlet state:

```
Tahoe 8210    40°C
  1 2   . .
```

The displayed numbers indicate enabled outlets while a dot means that the corresponding outlet is disabled.

Use up/down keys to navigate through the unit menu. When a setting is displayed press Enter to change its value. If change is in progress a value blinks to indicate that it may be altered using up/down keys. Press the Enter key to accept a new value or Esc to cancel the operation.

To save settings select *Save Settings* and press Enter. You may also restore the factory default setup by selecting *Factory Defaults*. (This won't affect the state of outlets).
The device may be reset by selecting the *Soft Reboot* entry and pressing Enter. During the reset the outlets' state is preserved, but any unsaved settings may be lost.

For each of the device's four outlets there is a menu entry with its name and state displayed. Press Enter to change outlet state as described above, e.g:

```
[1] Outlet1
Enabled
```

Remote Connection

✎ *By default the device has the address:* **10.0.0.1**, *netmask is* **255.0.0.0** *and there is one user account named "***root***" with the default password "***Tahoe***" (case sensitive).*

To connect to the device the network interface on remote host has to be in the same IP subnet as the device, so the host may have IP address set to 10.0.0.2 and the same netmask.

If the device was already configured and the routing table (or gateway) is correctly set, a connection to its IP address is possible from anywhere on the network.

Web Interface

The web interface in a convenient method to access the outlets' state, measurements and the most of the system settings. To access the web interface point your browser to the device IP address, e.g:

http://10.0.0.1

The login screen will appear.

Enter username and password then press the *Login* button. After successful login the main *Power management* page is shown:

From the left panel you may select one of these pages:

- Power management   - power status and outlet control,
- LAN settings   - network settings,
- GSM service   - GSM access settings,
- User management   - add, remove and set permission for users,
- Log out   - close session.

Settings may be saved anytime by clicking *Save Settings* on the top panel. You may also reboot the device by clicking *Reboot*, or logout by clicking *X* on the top panel.

By default HTTP occupies TCP port number 80. Use the **http** command to configure the web service.

Power management

The power management page presents the state of power outlets available to the user. For each outlet its name, current state, owner, watch address and possible actions are displayed. Outlet settings may be changed with an *Edit* action.

LAN setting

This page allows the user to change local network settings (LAN port). The IP address, netmask and the default gateway may be set.

The LAN settings page is available only for users of administrative level.

GSM service

This page contains the status of the GSM service and a list of known numbers. If a SIM card PIN is required, the PIN box is shown. Enter the PIN and press the *Set* button to connect to the network. If GSM service is available, signal strength, operator name and SMS service center number are displayed. The SMS service centre may be changed if needed.

On the bottom of this page a list of numbers/users' associations is shown. You may add or remove associations using *Add* and *Remove* actions. Messages received from associated numbers don't need to contain the **login** command.

The GSM service page is available only for users of administrative level.

User management

The user management page presents a list of users. For each user his privilege and actions available are shown. The user name, privilege and password may be changed with an *Edit* action.

This page is available only for users of administrative level.

Change password

This page is available for restricted users only, allowing them to change their password. The current password must be provided as well as a new one. The minimum password length is 5 characters.

Telnet Connection

The Telnet protocol gives a full access to the command line interface. See the *Command Line Interface* for the list of available commands. By default Telnet uses TCP port number 23. Use the **telnet** command to configure the telnet service.

SSH Connection

The SSH protocol gives secure encrypted access to the device's command line interface. Any SSH-2.0 conforming client such as Putty or OpenSSH may be used. See the *Command Line Interface* section for the list of available commands.

Please note that the ssh access must be explicitly enabled and a host key generated using **ssh on** command prior to use. By default SSH uses TCP port number 22. Use the **ssh** command to configure the SSH service.

GSM access (Tahoe 8210/GSM only)

To control the power through the GSM network insert a GSM SIM card into the SIM Card slot and make sure the antenna is present and properly connected. If necessary, a PIN must be entered using the web interface or the **gsm pin** command, and settings saved afterwards. Also make sure the GSM service centre to be used is correctly set.

The outlets are controlled via short text messages using the following commands:

```
login <username> <password>
on <outlets>
off <outlets>
```

```
reset <outlets>
end
```

The **login** command is needed to authenticate sender, preceding other commands, if his or her number is not in the list of known numbers. (The list of known numbers may be managed via web interface or by command line with **gsm** command).

The **on**, **off** and **reset** commands turn specified outlets on, off or reboot outlets respectively. You may specify *outlets* as a combination of the following forms:

```
<a>,<b>        - specific outlets,
<m>-<n>        - range of outlets,
<name>         - outlet by its name,
*              - all outlets,
```

e.g:

```
off *          - turns off all outlets,
on 1-4         - turns on outlets from 1 to 4 on main unit,
on 1,3         - turns on outlets 1 and 3.
```

The **end** command is useful if service operator appends some text to messages. It preserves from an error occurrence in such a situation and should be placed after all commands to be executed and followed by semicolon or newline. The following text is then ignored.

Commands must be separated with a semicolon (';') or newline character.

After a message is received, the device replies with a status message of the form:

```
Tahoe RPMU: <n> of <m> succeeded.
```

Where n is the number of commands successfully executed and m is the total number of commands found in the message.

Serial Console

The serial console gives access to the command line interface. Use a null modem cable to connect to the device through the serial console port. Port speed is 9600bps with one stop bit, 8 data bits and no parity, no flow control. See the *Command Line Interface* section for the list of available commands.

Command Line Interface

The Command line interface gives full access to all device settings and is available through telnet and ssh connection as well as serial console port.

Complete command set

?	displays the command list/context sensitive help
arp	ARP table configuration
config	displays current configuration
console	console access settings
eepromdump	dumps EEPROM (configuration memory) contents
eraseconfig	erases whole configuration
exit	closes a connection
gsm	GSM settings
help	usage information
http	web server configuration
ifconfig	interface configuration
mem	memory usage information
mii	MII (Ethernet) transceiver settings
netstat	TCP/IP connections list
power	power control
prompt	changes command prompt
ps	displays the process list
quit	closes connection
reboot	reboots the device
route	routing table settings
snmp	SNMP settings
ssh	SSH settings
syslog	sending logs to remote syslogd
tech	system information for tech support
telnet	telnet server settings
tftp	TFTP server settings
timeout	login and session timeout settings
uptime	shows router uptime
user	user management
ver	shows firmware version

vlan	VLAN bridging configuration
w	shows router uptime
wake	powers on a LAN station using Wake-On-LAN feature
write	saves settings to EEPROM

?

Shows a list of available commands and context sensitive help.

arp

The **arp** command is used to configure the ARP table. The **arp** alone shows the list of bindings between IP and hardware (MAC) addresses:

```
Tahoe> arp
IP address     Hardware address     Type          Expires
10.0.0.2       00:50:04:0D:70:31    dynamic       215s
Tahoe>
```

The *Type* can be *dynamic* (learned from the network traffic) or *static* (added manually). The value in the *Expires* column denotes the time left until ARP table entry removal. The ARP entries are removed when they are not used for 5 minutes.

ARP table entries can be removed using the **arp del** command:

```
arp del <IP address>
```

A static ARP entry can be added using **arp add**:

```
arp add <IP address> <MAC address>
```

e.g.

```
arp add 10.0.0.4 00:50:13:E9:5C:01
```

The dynamic hardware address resolution may be disabled using the **ifconfig** command. When disabled, only those stations whose IP and MAC addresses are entered statically into the ARP table using the **arp add** command are allowed to connect to the device.

config

The **config** command displays a current configuration. The command output can be entered on another device to make an exact copy of the configuration.

eepromdump

This command displays the complete contents of the EEPROM (non-volatile) memory in hexadecimal form. It is used for debugging only.

eraseconfig

The **eraseconfig** command erases the whole configuration from the EEPROM. After rebooting the device it will return to its factory defaults. Until the reboot it will continue to run with its current settings, which can be saved again using the **write** command.

exit

This command closes the session and disconnects the user from the device.

help

Shows usage information.

http

The **http** command configures the built-in web server. Server can be enabled or disabled by entering, respectively:

```
http on
```

or

```
http off
```

The web server port may be changed with

```
http port <port>
```

The default port is 80.

Access to the server can be limited by entering:

```
http host <IP address>
```

Then the server is only reachable from the given IP address. To remove the limitation enter 0.0.0.0 as the IP address.

ifconfig

This command allows configuration of the network interfaces. The following interface names are available:

```
eth0 – Ethernet interface
```

This command has a similar syntax to the Linux **ifconfig**:

```
ifconfig <interface name> [<IP address>] [netmask <network mask>] [bcast
<broadcast address>] [static | dynamic]
```

The **ifconfig** alone displays information about all active interfaces. Entering **ifconfig** *<interface name>* shows information about a specific interface. An information about the interface's IP address, number of packets and bytes sent and received, number of transmission errors and other important data are displayed.

You can assign an IP address to an interface, together with a subnet mask and broadcast address. You can also enable or disable dynamic Address Resolution Protocol (ARP, enabled by default).

mem

Mem shows the memory usage statistics. The *free* entry shows how much free memory is left and the *free bufs* informs the user about the amount of free memory designated for network packets.

mii

The **mii** command allows access to the Ethernet transceiver. With no arguments displays Ethernet port status (link state, negotiated speed, etc.) The following options are available:

·   **reset** – resets the transceiver to the default settings,

- **auto** – enables Ethernet auto-negotiation (default),

- **adv** *<mode>* [*mode* [...]] } – sets a list of modes used during the auto-negotiation. The modes may be selected from the following values: **100BaseTx-FD, 100BaseTx-HD, 10BaseT-FD, 10BaseT-HD**,

- **force** *<mode>* – forces a specific mode and disables auto-negotiation,

- **power** { **on** | **off** } – enables or disables the Ethernet port,

- **read** [*address*] – read all or selected MII registers,

- **write** *<address>* *<value>* – writes to an MII register.

⚠ *Configuring the Ethernet transceiver may cause loss of the LAN connection, which in turn may make it impossible to manage the device remotely.*

netstat

Shows a list of TCP connections.

power

The **power** command is used to manage power outlets. The following options are available:

- **status** [*outlets*] – shows the state of all or selected outlets,

- **on** *<outlets>* – enables selected outlet(s),

- **off** *<outlets>* – disables selected outlet(s),

- **reset** *<outlets>* – resets selected outlet(s),

- **rename outlet** *<new name>* *<outlets>* – assigns a name to outlet(s),

- **chown** *<username>* *<outlets>* – changes owner of outlet(s),

- **watch** *<IP address>* *<outlets>* – assigns watch address to outlet(s),

- **watch** – shows watch timeouts,

·   **watch interval** *<interval>* – echo request interval (default 5 seconds),

·   **watch amount** *<amount>* – amount of unreplied echo requests before reset is performed (3 by default),

·   **watch delay** *<delay>* – boot delay (60 seconds by default).

You may specify *outlets* as a combination of the following forms:

<a>,*<b>*	– specific outlets,
<m>-*<n>*	– range of outlets,
<name>	– outlet by its name,
*	– all outlets,

e.g:

power off *	– turns off all outlets (on all units),
power on 1-4	– turns on outlets from 1 to 4,
power on 1,3	– turns on outlets 1 and 3.

Using the **power watch** command you may assign an IP address to specific outlet(s). In this case the outlet is reset if the specified address doesn't respond to ICMP echo requests. The echo request is send every *interval* seconds. If *amount* of consecutive echo requests are not replied to, the outlet reset is performed. After boot or reset echo requests are not being sent for *delay* interval. Set outlet's watch address to 0.0.0.0 to disable this function.

prompt

By using the **prompt** command you may change the default Tahoe> prompt to any other text that will help you identify the device.

ps

Shows the processes list.

quit

This command closes the session and disconnects the user from the device. The same as **exit**.

reboot

Reboots the device.

⚠️ *The outlets state is preserved, but all unsaved changes to the configuration will be lost.*

route

The **route** command is similar to an analogous Linux command. It is used to configure the IP routing. The **route** alone shows the current routing table. It may be modified using the following options:

route add *<address>* *<interface>* – adds the route to a specific host directly through the interface (the station with this address has to be in the network directly connected to that interface),

route add *<address>* **gw** *<gateway>* – adds the route to a specific host through a gateway,

route add -net *<address>* **netmask** *<network mask>* *<interface>* – adds the route to a subnet with given address and network mask directly on the specified interface,

route add -net *<address>* **netmask** *<network mask>* **gw** *<gateway>* – adds the route to a subnet with given address and network mask through the specified gateway,

route add default gw *<address>* – adds the default route through the specified gateway,

route del *<address>* – removes route to the specified IP address,

route del -net *<address>* **netmask** *<network mask>* – removes route to the specified subnet,

route del default – removes the default route.

snmp

The **snmp** command is used to configure the SNMP (Simple Network Management Protocol) support. It has the following syntax:

snmp – shows current settings:

```
Tahoe> snmp
SNMP on
Read community: public
Write community: private
```

```
SNMP host1: <any>
SNMP host2: <disabled>
SNMP host3: <disabled>
Tahoe>
```

snmp on – enables SNMP support

snmp off – disables SNMP support

snmp rdcomm *<community>* – sets the read community (the password used to read the SNMP parameters)

snmp wrcomm *<community>* – sets the write community (the password used to write the SNMP parameters)

snmp host1 *<address>*
snmp host2 *<address>*
snmp host3 *<address>* – allows the setting of up to 3 addresses, from which SNMP access will be permitted. Entering 0.0.0.0 allows access from any address, while 255.255.255.255 disables an entry (entering 255.255.255.255 in all three positions is equal to disabling the SNMP service)

ssh

The **ssh** command configures the built-in Secure Shell server. Server can be enabled or disabled by entering, respectively:

ssh on
or
ssh off

For the first time when the server is enabled the host key must be generated (this may take several minutes).

The SSH server port may be changed with

ssh port *<port>*

The default port is 21.

Access to the server can be limited by entering:

http host *<IP address>*

Then the server is only reachable from the given IP address. To remove the limitation enter 0.0.0.0 as the IP address.

syslog

The device may send messages about its status and important events to a syslog server. To configure syslog logging the following commands may be used:

syslog on – enables logging,

syslog off – disables logging,

syslog host *<IP address>* – sets the IP address to which the messages will be sent.

tech

The **tech** command displays a detailed report about the device's internal state. This output may be used by the technical support for debugging purposes.

telnet

This command allows limiting telnet access to the device. Access may be enabled or disabled by entering:

telnet on

or

telnet off

respectively. The telnet port may be changed with

telnet port *<port>*

The default port is 23. Moreover, access may be limited to a certain IP address:

telnet host *<IP address>*

If the IP address is set as 0.0.0.0, then access is possible from anywhere in the network.

⚠️ *If you disable telnet access while connected through telnet connection, you may loose possibility to manage the device remotely and you may not be able to enable telnet access again without a reboot or local management through the serial console.*

tftp

This command allows limiting TFTP access used for the firmware upgrade. Access may be enabled or disabled by entering:

```
tftp on
```

or

```
tftp off
```

respectively. Moreover, access may be limited to a certain IP address:

```
tftp host <IP address>
```

If the IP address is set as 0.0.0.0, then access is possible from anywhere in the network.

timeout

This command sets the inactivity time (in seconds), after which the remote connection is closed:

```
Tahoe> timeout <session timeout> [<loggin timeout>]
```

The first parameter is used after logging in, while the second one (optional) is used during the login process. Entering **0** disables the timeout. **timeout** without arguments displays the current settings.

uptime

Shows the time elapsed since device startup.

user

The **user** command is used to manage users having access to the device. The command has the following syntax:

user list – shows the user list,

user add *<name>* – adds a new user,

user del *<name>* – removes a user,

user passwd *<name>* *<password>* – changes the user's password,

user rename *<name>* *<new name>* – changes the user's name,

user level *<name>* *<access level>* – changes the user's access level. The <access level> argument may be one of:
>   **admin** – full access to the device,
>   **restricted** – limited access.

ver

Displays the current firmware version and the compilation date.

vlan

The **vlan** command is used to manage VLAN configuration. The device may work in one of following modes:

- transparent – the VLAN-tagged packets are passed transparently. The device is transparent to the traffic and it's up to user to manage VLANs on external devices (default)

- non-transparent – the device may be set up to analyse the traffic and some packets may be directed to specified interfaces, while others may be filtered. Also VLAN headers may be removed or added while forwarding a packet, thus encapsulating a data stream from a specified interface into a VLAN.

The command has following syntax:

- **vlan show** – shows current settings

- **vlan transparent { on | off }** – enables or disables the transparent mode

- **vlan create** *<vid>* – inserts a new VLAN ID into the list of supported VLANs

- **vlan remove** *<vid>* – removes a VLAN ID from that list

- **`vlan <vid> add <interface>`** – adds an interface to a VLAN

- **`vlan <vid> del <interface>`** – removes an interface from a VLAN

- **`vlan <vid> name <name>`** – sets a VLAN name to ease identification

- **`vlan <vid> { tag | untag } <interface>`** – sets an interface as tagged or untagged.

To manage VLAN traffic first you have to follow these steps:

1. Disable transparent mode using **vlan transparent off** command.

2. Add VLANs you want to forward using **vlan create <vid>**.

3. Add interfaces to that VLAN using **vlan <vid> add <interface>**.

4. Decide whether interfaces should be tagged or untagged using **vlan <vid> { tag | untag } <interface>** command. A tagged interface means that all traffic belonging to specified VLAN will be transmitted through that interface without modification (with a VLAN header). Such traffic can be further separated using an external VLAN-aware switch.

   In case of an untagged interface the VLAN headers will be stripped from the packets before they are transmitted over that interface. In the opposite direction the VLAN headers will be added to all untagged (i.e. regular) packets received on that interface. This way only regular Ethernet packets would appear on that interface (so you can connect regular Ethernet devices) while the device will see VLAN traffic only. Such VLAN traffic can be sent further to other devices without being mixed with packets coming from other sources.

The non-VLAN traffic is directed to a default VLAN with ID 1. That VLAN is used for internal processing only. All interfaces are added to that VLAN by default and are marked as untagged.

w

Shows the time elapsed since the device boot.

wake

The **wake** command is used to power-on LAN devices that have the Wake-On-LAN ability. To send a wake-up packet to a specified MAC address type:

```
wake [-b] <MAC address>
```

A -**b** option may be added before the MAC address to generate a broadcast packet. This may be necessary in some cases when the regular packet isn't forwarded through the Ethernet switch or another device.

write

Saves the current configuration to the non-volatile memory (EEPROM) so the device keeps its settings after reboot or power off. The command also displays information about configuration memory usage. If the configuration is too large to be stored, some settings have to be removed, such as users, static ARP entries, etc.

Appendix A, Troubleshooting

Problem	Possible solutions
Connected device is not powered.	▪ Make sure the corresponding outlet is enabled.
Remote GSM access does not work. (Tahoe 8210/GSM only)	▪ Make sure the correct PIN is entered and saved. ▪ Make sure the correct login command is entered or the sender is in the list of known numbers. ▪ Make sure the GSM antenna is properly fastened to the RF connector. ▪ Check the GSM signal level and use an external antenna if necessary.
Web service is unavailable.	▪ Check http server settings.

Appendix B, Technical Specification

	Tahoe 8210	Tahoe 8210/GSM
power input	1 x IEC 60320-C13/M 100-240V AC 50/60Hz 10A (max.)	
power output	4 x IEC 60320-C13/F 100-240V AC 50/60Hz 10A (max.) total max. 10A	
processor	PowerPC, 50MHz	
memory	8MB SDRAM	
connectors	LAN, DB-9/M Console, RJ-45	RF, SMA SIM Card
GSM		EGSM 900/1800/850/1900 MHz
network protocols	IP, TCP, UDP, ICMP, TFTP, SNMP, SSH, HTTP	
Ethernet interface	10/100Base-T, Auto MDI/MDIX, RJ-45 connector	
serial console	RS-232, DB-9/M connector	
power consumption	20W	25W
dimensions	220 mm (width, 10") x 43 mm (height, 1U) x 200 mm (depth)	
environmental conditions	storage: temperature -20°C to 65°C, humidity 5% to 95% operation: temperature 0°C to 50°C, humidity 0% to 85%	

Appendix C, Declaration of Conformity

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TAHOE
Piotr Kaczmarzyk
Hercena 3-5,
50-453 Wroclaw, Poland

We declare that the products Tahoe 8210, Tahoe 8210/GSM comply with the regulations of the following European Directives:

- **73/23/EEC** low voltage safety requirements
- **89/336/EEC** EMC requirements
- **99/5/EEC** radio & telecommunication terminal equipment requirements

The compliance of Tahoe 8210, Tahoe 8210/GSM with the requirements of the above mentioned directives is ensured by complete application of the following harmonized European Standards:

- **EN 60950:2000**
- **EN 55022:1998**
- **EN 61000-6-1:2002**
- **EN 61000-6-3:2002**

The products also comply with the directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment („RoHS Directive") with the exemptions applicable for network infrastructure equipment for switching, signalling, transmission and network management (according to the clause 7 of the Annex to the directive).

Signed: Piotr Kaczmarzyk
Position: Director

Signature:

Date: 20 April 2009
Place: Wroclaw, Poland

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