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# GE Digital Energy Power Quality



## Operating Manual

### Digital Energy™ *SNMP / WEB ADAPTER*

- P/N 1018959 3-ph SNMP/Web plug-in adapter
- P/N 1019070 1-ph SNMP/Web plug-in adapter
- P/N 23954 SP SNMP/Web plug-in adapter
- P/N 1019071 1-ph SNMP/Web external adapter

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GE imagination at work



Model: 3-ph SNMP/Web plug-in adapter  
 1-ph SNMP/Web plug-in adapter  
 SP SNMP/Web plug-in adapter  
 1-ph SNMP/Web external adapter

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Please read carefully the Installation Manual, which contains all the necessary information about the installation of the adapters.

Thank you for choosing **GE** !

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# 1 INTRODUCTION

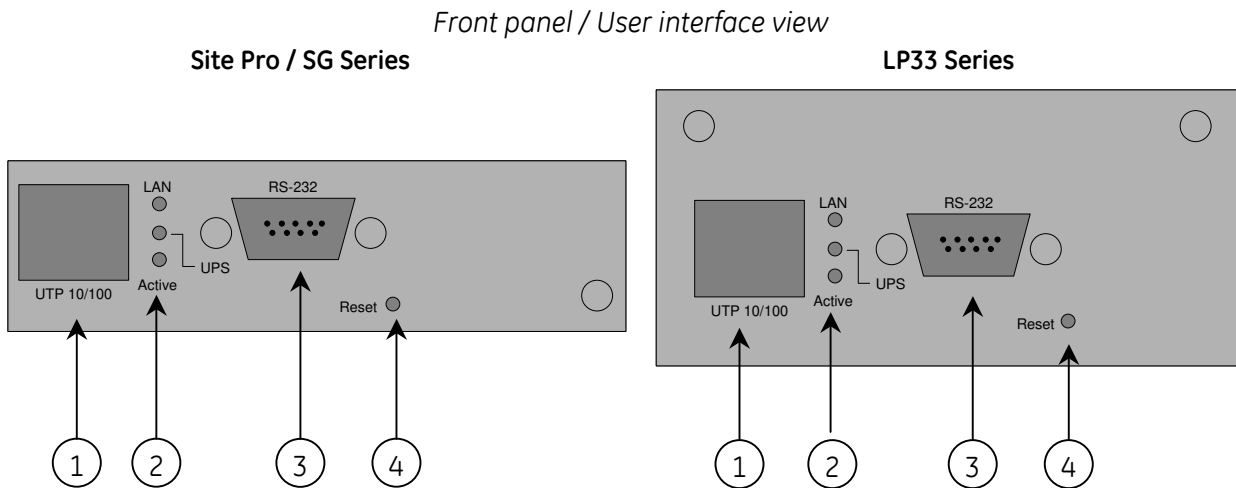
## 1.1 FEATURES

Each SNMP/Web adapter provides the following features:

- 10/100 Mbps connection speed
- Use of DHCP / BOOTP or manual configuration for the TCP/IP network settings
- SNMP Agent
- Web server
- Console interface
- UPS status / alarms / readings, event logging over different interfaces
- Digital outputs (open-collector outputs for relay drive) – *1-ph plug-in version only*
- SNMP Traps and E-mail notification upon UPS event
- Advanced security features

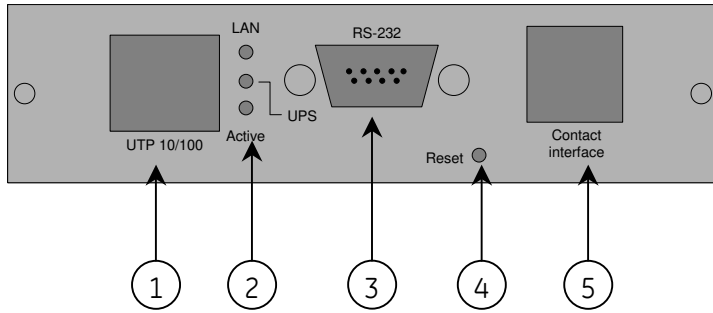
## 1.2 OVERVIEW

### 3-ph SNMP/Web plug-in adapter (P/N 1018959)



- 1 – RJ45 Connector Ethernet connection, 10Base-T or 100Base-TX
- 2 – LEDs Ref. specific section
- 3 – RS-232 port Local console connection (115200-N-8-1)
- 4 – Reset button HW reset

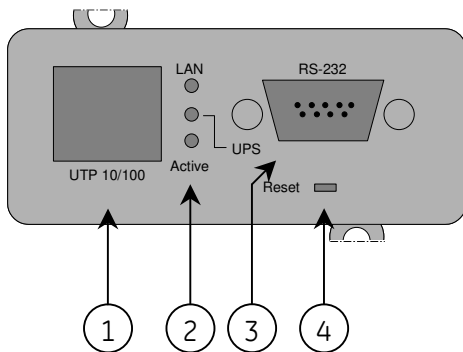
**1-ph SNMP/Web plug-in adapter (P/N 1019070)**



*Front Panel – User Interface View*

- 1 – RJ45 Connector Ethernet connection, 10Base-T or 100Base-TX
- 2 – LEDs Ref. specific section
- 3 – RS-232 port Local console connection (115200-N-8-1)
- 4 – Reset button HW reset
- 5 – RJ11 Connector Contact interface, open-collector output

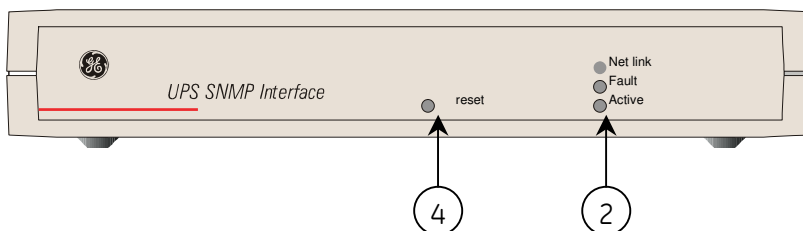
**SP SNMP/Web plug-in adapter (P/N 23954)**



*Front Panel – User Interface View*

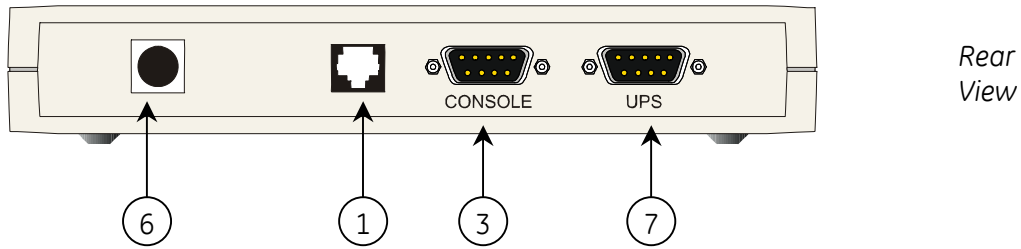
- 1 – RJ45 Connector Ethernet connection, 10Base-T or 100Base-TX
- 2 – LEDs Ref. specific section
- 3 – RS-232 port Local console connection (115200-N-8-1)
- 4 – Reset button HW reset

**1-ph SNMP/Web external adapter (P/N 1019071)**



*Front View*





- 1 – RJ45 Connector      Ethernet connection, 10Base-T or 100Base-TX
- 2 – LEDs      Ref. specific section
- 3 – RS-232 port      Local console connection (115200-N-8-1)
- 4 – Reset button      HW reset
- 6 – Power-in      AC adapter connection
- 7 – UPS port      RS-232 connection to the UPS

### LEDs

The various front panel LEDs have the following meaning:

- LAN / Netlink

Status	Meaning
Off	No LAN connection detected
On	LAN connection established, no communication
Blink	LAN connection established, receive or transmit active

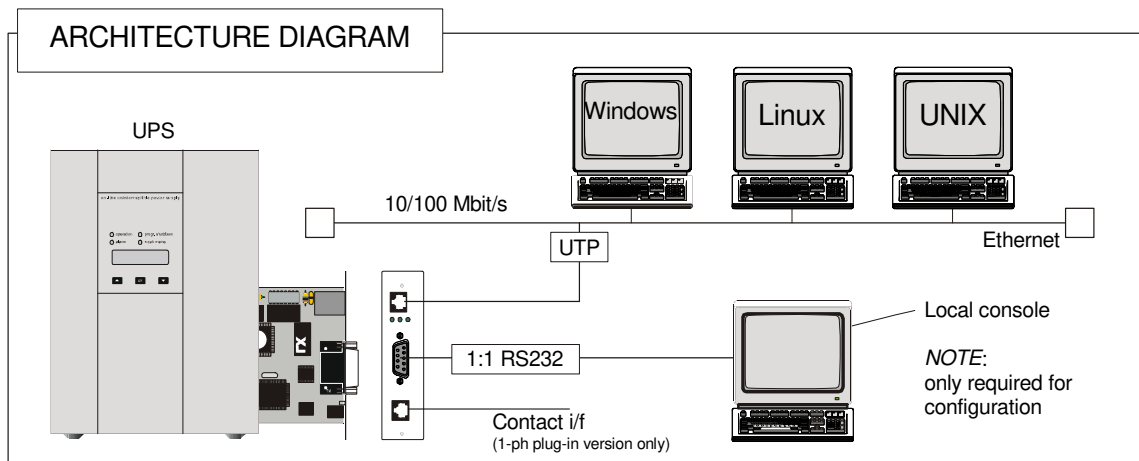
- UPS / Fail

Status	Meaning
Off	OK / No Fault
On	No UPS Connection

- Active

Status	Meaning
Off	Fault of device
Blink	Device OK / No fault

## 1.3 ARCHITECTURE



## 1.4 SAFETY

All maintenance and service work should be performed by qualified service personnel only.

Please read carefully the *Installation Manual* before installing or operating the adapters.

For more information on the **UPS** system, please refer to the applicable Installation and User Manual.

Particularly, refer to *Safety Rules, Warnings and Cautions* as laid out in the cited document.

**The knowledge of (and FULL compliance to) the safety instructions and the warning contained in the cited documents are THE ONLY CONDITION to avoid any dangerous situations during installation, operation, maintenance work, and to preserve the maximum reliability of the UPS system.**

## 2 CONSOLE INTERFACE

### 2.1 INTRODUCTION

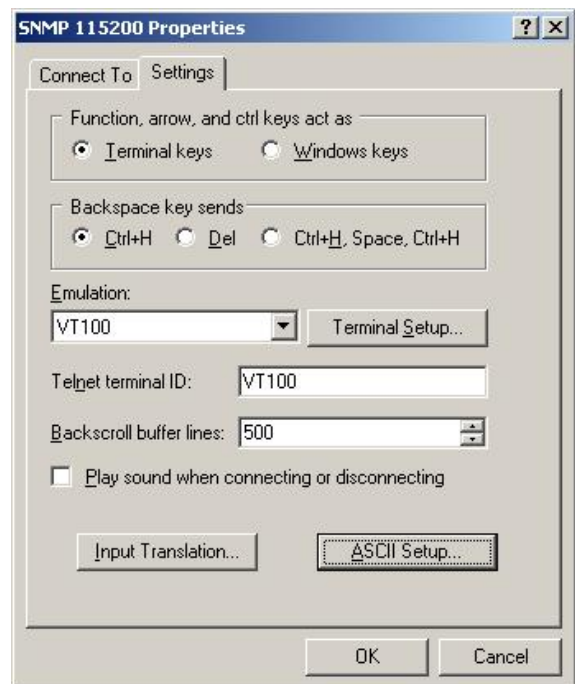
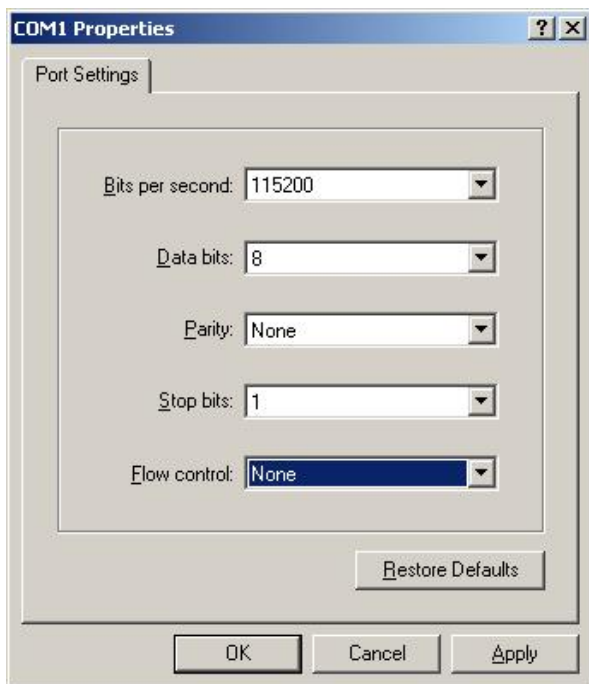
The console interface provides a simple way to configure the SNMP/Web adapters through a command-line interface. Actually, the console interface provides a full set of commands, extending far beyond the adapter initial configuration and allowing access to all advanced functionalities. Nevertheless, access using the console interface (by means of a local serial connection) is normally needed only for initial configuration, when no DHCP server is available or the IP-address is not known.

The console interface can be accessed locally (serial connection) or remotely (Telnet, SSH).

#### 2.1.1 Local connection

**Local access** requires a local computer connected to the adapter serial port using a straight serial cable:

- Connect the SNMP adapter to a computer using a standard 1:1 serial communication cable.
- Run a terminal simulator (e.g. *HyperTerminal* on a PC running Windows)
- Configure the terminal simulator as follows:  
*115,200bps, 8 data bits, 1 stop bit, parity none, flow control none*  
*terminal emulation VT-100*



- Establish the connection and press **<enter>**
- The default username (login) and password are *ge* and *ge*
- A command-line configuration interface is entered

## 2.1.2 Remote connection

The console interface can also be accessed remotely from any computer on the same subnet using either Telnet or SSH (under the hypothesis that the relevant service is running and enabled for the selected user).

### TELNET

Telnet provides basic user authentication. The SNMP/Web adapter uses the standard telnet port.

To start a Telnet session and connect to the adapter:

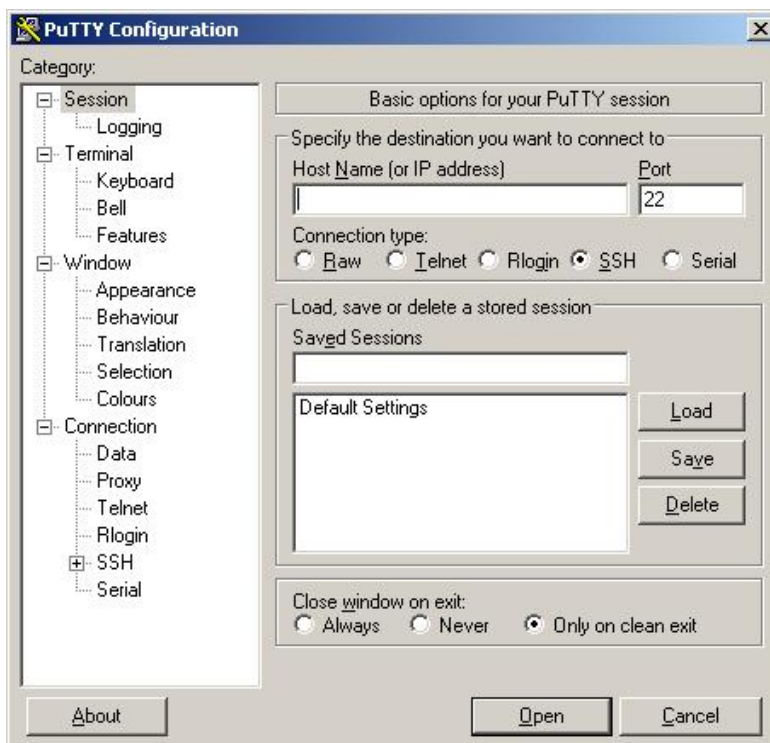
- Launch a telnet client (e.g. on a PC running Windows, select *Run* from the *Start* menu and type **telnet <IP>**)
- The default username (login) and password are *ge* and *ge*
- A command-line configuration interface is entered

### SSH

SSH (Secure SHell) combines user authentication with encryption, to provide a higher degree of communication security. In any case, the user access rights are the same regardless of the service/interface used.

Below is a sample SSH session using a popular SSH client (*putty*):

- Start the SSH client application (**putty.exe**)



- In the *Host Name* section specify the card hostname or the IP address
- In the *Connection Type* section select SSH
- Select *Open* to launch the SSH session

### NOTES

The SNMP/Web adapters use the standard SSH port

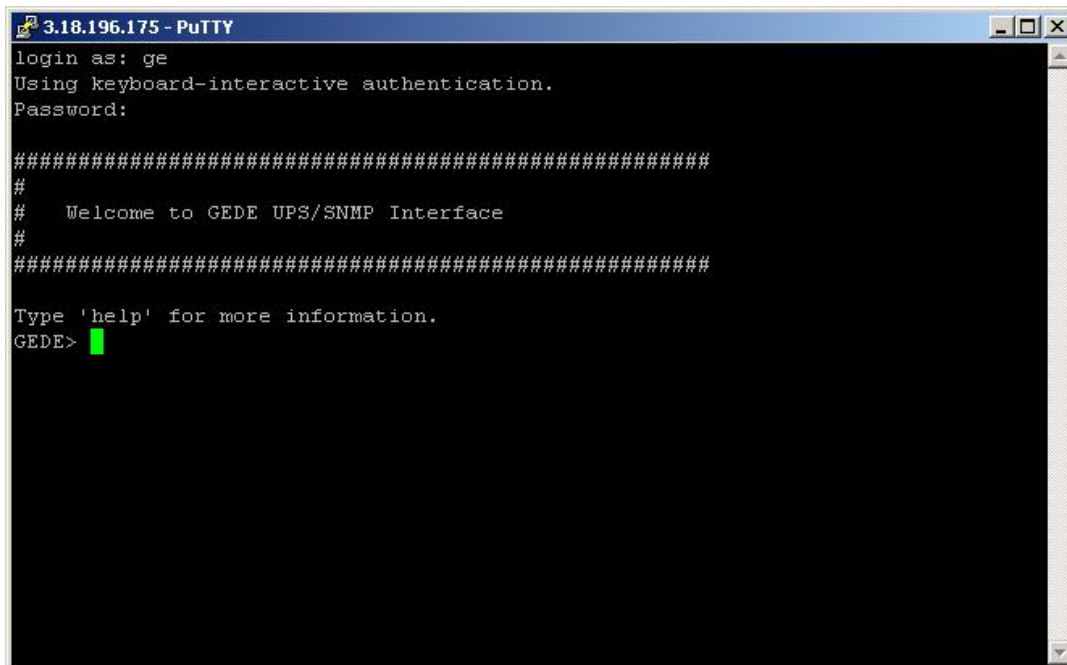
The SNMP/Web adapters support both SSH v1 and SSH v2

Normally, no further settings are required. In any case, SSH protocol and version settings are accessible on putty on the SSH category on the left-hand side menu

- Most SSH clients display the host key fingerprint at the start of the session. Make sure the fingerprint shown matches the SNMP/Web adapter fingerprint (see *Encryption* section for details on figuring out the SSH fingerprint)



- A login window should then be available in a few seconds. The default username (login) and password are *ge* and *ge*



### 2.1.3 Log-on

User authentication requires inputting the username and password. Remember that:

- Both username and password are case-sensitive, and are always specified in lower case
- By default, only one user is defined, with username and password set to *ge* and *ge*
- Depending on the user class, not all commands and settings may be available

### 2.1.4 Saving the settings

Apart from some network parameters, most settings are immediately active. However, the adapter will revert to the last saved settings at reboot. Therefore, in order to permanently modify the SNMP/Web adapter setting, remember to save the configuration after every change.

## 2.2 COMMAND LIST

The various commands are split in different groups, depending on the involved functionality, and are listed here in accordance with their group classification.

The command-line interface includes a command auto-completion feature. Normally, typing a command without any parameter displays usage information on the command. A *help* command is also available.

Note that all commands are case-sensitive.

### 2.2.1 General command group

The *general* command group consists of the following commands:

Command	Parameters	Description
<i>help</i>	general   network   dns   user   service   time   smtp   snmp   trap   ups   syslog	Show help information <i>general</i> shows all general commands <i>network</i> shows all network commands <i>dns</i> shows all dns commands <i>user</i> shows all user management commands <i>service</i> shows all service commands <i>time</i> shows all time commands <i>smtp</i> shows all smtp commands <i>snmp</i> shows all snmp commands <i>trap</i> shows all trap commands <i>ups</i> shows all ups commands <i>syslog</i> shows all syslog commands
<i>list</i>		List all available commands
<i>version</i>		Display the board FW version
<i>logout</i>		User logout <b>NOTE:</b> <i>Auto-logout after 10 min inactivity</i>
<i>exit</i>		User logout
<i>passwd</i>		Change current user password
<i>ping</i>	[hostname]   [X.X.X.X]	Ping IP address or hostname <i>hostname</i> fully qualified hostname <i>X.X.X.X</i> IP-address
<i>nvdefault</i>		Reset the configuration to factory default
<i>nvsave</i>		Save changes to non-volatile memory
<i>nvdump</i>		Dump configuration file ( <i>gedeups.cfg</i> ) to FTP area
<i>nvupdate</i>		Update the SNMP/Web configuration with the <i>gedeups.cfg</i> file from the FTP area <b>NOTE:</b> <i>The adapter performs no checks on the received file. Make sure the file format is correct - unexpected behaviour may occur.</i>
<i>upgrade</i>		Start the upgrade with the uploaded firmware <b>NOTE:</b> <i>FW file to be uploaded via FTP</i>
<i>reboot</i>		System restart (soft-reset) <b>NOTE:</b> <i>All unsaved changes will be lost</i>

## 2.2.2 Network command group

The *network* command group allows to configure the board for communication over the network.

Command	Parameters	Description
<i>showip</i>		Show the current network settings
<i>arp</i>		Show ARP table
<i>boot-method</i>	manual   dhcp   bootp	Define the network settings at boot-up (*) <i>manual</i> static IP configuration, the device configuration (ref. <i>setip</i> ) is used <i>dhcp</i> network settings retrieved from DHCP server <i>bootp</i> network settings retrieved from BOOTP server
<i>setip</i>	[address] [netmask] [gateway]	Set static IP/mask/default gateway <i>[address]</i> IP-address <i>[netmask]</i> Subnet mask <i>[gateway]</i> Default gateway IP-address <b>NOTE:</b> <i>network settings can be specified manually only when boot-method is set to manual</i>
<i>hostname</i>	[hostname]	Define the full qualified domain name <i>[hostname]</i> Full qualified domain name
<i>dhcphost</i>	on   off	Get the hostname from DHCP server <b>NOTE:</b> <i>This functionality is disabled (off) by default</i>
<i>mii-tool</i>	recheck	As most network devices, SNMP/Web adapters use an auto-negotiation protocol to communicate what media technologies they support, and then select the fastest mutually supported media technology. Running this command shows the negotiated media.
<i>speedduplex</i>	auto   100baseTx-FD   100baseTx-HD   10baseT-FD   10baseT-HD	As most network devices, SNMP/Web adapters use an auto-negotiation protocol to communicate what media technologies they support, and then select the fastest mutually supported media technology. Some passive devices, such as single-speed hubs, are unable to auto-negotiate. To handle such devices, the SNMP/Web adapter can be forced to operate in one mode, instead of auto-negotiating.
<i>menu</i>		Quick network configuration menu Running this command lunches an interactive menu – follow the on-screen instructions

(\*) **NOTE:** Network settings become effective only after a reboot. Therefore, if these settings must be modified, the following actions shall be performed in sequence:

- Update the settings, using the applicable command
- **Save the settings** – *nvsave* command. Always remember that unsaved settings are lost in case of reset / reboot
- Reboot the card – *reboot* command



Setting the *boot-method* to manual has the side effect that *manual-dns* is also set to ON. Mind that the reverse is not true (setting *boot-method* to DHCP does not forced *manual-dns* to OFF). However, if the boot method is set through the quick network configuration menu, setting the *boot-method* to DHCP will also force *manual-dns* to OFF.

Unlike network settings, the DNS settings become immediately active.

### 2.2.3 DNS command group

The *dns* command group allows to configure the setting for hostname address resolution.

Command	Parameters	Description
<i>showdns</i>		Show detailed DNS settings
<i>manual-dns</i>	on   off	Define DNS configuration <i>on</i> Use DNS server address specified manually <i>off</i> Obtain DNS server address automatically
<i>addnssrv</i>	[X.X.X.X]	Add a DNS Server [X.X.X.X] DNS server IP-address <b>NOTE:</b> In order to replace a DNS server address, remove the DNS server first and then add the new one.
<i>deldnssrv</i>	[X.X.X.X]	Delete a DNS Server [X.X.X.X] DNS server IP-address
<i>nslookup</i>	[host] [server]	Test DNS settings address resolution [host] hostname [server] DNS server IP-address (optional) <b>RESULT:</b> Successful Server: [DNS server hostname] Address: [DNS server IP address] Name: [host] Address: [Resolved IP address for the host] Unsuccessful [host]: No address associated with the name Or [host]: Hostname lookup failure

**NOTE:** DNS settings may be critical for the SNMP/Web adapter operation. Incorrect DNS configuration may compromise the functionality of other network services. Therefore make sure the DNS is correctly configured, especially when a manual configuration is selected.

## 2.2.4 User command group

The *user* command group is available **only to the supervisor user**, the only user who can perform user management.

Command	Parameters	Description
<i>supername</i>	[name]	Change supervisor login name <i>[name]</i> New supervisor username <b>NOTE:</b> By default, the superuser is the only configured user with username and password set to <b>ge</b> and <b>ge</b> .
<i>showuser</i>		Show user settings
<i>adduser</i>	[user] [http] [telnet] [ftp] [access]	Add a user <i>[user]</i> username for the new user <i>[telnet]</i> 1 - access allowed / 0 - not allowed <i>[http]</i> 1 - access allowed / 0 - not allowed <i>[ftp]</i> 1 - access allowed / 0 - not allowed <i>[access]</i> 'ro' - read-only / 'rw' - read/write <b>NOTE:</b> After entering the command, the console prompts for the password, which needs to be re-confirmed.
<i>deluser</i>	[name]	Delete a user <i>[name]</i> User to be deleted
<i>moduser</i>	[user] [http] [telnet] [ftp] [access]	Modify services and access rights for a user <i>[user]</i> username for the new user <i>[telnet]</i> 1 - access allowed / 0 - not allowed <i>[http]</i> 1 - access allowed / 0 - not allowed <i>[ftp]</i> 1 - access allowed / 0 - not allowed <i>[access]</i> 'ro' - read-only / 'rw' - read/write

**NOTE:** The indicated services refer to the following access methods:

<b>http</b>	Web interface	Controls access with both HTTP and HTTPS protocols
<b>telnet</b>	Remote console interface	Controls access with both Telnet and SSH (Secure SHell) protocols
<b>ftp</b>	File transfer	Controls access with both FTP and SFTP (Secure FTP) protocols

**NOTE:** Both username and passwords are case sensitive. It is recommended to always use lower case for both.

## 2.2.5 Service command group

The *service* command group allows to enable/disable different services. Note that the local (serial) connection cannot be disabled.

Command	Parameters	Description
<i>http-server</i>	on   off	Enable/disable HTTP server (port:80) <i>on</i> Web server enabled <i>off</i> Web server disabled
<i>https-server</i>	on   off	Enable/disable HTTPS server (port:443) <i>on</i> Secure web server enabled <i>off</i> Secure web server disabled
<i>ssh-server</i>	on   off	Enable/disable SSH encryption (port:22) <i>on</i> SSH encryption enabled <i>off</i> SSH encryption disabled <b>NOTE:</b> <i>SSH encryption enables / disables both SSH (Secure SHell) and SFTP (Secure FTP)</i>
<i>ftp-server</i>	on   off	Enable/disable FTP server (port:21) <i>on</i> FTP server enabled <i>off</i> FTP server disabled
<i>telnet-server</i>	on   off	Enable/disable Telnet server (port:23) <i>on</i> Telnet server enabled <i>off</i> Telnet server disabled
<i>makecert</i>	sitename	Create new digital certificate for the HTTPS server (*) <i>sitename</i> The DNS name / IP address of the adapter
<i>ssh-fingerprint</i>		Show the SSH key fingerprint (*)
<i>ssl-fingerprint</i>		Show the web server digital certificate fingerprint (also known as thumbnail) (*)
<i>ca-fingerprint</i>		Show the digital certificate fingerprint (also known as thumbnail) for the CA Root Certificate (*)
<i>showftp</i>		Show FTP server info and connections
<i>showlogin</i>		Show detailed telnet/ssh login information

(\*) Refer to the *Encryption* section for details.

## 2.2.6 Time command group

The *time* command group allows to enable/disable different services. Note that the local (serial) connection cannot be disabled.

Command	Parameters	Description
<i>showtime</i>		Show all configured time settings
<i>ntponoff</i>	on   off	Enable/disable NTP client <i>on</i> NTP client enabled <i>off</i> NTP client disabled
<i>ntp-server</i>	[hostname]	Define NTP server <i>[hostname]</i> hostname or IP-address of the NTP server <b>NOTE:</b> <i>using hostnames requires DNS connection.</i>
<i>ntpdate</i>		Force clock synchronisation with NTP server
<i>tmzone</i>	(*)	Set the time-zone. <b>NOTE:</b> <i>the time-zone controls both the time difference with respect to GMT and the daylight-saving settings. As the time-zone is specified as a Region/Country pair, selecting the correct time-zone will ensure that the adapter computes the correct time.</i>
<i>settime</i>	MMDDhhmm[[CC]YY][.ss]	Set the date & time <i>MM</i> month <i>DD</i> day <i>hh</i> hour <i>mm</i> minute <i>[CC]YY</i> year <i>ss</i> seconds

(\*) By running the *tmzone* command, an interactive menu is launched – follow the on-screen instructions.

**NOTE:** When using the local serial connection, make sure that the terminal emulation is set to VT-100, otherwise the interactive menu may not be rendered correctly.

## 2.2.7 Smtplib command group

The *smtplib* command group allows to configure the e-mail sending functionality for e-mail notification of UPS events and alarms:

Command	Parameters	Description
<i>showsmtp</i>		Show detailed e-mail settings
<i>email-alert</i>	on   off	Enable/disable email functionality <i>on</i> E-mail alert enabled <i>off</i> E-mail alert disabled
<i>smtp-server</i>	[hostname]	Set SMTP server address <i>[hostname]</i> hostname/IP-address of the SMTP server <b>NOTE:</b> using hostnames requires DNS connection.
<i>email-authen</i>	on   off	Enable/disable authentication for email server <i>on</i> E-mail server requires authentication <i>off</i> E-mail server does not require authentication
<i>email-account</i>	[user]	Set email server account <i>[user]</i> Username for e-mail server authentication
<i>email-passwd</i>	[pwd]	Set email server password <i>[pwd]</i> Password for e-mail server authentication
<i>smtp-sendername</i>	[sender]	Set the 'mail from:' header <i>[sender]</i> E-mail address (63 chars max) <b>NOTE:</b> This may be a critical parameter, as some SMTP servers require a valid sender address within a specified domain. Confirm the exact requirement with your service provider or IT function.
<i>addrcpt</i>	[e-mail]	Add a recipient address <i>[e-mail]</i> E-mail address (63 chars max) <b>NOTE:</b> Maximum 8 recipients can be defined.
<i>delrcpt</i>	[e-mail]	Delete a recipient address <i>[e-mail]</i> E-mail address (63 chars max)
<i>sendemail</i>	[msg]	Send a test mail <i>[msg]</i> Test message to be send

## 2.2.8 Snmp command group

The *snmp* command group allows to configure the SNMP Agent for UPS monitoring via SNMP and trap notification of UPS events and alarms:

Command	Parameters	Description
<i>showsnmp</i>		Show detailed system information
<i>snmpport</i>	[port]	Set SNMP server listening port (*) [port] SNMP port <b>NOTE:</b> Default SNMP port is 161.
<i>snmp-server</i>	on   off	Enable/disable SNMP Agent <i>on</i> SNMP Agent enabled <i>off</i> SNMP Agent disabled
<i>syscontact</i>	[contact] (**)	Set the system contact [contact] contact person <b>NOTE:</b> The <i>syscontact</i> parameter is the identification of the contact person for the managed node.
<i>syslocation</i>	[location] (**)	Set the system location [location] location name <b>NOTE:</b> The <i>syslocation</i> parameter is the identification of the physical location of the managed node.
<i>getcommunity</i>	[community]	Defines the community name for receiving SNMP information (GET). [community] community name <b>NOTE:</b> The <i>get community</i> name controls access to the SNMP Agent – the community in the request must match the <i>getcommunity</i> parameter. The default value is <b>public</b> .
<i>setcommunity</i>	[community]	Defines the community name for writing SNMP information (SET). [community] community name <b>NOTE:</b> The <i>set community</i> name controls access to the SNMP Agent – the community in the request must match the <i>setcommunity</i> parameter. The default value is <b>private</b> .

(\*) Changing the port causes the SNMP Agent to restart. This might have a temporary effect also on trap notification.

(\*\*) Both parameters have a maximum length of 63 chars. If these parameters contain blanks or special characters they shall be specified in between double quotation marks ("...").

## 2.2.9 Trap command group

The *trap* command group allows to configure the trap sending functionality. With SNMP traps various systems can be notified in case of UPS events and alarms.

Command	Parameters	Description
<i>showtrap</i>		Show detailed trap configuration
<i>sendtrap</i>	on   off	Enable/disable send trap [RFC1628] function <i>on</i> Trap sending enabled <i>off</i> Trap sending disabled
<i>sendgetrap</i>	on   off	Enable/disable send trap [GE-MIB] function <i>on</i> Trap sending enabled <i>off</i> Trap sending disabled <b>NOTE:</b> 3-ph version ONLY
<i>addtraptgt</i>	[X.X.X.X] v1   v2 [community] [port]	Add a trap address [X.X.X.X] IP-address of the trap target v1   v2 SNMP version (optional – default: <b>v1</b> ) [community] community name (optional – default: <b>public</b> ) [port] port to which the trap will be sent (optional – default <b>162</b> ) <b>NOTE:</b> Maximum 20 recipients can be defined.
<i>deltraptgt</i>	[X.X.X.X]	Delete a trap address [X.X.X.X] IP-address of the trap target



## 2.2.10 UPS command group

The UPS command group allows monitoring and configuration of the managed UPS system.

Command	Parameters	Description
<i>upsinfo</i>	(*)	Show detailed UPS information
<i>upstest</i>	(*)	Start/Stop UPS tests
<i>upscontrol</i>	(*)	Control the UPS ( <i>1-ph/SP versions ONLY</i> )
<i>upsconfig</i>	(*)	Configure UPS parameters
<i>attacheddevice</i>	[device]	Set UPS attached device [device] Device which is powered/protected by the UPS <b>NOTE:</b> Maximum length 63 chars. If this parameter contain blanks or special characters it shall be specified in between double quotation marks ("...")
<i>alarmdelay</i>	[time]	Set alarm delay time ( <i>1-ph/SP version ONLY</i> ) [time] Time in seconds before alarm notification <b>NOTE:</b> This parameters is factory set to its ideal value and shall not be changed unless instructed to do so
<i>retrydelay</i>	[time]	Set retry delay time ( <i>1-ph/SP version ONLY</i> ) [time] Time in seconds between re-connection attempts <b>NOTE:</b> This parameters is factory set to its ideal value and shall not be changed unless instructed to do so
<i>retrycount</i>	[count]	Set retry count ( <i>1-ph/SP version ONLY</i> ) [count] Number of re-connection attempts <b>NOTE:</b> This parameters is factory set to its ideal value and shall not be changed unless instructed to do so
<i>serialbypass</i>	on   off	Enable/disable the serialbypass functionality <b>NOTE:</b> This command is offered for UPS service access ONLY. It use outside of this scope is not recommended (enabling this functionality stops the UPS monitoring)
<i>cardaddress</i>	[address]	Show/Set card address on the IMV bus [address] Card address in the range 0, 54-57 <b>NOTE:</b> This setting may overrides the HW setting through the dip-switches on the card. Setting this parameter to 0 reverts to the HW settings. This setting becomes active only after reboot (save the settings!)
<i>readonlymode</i>	on   off	Enable/disable write commands to the UPS <b>NOTE:</b> <i>1-ph/SP versions ONLY</i>

(\*) By running these commands, an interactive menu is launched – follow the on-screen instructions. The menu also provide a complete on-line help section.

**NOTE:** When using the local serial connection, make sure that the terminal emulation is set to VT-100, otherwise the interactive menu may not be rendered correctly.

**Caution!** Some of these commands (particularly *upscontrol* and *upsconfig*) may inject commands and/or alter the UPS configuration with consequences on the UPS operation that may affect the load. Make sure you fully understand the effect on the UPS and on the load before injecting any of these commands. Make sure that it is safe to perform the desired operation for both the UPS and the load.

### 2.2.11 Log command group

The *log* command group allows to access the logs maintained by the SNMP/Web adapters.

Command	Parameters	Description
<i>syslog</i>		Dump the System log to the console
<i>upslog</i>		Dump the UPS log to the console (1-ph/SP version ONLY)
<i>logdump</i>		Dump the System and UPS log to the FTP area
<i>clearlog</i>		Clear the UPS event log (1-ph/SP version ONLY)

# 3 WEB INTERFACE

## 3.1 INTRODUCTION

The SNMP/Web adapters provide a web interface by implementing an embedded web server. This interface allows to configure the adapter in order to monitor and manage the UPS.

### 3.1.1 Supported browsers

The use of non-standard / deprecated HTML tags has been avoided in order to guarantee compatibility with the most commonly used browsers. Although the web page rendering may not be identical in different browsers, it should always be visually consistent.

The web interface has been tested using the following browsers:

- Microsoft Internet Explorer 6.0, 7.0
- Mozilla Firefox 1.5
- Opera 9.01
- Netscape browser 8.1

### 3.1.2 Initial web access

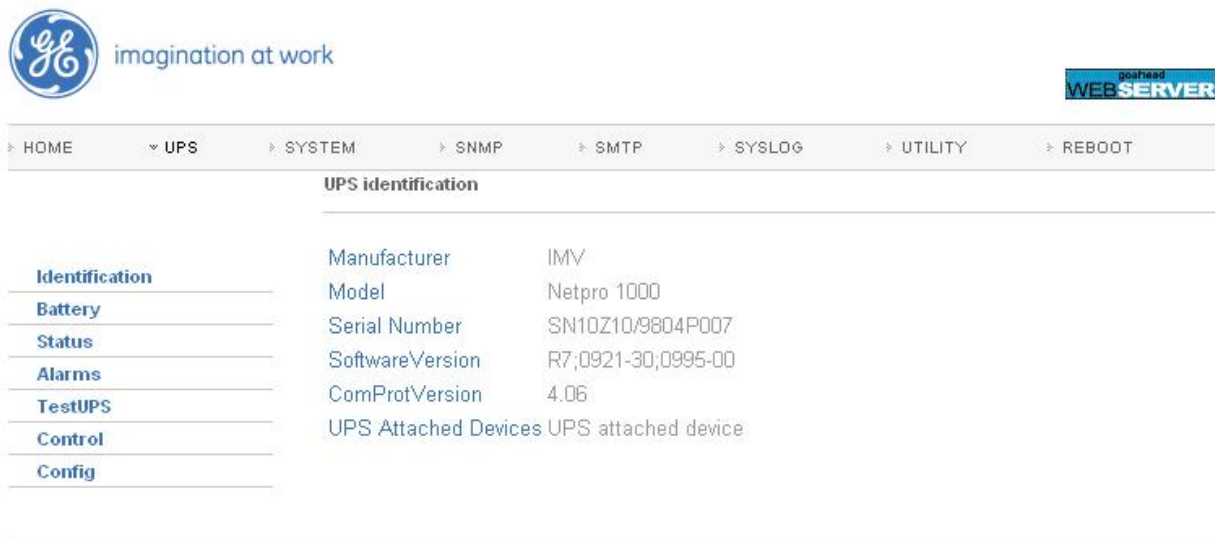
Enter the SNMP/Web adapter address in the web browser URL field to access the web interface. Either the adapter IP address or the hostname can be used (DNS resolution of the hostname must be ensured in the latter case). You will be presented with the web server initial page.

Note that authentication (username / password pair) can be required. The only user configured by default is the supervisor with username /password set to *ge* and *ge*.

In case any problem is encountered during web access refer to the *Troubleshooting* section.

### 3.1.3 Sample page

A sample web page is shown in the following picture:



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Each page features a top navigation bar that directs to the main functionalities of the adapter. Additionally, there can be a side navigation menu that allows accessing different pages dealing with a specific functionality.

### 3.1.4 Saving the settings

Apart from some network parameters, most settings are immediately active. However, the adapter will revert to the last saved settings at reboot. Therefore, in order to permanently modify the SNMP/Web adapter setting, remember to save the configuration after every change.

## 3.2 NAVIGATION BAR

The top navigation bar features the following items:

- *Home*: is the web server home page, showing basic information on the system and the network settings
- *UPS*: access to the UPS section, for UPS monitor, control and configuration
- *System*: adapter configuration (network settings, time management, etc.)
- *SMTP*: configuration and control of the e-mail notification functionality
- *SNMP*: configuration of the SNMP Agent and trap notification
- *Log*: UPS log and System log
- *Utility*: various utility applications (e.g. DNS lookup, media technology selection and verification) and service enable page
- *Save*: save the current settings and/or force a reboot
- *User*: user management

The following paragraphs will detail each single section

## 3.3 UPS SECTION

The UPS pages can be split in two different sections: UPS monitoring and UPS control.

The *Identification*, *Battery*, *Status*, *Alarms* and *PMAD* pages are part of the UPS monitoring section. These pages allow to remotely access the UPS status and measurements. Please note that each specific UPS model may implement a subset of the available measurement – data not available for the specific UPS is marked as *N/A*.

The *Test*, *Control* and *Config* pages are part of the UPS control sections. Once again, the supported command and configuration options depend on the specific UPS model. Unsupported options are marked as *N/A* and cannot be set. It must be stressed that some of the commands will affect the UPS and may cause alarms or UPS malfunction and eventually switch off the UPS (as is the case with the shutdown command).

**Caution!** Make sure you fully understand the effect on the UPS and on the load before injecting any command or altering any configuration parameter.

In a 3-ph parallel UPS system, the SNMP/Web adapter presents the readings from every single UPS and from the overall system.

### 3.3.1 UPS Identification page

The *UPS Identification* page shows the following information:

- UPS Manufacturer
- UPS Model
- Serial Number
- Software Version – the version of the main UPS control board firmware
- Protocol Version – the version of the serial protocol used to communicate with the UPS
- UPS Attached Devices – identification of the devices attached to the UPS output (as set by the administrator).