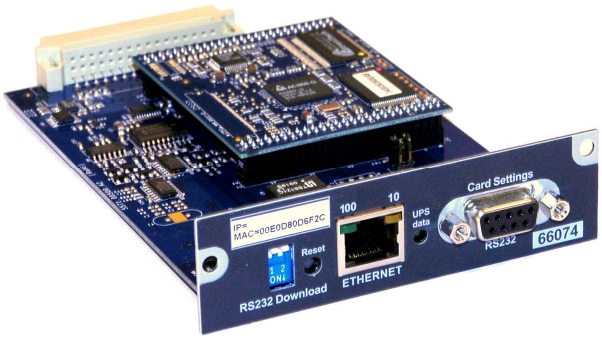
Network Management Card

User Manual



NMC Transverse - 66074

Environment Sensor - 66846

Network Management Card

User Manual

Table of Contents

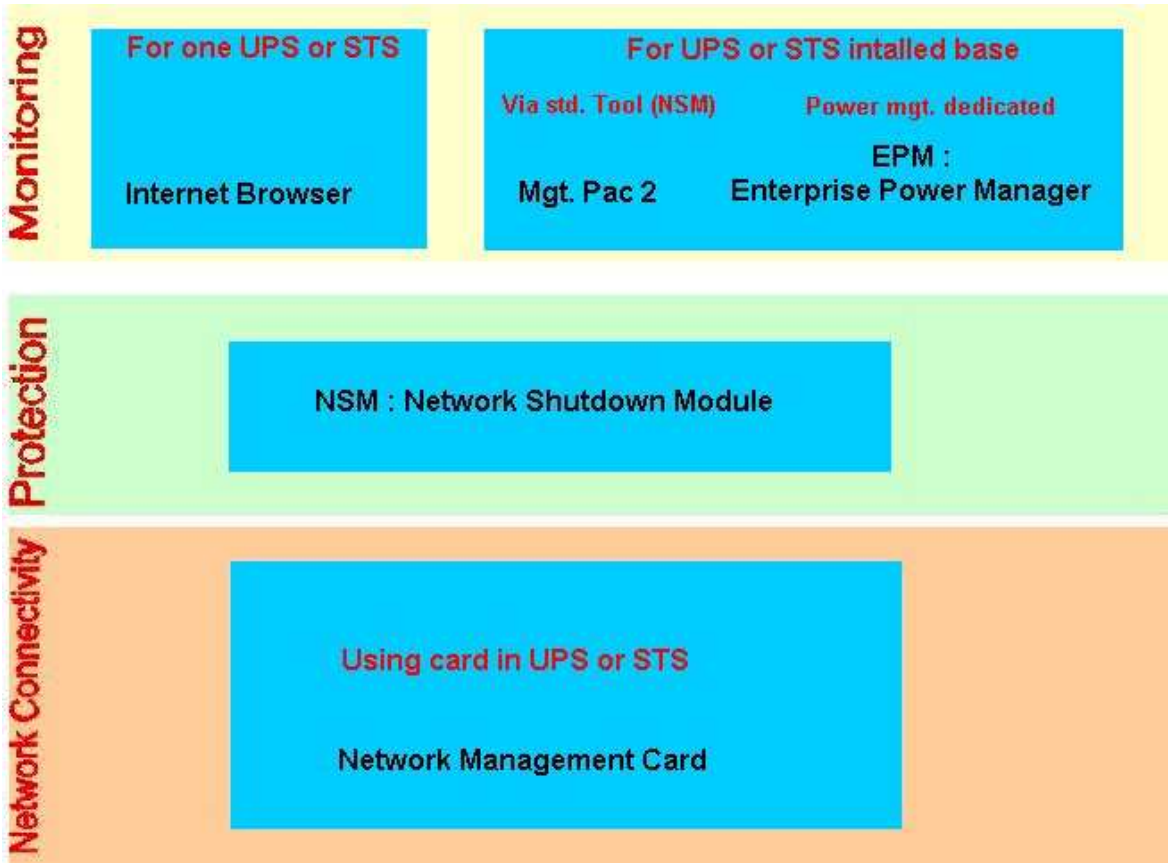
1 MGE Network Solution

1.1 Introduction

- provides information on events concerning the supply of power to the computers connected to your computer network,
- carries out automatic shutdown of computer systems,
- monitors and controls all the UPSs connected to the network.
- monitors all the STS connected to the network,

As illustrated in the picture below, MGE Network Solution provides these 3 main functions:

- **connecting** the UPS / STS to the Network,
- **protecting** the computers powered by UPS,
- **monitoring** the UPSs / STSs over the Network



1.1.1 Connecting the UPS / STS to the Network

This function can be performed either through network Cards inserted in the UPS (**Network Management Card**).

The Network Management Card:

- manages communication with the UPS / STS,

- periodically accesses the information concerning the UPS / STS,
- makes this information available to the connected applications (**Network Shutdown Modules**, Web Browser, Network Management Systems, **Enterprise Power Manager**)

Operation may be in standard secure mode (the default mode) or in SSL secure mode (Secure Socket Layer SSL).

1.1.2 Protecting the computers / servers

This function is performed by the **Network Shutdown Module** installed on each of the servers to be protected. Note that the Shutdown Module is available on several Operating Systems.

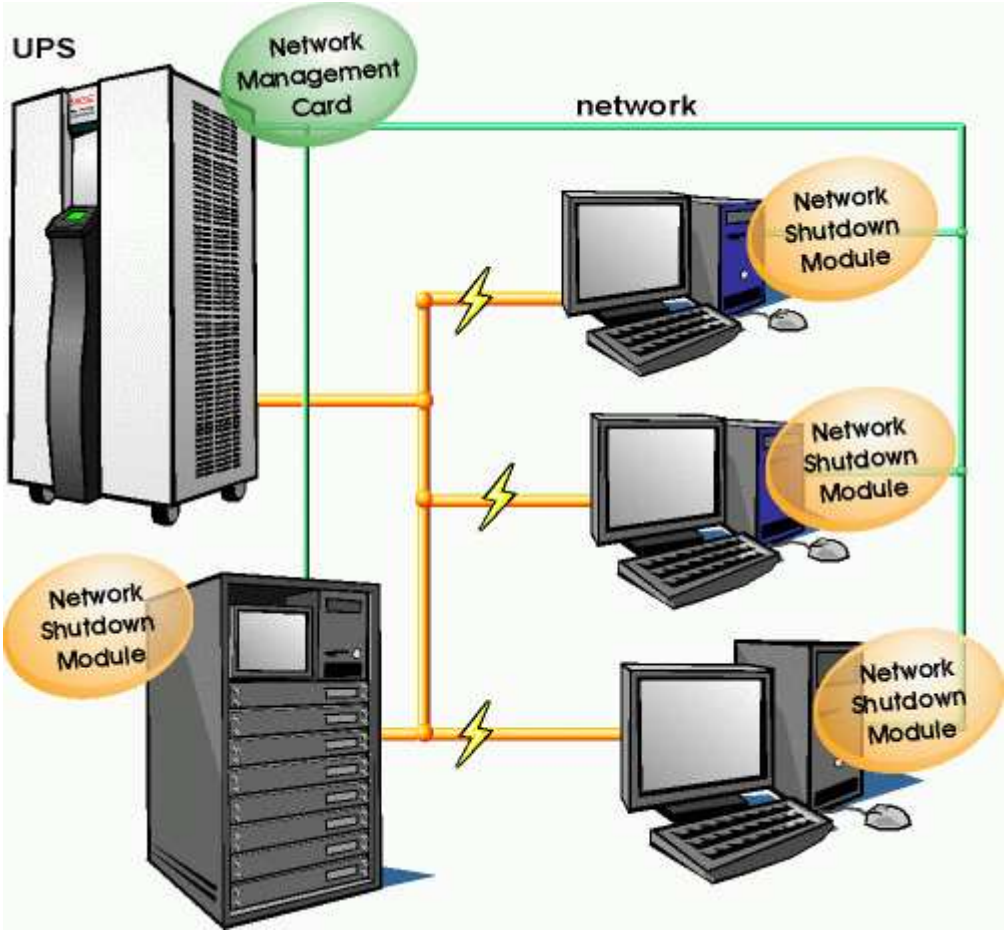
The Network Shutdown module (only available for UPS, not for STS):

- Continuously waits for information from the Network Management Card connected to the MGE UPSs.
- warns administrators and users if AC power fails and proceeds with graceful system shutdown before the end of battery backup power is reached.

1.1.3 Monitoring the UPSs over the network

Depending on your needs, you can either use:

- your Internet browser to monitor each UPS, as Management Card include a Web server.
- your company's standard Network Management System (HP-Openview, CA Unicenter, HP Insight Manager, IBM Tivoli Netview). To simplify integration of MGE UPSs with these NMS, you can use one of the Network Management System Kits for MGE devices. These kits are available on **Management Pac 2** CD-Rom. (ref 66923)
- the MGE supervisor " **Enterprise Power Manager** "



1.1.4 Connection

1.1.4.1 How to connect UPS / network :

- Insert the optional card in the UPS / STS and connect the device to the computer network.
- Start the MGE UPS / STS, then the computers.

1.1.4.2 Setting up the protection, for UPS only

- Set up the Network Management Card (see user manual).
- Install Network Shutdown Module on all machines that are to be protected by the UPS (supplied with UPS battery backup power).

The software components for each platform and the user manuals are supplied free-of-charge on the Solution-Pac 2 CD are available or for download on the www.apc.com Web site.

1.2 Presentation of the Network Management Cards (NMC)

MGE provides one form factors for its **Network Management Cards** :

- **NMC Transverse** for UPS, in UPS slot, like the MGE Galaxy PW, MGE Galaxy PW 1000, MGE Galaxy 3000, MGE Galaxy 4000 US, MGE Galaxy 5000, MGE Galaxy 5000 US
- **NMC Transverse** for UPS, *using the* ***Network Management Link,*** like the Comet 3000, Comet S31, MGE Galaxy 6000, MGE Galaxy 9000, EPS 6000 US, EPS 7000 US, EPS 8000 US
- **NMC Transverse** for STS, in STS slot, like the MGE Epsilon STS and MGE Upsilon STS

.

The Network Management Cards acquire information on the operation status of the UPS / STS systems and provide remote control of these systems by means of an ETHERNET network from any SNMP administration station or Web browser. They also supply alarms to the Network Shutdown Modules to trigger shutdown or other automatic actions for protected servers.

A simple html browser is used for supervision and configuration.
Network Management Cards are compatible with :

- Network Shutdown Modules
- Entreprise Power Manager
- Management-Pac 2 ?
- ISXC

1.3 Presentation of the Environment Sensor solution

The Environment Sensor solution comprises a box to be connected to the **Card Settings** port of the Network Management Cards:

Environment Sensor enables measurement of temperature and humidity around the UPS, consideration of external alarms via 2 dry contacts and notification of alarms according to pre-programmed thresholds.

1.4 Direct sending of E-mail

When a UPS / STS event occurs, the Network Management Card can directly notify up to 4 intranet or extranet addressees by e-mail (see Email Notification and Email Message Settings).

1.5 Sending text messages (SMS)

SMS messages can be sent by specific configuration of the e-mail function via the internet access providers making the e-mail / SMS transfer.

1.6 Compatibility with the Network Management Systems (NMS) – Trap sending

The Network Management Cards are compatible with the major Network Management Systems (IBM Tivoli, CA Unicenter, HP Insight Manager ..),. The Management-Pac 2 offering includes the necessary SNMP plug-in to allow an easy integration in the NMS. Events are notified by SNMP trap

- NMS can subscribe on page "Notified Application"
- SNMP sequences are described in chapter "Server protection"

The trap list can be looked over in the document "Agent's MIB description" available on apc.com.

1.7 Technical data

1.7.1 Configuration

The user can configure the card with one of the following means:

- Web browser
- Local serial link
- Telnet console
- BOOTP/DHCP
- Mupgrade

1.7.2 Administration

- Up to 50 workstations protected
- Up to 15 browsers connected at the same time
- E-mail sending configurable according to UPS alarms and transmission of a periodical report
- Measurement of temperature and humidity, adjustable thresholds, possibility of sending e-mails and shutting down the installation
- Control of UPS on/off switching via the HTML interface
- Adjustment and control Power via the HTML interface, sequential starting of the installation and optimisation of backup time by shutting down non-priority systems
- Adjustment of date and time via NTP server - Daylight Saving Time management
- Protection by encrypted password.
- Protection by secured connection SSL and SSH
- Saving of logs in the non-volatile memory
- Automatic language detection according to browser configuration.
- Languages available: English / French / Spanish / German / Italian
- On-line help available for each page
- Card firmware updated via the network
- Card configuration deployment on your installed base through network utility (Mupgrade)

1.7.3 Network

- Fast ETHERNET 10/100 Mbits compatibility with auto-negotiation on the RJ45 outlet
- SNMP trap port modifiable (by default = 162)

1.7.4 MIB (Management Information Base)

- MIB IETF UPS (RFC1628) for UPS
- MIB MGE V1.7 AD, for UPS
- MIB MGE V2.2 AA, for STS

1.7.5 Environment sensor

- Temperature measurement from 0 to 70 ℃ with +/- 1° C accuracy
- Measurement of humidity from 0 to 100 % with +/- 6 % accuracy
- Min / max time-stamped function for temperature and humidity
- Choice of temperature readings in Celsius or Fahrenheit
- High and low thresholds, hysteresis and offset adjustable via Web interface

- Possibility of notification of status changes by e-mail, SMS or SNMP traps
- Position detection of 2 dry contacts (maximum sensor/contact distance: 20 m)
- Name and status of each configurable contact
- Recording of events and measurements in the card log
- Possibility of shutting down the installation in the event of a threshold being exceeded or on opening / closure of a dry contact
- Connection to the card with straight CAT5 RJ45 network cables (maximum card/sensor distance: 20 m)

2 Installation and Configuration

For the following sections, read the installation manual supplied with the card or available for download on the www.apc.com web site in the "Download area" section .

2.1 Installation

2.1.1 Installing the card in the UPS / STS

2.1.2 Connecting the card to the IT network

2.1.3 Understanding front panel signals

2.2 Basic configuration

2.2.1 List of default parameters

2.2.2 Adjusting the network parameters

2.2.3 Rebooting the card

2.2.4 Restoring factory configuration

2.2.5 Lost password – restoring the default password

2.2.6 Checking that the card is working

2.3 Environment Sensor

Read the installation manual supplied with the box.

3 Supervision / Administration via a Web browser

A JVM (Java Virtual Machine) is required to ensure correct display of information in HTML pages.

- On a computer equipped with a Web browser (Internet Explorer or Netscape recommended), enter the address initialised previously in the Installation chapter (e.g.: http://213.30.17.30.)
- The “UPS properties” or “STS properties” home page is displayed.

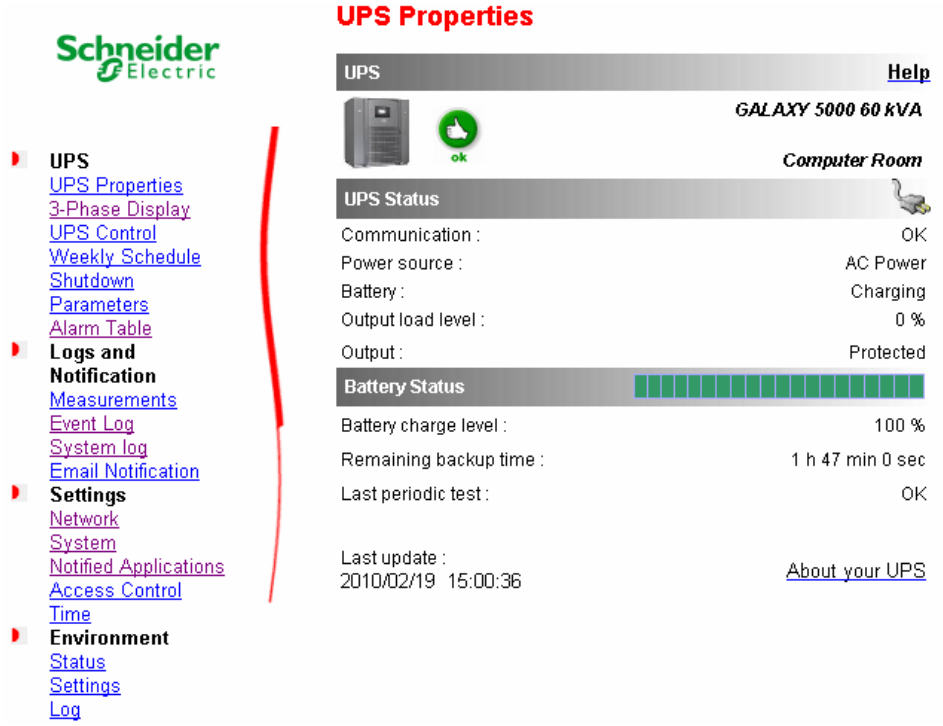
3.1 Optimising the performance of your browser

- To view status changes on the UPS in real time, the browser must be configured so that it automatically refreshes all the objects on the current page.
  Example on IE : **Tools / Internet Options / General / Parameters menu,** tick **Every time this page is visited** and validate.

3.2 UPS / STS

3.2.1 "UPS properties" page

- This page gives instant access to the essential information about your UPS.
  This page is automatically refreshed every 10 seconds (by default).
  To change this value, go to the "System" page.



3.2.1.1 UPS zone: general information on the UPS.

Indication of the picture and generic name of the UPS range

Computer room: Customised name of your system corresponding to the "upsIdentName" object of the UPS MIB (RFC 1628)
You can change this name on the "System" page.

• 	• Normal operation
• 	• Alarm present. This icon links directly to the alarm page

3.2.1.2 "UPS status" zone: essential information

- The various icons showing the status of the UPS are:

• 	• Battery operation
• 	• Load powered by main AC
• 	• Loss of communication with the UPS
• 	• Battery fault

"Communication": indicates the status of the communication between the card and the UPS
"Power source": indicates whether the power comes from the utility or from the UPS battery
"Batteries": indicates whether the battery is being charged or discharged
"Output load level": indicates the power percentage used at UPS output
"Output": indicates if the UPS output is protected, Powered or not Powered

3.2.1.3 "Battery status" zone:

- **"Bargraph":** Graph showing the remaining battery charge (in percent).
- **"Battery charge level"**: Remaining battery charge (in percent).
- **"Remaining backup time"**: Estimation of the maximum backup time remaining before UPS shutdown.

  This time can be modified by the adjustments on the "Shutdown parameters" page
- **"Last periodical test":** Result of the last automatic battery test carried out by the UPS

  Possible values are:

  - **OK**: the test was completed correctly

  – **NOK**: the battery needs to be checked

  – **Deactivated**: the automatic battery test is not validated on the UPS

3.2.2 "STS properties" page

- This page gives instant access to the essential information about your STS.
  This page is automatically refreshed every 10 seconds (by default).
  To change this value, go to the "System" page.

3.2.2.1 STS zone: general information on the STS.

Indication of the picture and generic name of the UPS range

Computer room: Customised name of your system corresponding to the "upsIdentName" object of the UPS MIB (RFC 1628)
You can change this name on the "System" page.

• 	• Normal operation
• 	• Alarm present. This icon links directly to the alarm page

3.2.2.2 "STS status" zone: essential information

- The various icons showing the status of the UPS are:

• 	• Loss of communication with the STS

"Communication": indicates the status of the communication between the card and the STS
"Output": indicates whether the output is or not powered
"Output load level": indicates the power percentage used at STS output
"Transfer": indicates if it is possible to switch from one used source to the other.

3.2.2.3 "Sources status" zone:

- **"Active source"**: indicate which source is currently used.

  Possible values are:

  - **1**: for source 1

  - **2** : for source 2

  – **Unknow** : if value unknown (intialization, lost of communication)

- **"Prefered source":** indicate which source is used, if none source is faulty

  Possible values are:

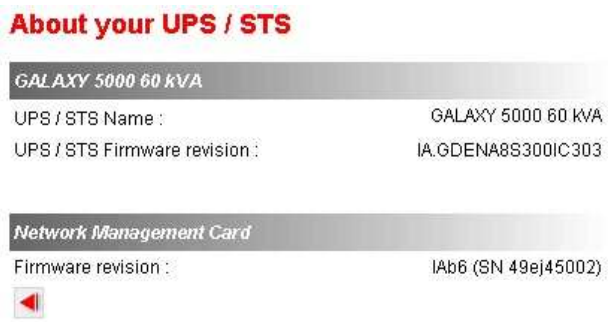
  - **1**: for source 1

  - **2** : for source 2

  – **Unknow** : if value unknown (intialization, lost of communication)

3.2.3 About

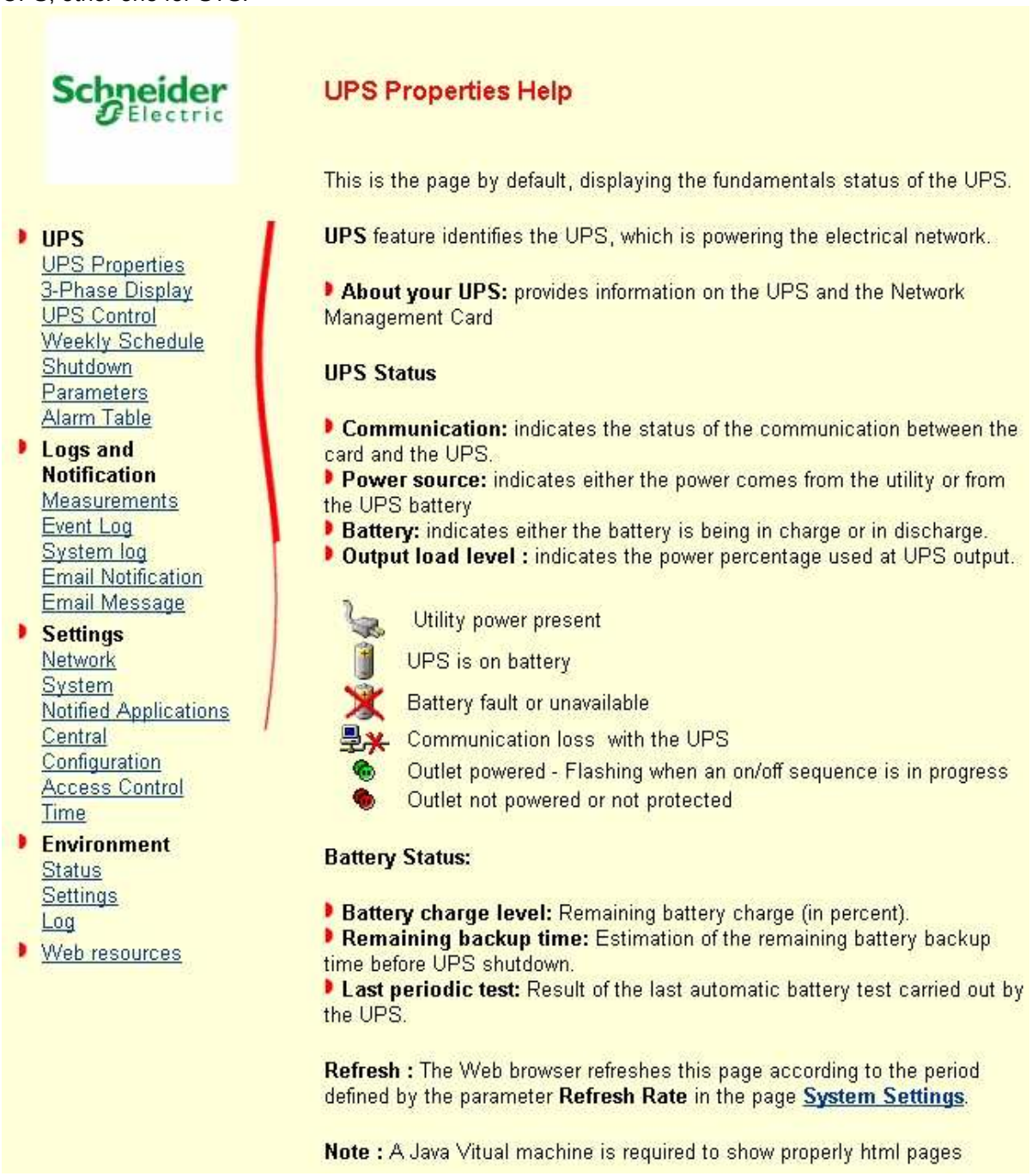
The "**About your UPS**" or "**About your STS**" zone provides information on the UPS / STS, in particular, the name range and software version. Are also available, the current NMC firmware release.

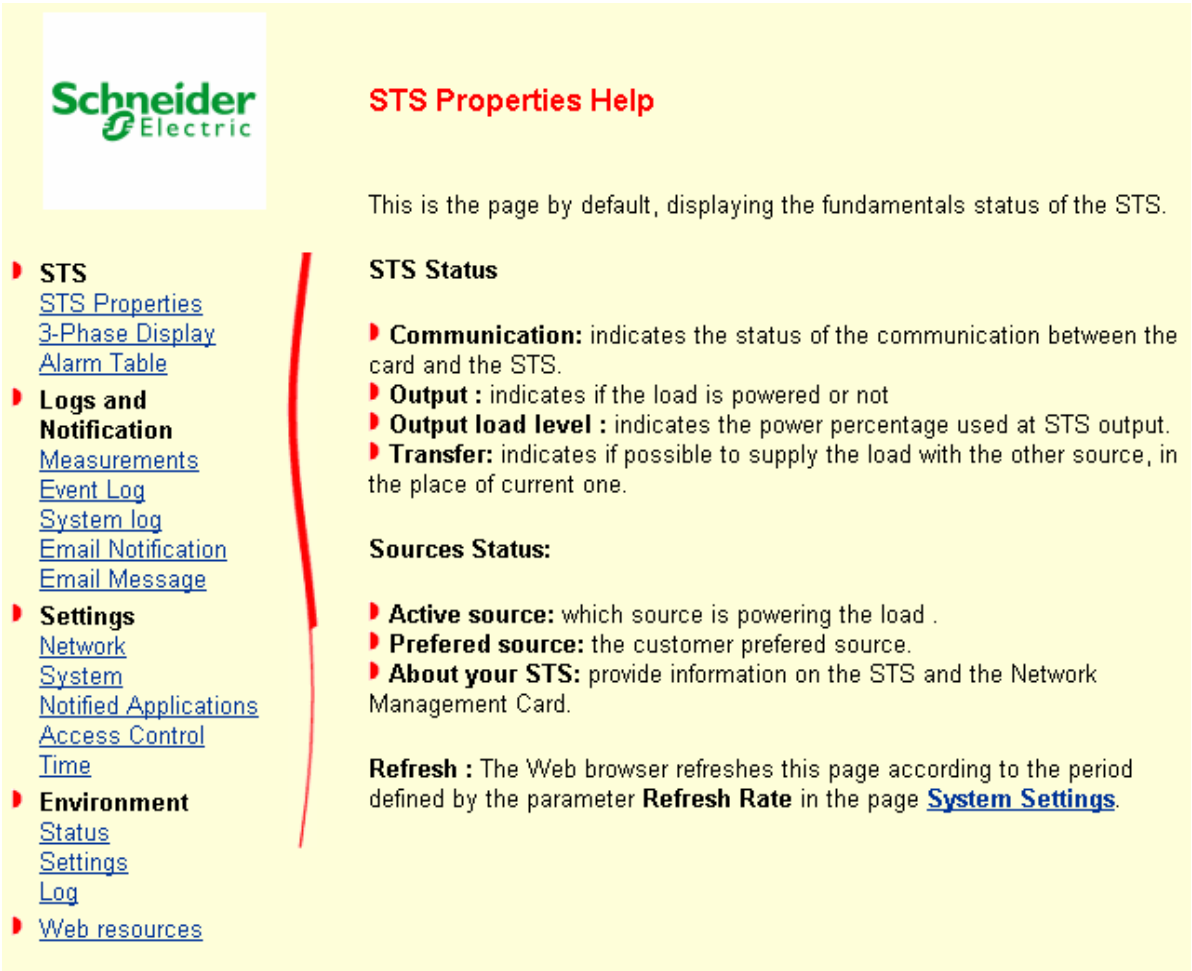


3.2.4 On-line help

On-line contextual help in English is available at the top of each page by clicking on the ***Help*** link, which is always located on the top right corner.

The Help page always opens a new window. There is two help pages, dedicated to the device : one help for UPS, other one for STS.




Schneider Electric
STS Properties Help
This is the page by default, displaying the fundamentals status of the STS.
STS
STS Properties
3-Phase Display
Alarm Table
Logs and Notification
Measurements
Event Log
System log
Email Notification
Email Message
Settings
Network
System
Notified Applications
Access Control
Time
Environment
Status
Settings
Log
Web resources
STS Status
Communication: indicates the status of the communication between the card and the STS.
Output : indicates if the load is powered or not
Output load level : indicates the power percentage used at STS output.
Transfer: indicates if possible to supply the load with the other source, in the place of current one.
Sources Status:
Active source: which source is powering the load .
Prefered source: the customer prefered source.
About your STS: provide information on the STS and the Network Management Card.
Refresh : The Web browser refreshes this page according to the period defined by the parameter Refresh Rate in the page System Settings.

3.2.5 UPS 3-Phase display

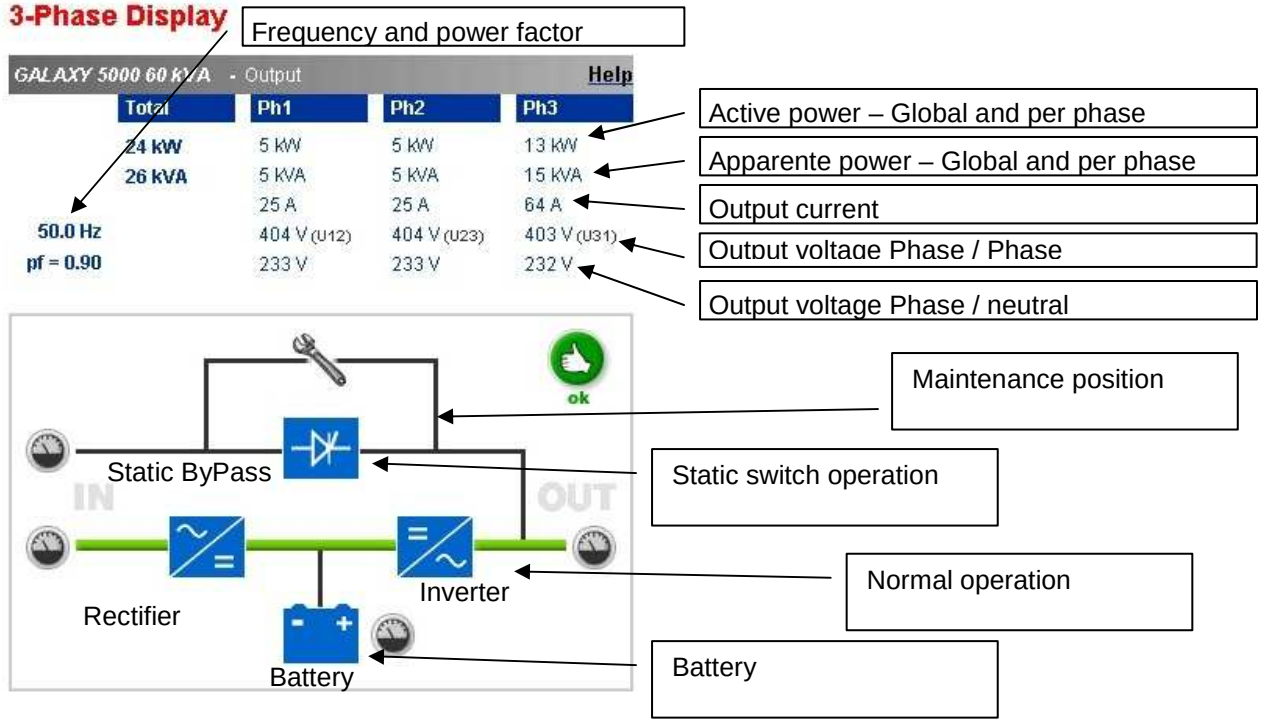
Click ***3-phase display*** to access to the detailed monitoring page
This item is added to the menu for all single UPSs having a three-phase output.

The link on the gauge symbols gives access to the measurement page related to the function.

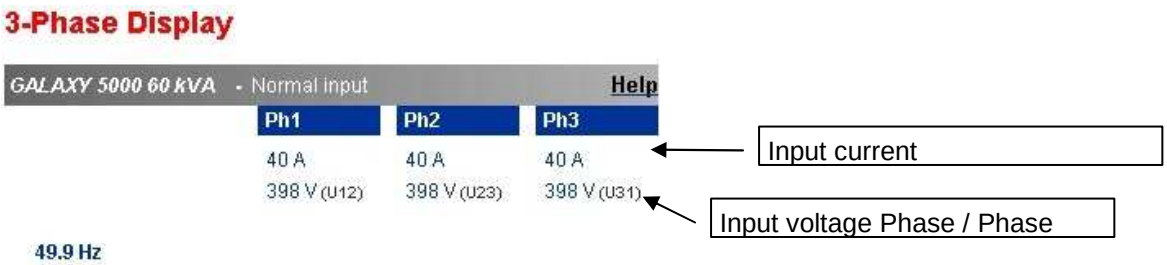
Function symbols are outlined in red when an alarm is present.

The red triangle, linked to the alarm page, appears when an alarm is present, otherwise a green symbol is displayed.

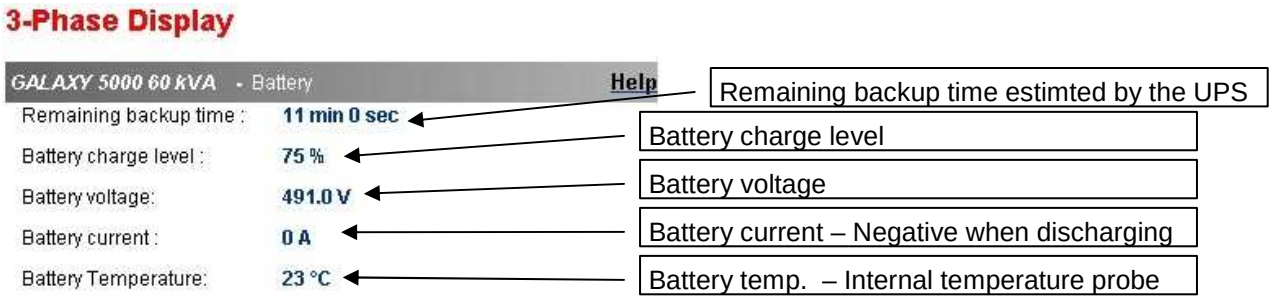
This page is automatically refreshed every 10 seconds (by default).
To change this value, go to the "System" page.



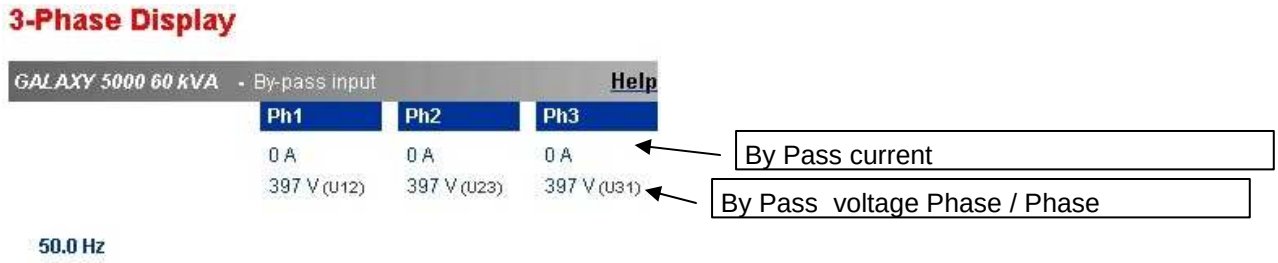
3.2.5.1 Normal input measurements



3.2.5.2 Battery measurements



3.2.5.3 By Pass measurements



3.2.6 STS 3-Phase display

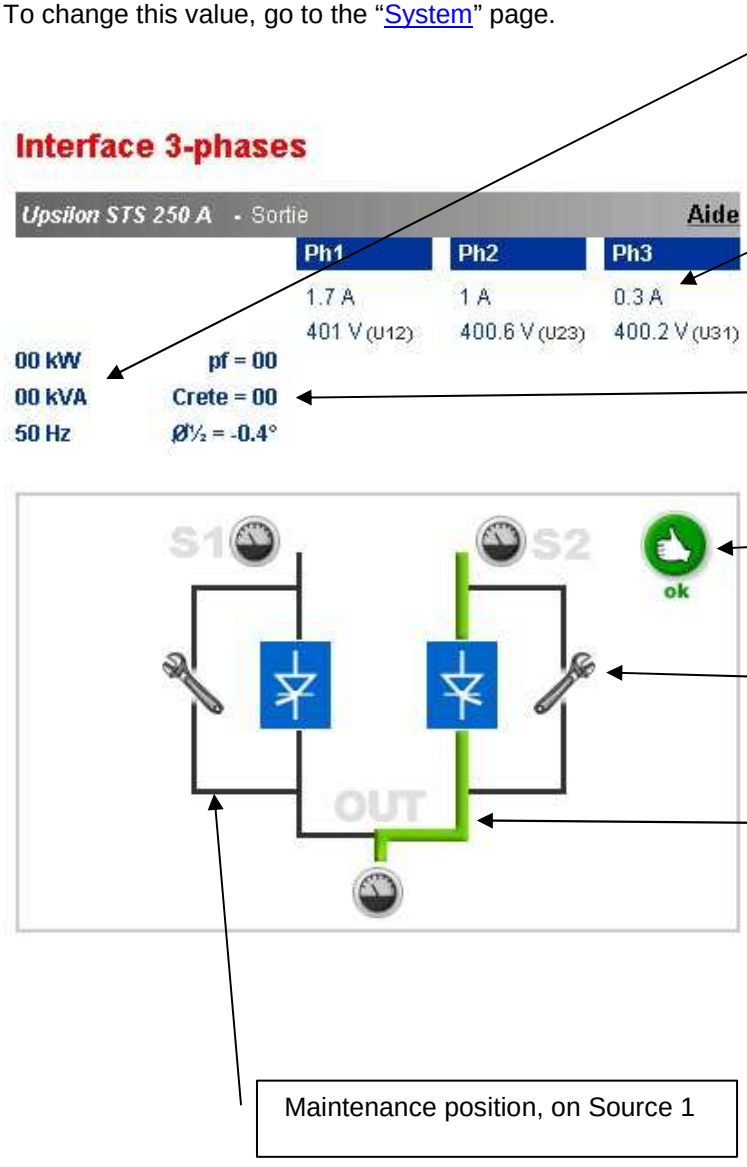
Click ***3-phase display*** to access to the detailed monitoring page
This item is added to the menu for all single UPSs having a three-phase output.

The link on the gauge symbols gives access to the measurement page related to the function.

Function symbols are outlined in red when an alarm is present.

The red triangle, linked to the alarm page, appears when an alarm is present, otherwise a green symbol is displayed.

This page is automatically refreshed every 10 seconds (by default).
To change this value, go to the "System" page.



Output active power
Output apparent power
Output frequency

Output current

Output voltage Phase / Phase

Output power factor
Output crest factor
Source1 source2 dephasement

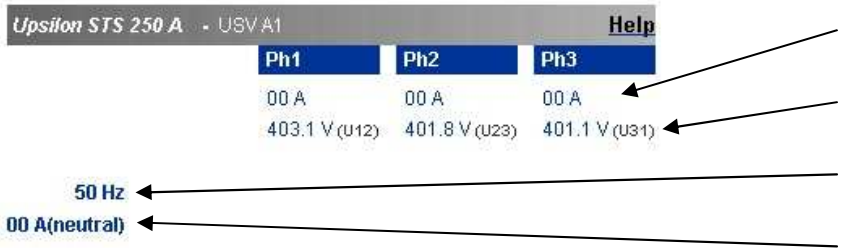
No Alarm – STS OK

Maintenance position, on Source 2

Normal position, on Source 2

Maintenance position, on Source 1

3.2.6.1 Source 2 input measurement



Source 1 current
Source 1 voltage Phase / Phase
Source 1 frequency
Source 1 neutral current (if wiring 3 phases + neutral)

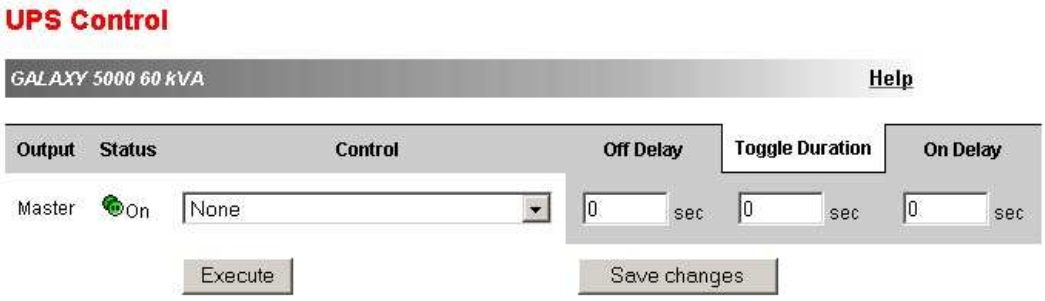
3.2.6.2 Source 2 input measurement

Source 2 current
Source 2 voltage Phase / Phase
Source 2 frequency
Source 2 neutral current (if wiring 3 phases + neutral)

3.2.7 UPS Control

Click on the ***"UPS Control"*** section in the menu.

If the UPS is not compatible with this function, a warning message is sent to the user.
UPS configuration may also prevent the commands from being properly run. Read the UPS manual for more information.



This page enables triggering of startup and shutdown sequences for the UPS main output
The status of output is displayed by a symbol associated with the **Off** label (red symbol) or **Powered** (green symbol).

- The shutdown sequences take into account the time required for the registered servers to shut down without losing data (see shutdown parameters). Once the sequence has started, the commands are disabled until it ends.
- After a startup sequence, the commands are disabled for 120 seconds to enable the servers to fully restart

The Check column proposes six different commands, and a command is only actually started after clicking on **'Execute'**:

“Safe power down”: a sequence to switch off output power is launched immediately. The symbol representing the output flashes, indicating that the sequence is in progress. The systems supplied are shut down correctly while the shutdown sequence is running, then the output is cut.

“Safe power down & reboot”: A sequence to switch off then restore output power is launched immediately. The symbol representing the output flashes, indicating that the shutdown sequence is in progress. The powered systems are shut down correctly during the shutdown sequence, then the output is switched off. Finally, the restart sequence is launched at the end of the time delay specified in the **“Toggle duration”** parameter. The output status is updated.

“**Immediate On”:** a sequence to switch on output power is launched immediately. The output is re-powered and the systems supplied start up again correctly.

“**Delayed, safe power down”:** this is the same switch off sequence as for the “ **Safe power down** ” command, but postponed by the number of seconds programmed in the “**Off Delay**” parameter.

“**Delayed, safe power down & reboot:”** this is the same switch off then on sequence as for the **Safe power down & reboot** ” command, but postponed by the number of seconds programmed in the “ **Off Delay** ” parameter.

“**Delayed On ”:** this is the same switch on sequence as for the “ **Immediate On** ” command, but postponed by the number of seconds programmed in the “ **On Delay** ” parameter.

The **Save** button saves the **Off Delay**, **Toggle duration** and **On Delay** parameters on the card .

Security: The administrator must click on **Save** and enter his login / password to save modifications or run commands. The login and password by default are**: MGEUPS.**

3.2.8 UPS weekly schedule programming

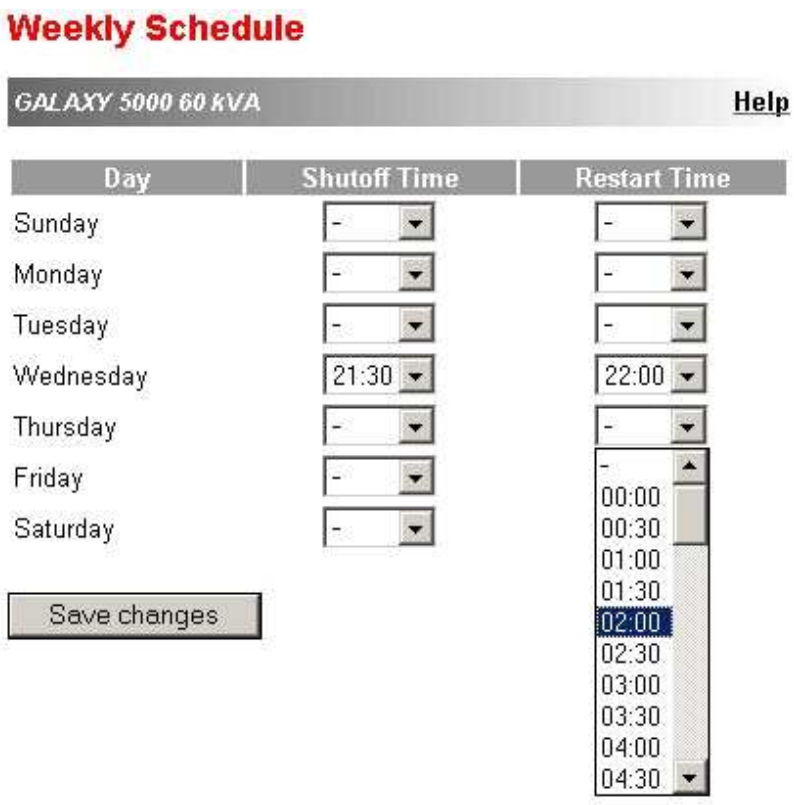
Click on the ***"Weekly schedule"*** section of the menu.

If the UPS is not compatible with this function, a warning message is sent to the user.
UPS configuration may also prevent the commands from being properly run. Read the UPS manual for more information.

The weekly schedule enables the administrator to optimise power consumption or program a reboot of the protected equipment at a set time.

In a shutdown sequence, the **Network Shutdown Modules** connected to the card are informed and ensure that each machine is shut down correctly before the UPS output is switched off (dependant of the UPS settings and UPS type).
Up to 7 UPS shutdown sequences (dependant of the UPS settings and UPS type) can be programmed in one week, with a minimum shutdown delay of 30 minutes.

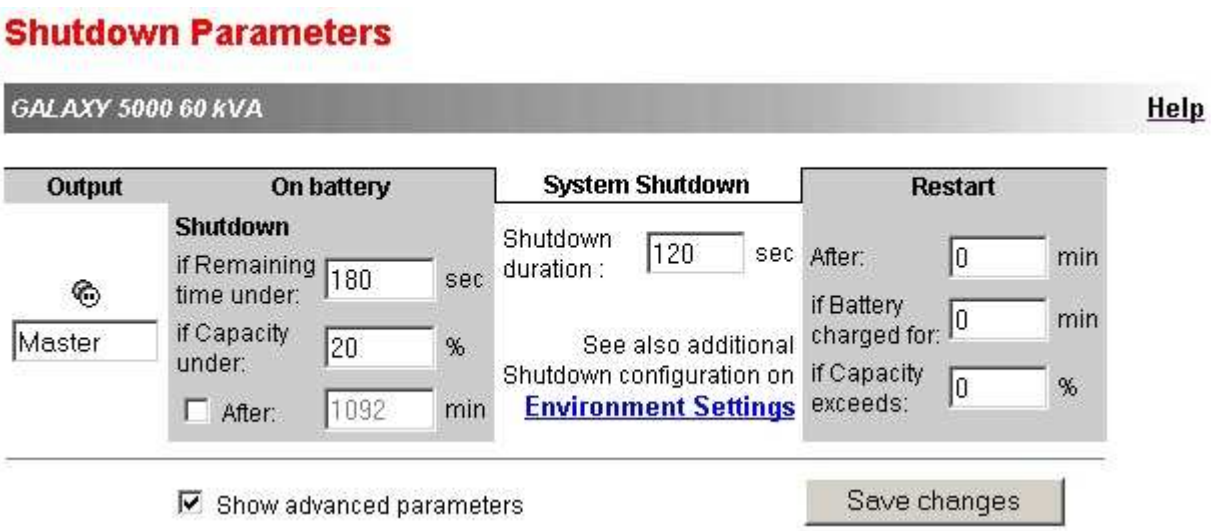
Security: the administrator clicks on **"*Save"*** and enters his/her login / password to save any edits. The login and password by default are**: MGEUPS.**



3.2.9 Shutdown parameters

- Click on the "**Shutdown parameters**" section in the menu to see the list of parameters.

Important note:
For installations that do not use **Network Shutdown Module** (backup units, routers and other internetworking equipment, automated systems, etc.) or in the event of long backup periods, the card will send a command to the UPS (dependant of the UPS settings and UPS type) to shut off end of the programmed **Shutdown After** time. To prevent this, the **Shutdown After** box must be not selected (default)



This page enables viewing and configuration of UPS operation parameters in battery mode and for power restoration.

When you tick the **Show advanced parameters** option, extra parameters are displayed. These parameters enable, in particular, adjustment of certain thresholds related to the percentage of remaining battery charge level.

The **Output** column enables each output to be named (maximum 30 characters).
Note

For the output

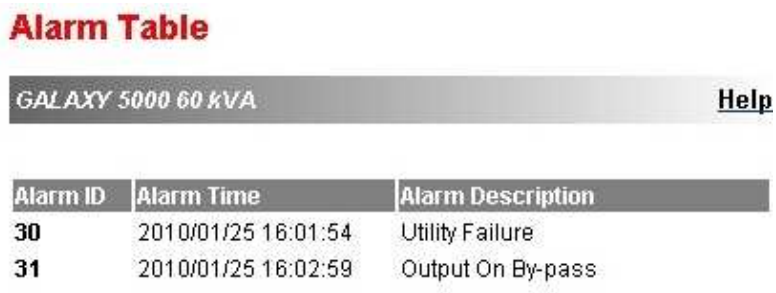
- **Shutdown after** is the operating time in minutes left for users after a switch to backup before starting the shutdown sequences of the UPS and its equipment (from 0 to 1092).
- **If remaining time under** (from 0 to 9999 seconds) and **If Capacity under** (from 0 to 100%) are two extra conditions for remaining backup time and battery level that can trigger shutdown sequences before the "**Shutdown after**" period runs out
- **Shutdown duration** is the time required for complete shutdown of systems when a switch to backup time is long enough to trigger the shutdown sequences. It is calculated automatically at the maximum of Shutdown duration of subscribed clients but can be modified in the Advanced mode
- **Restart after** is the minimum shutdown time before restarting the UPS after a shutdown sequence. It is thus possible to limit repeated restarts that may be due to several successive utility failures.
- **If the Battery is charged for** and **If Capacity exceeds** are two extra conditions for minimum battery level and maximum recharge time to be reached before restarting the UPS after utility restoration

Security: The administrator has to click on **Save** and enter his login/password to save any modifications. The default login and password are**: MGEUPS**

3.2.10 Viewing the alarms

- Click on the ***"Alarm table"*** section in the menu to view the list of current alarms. The table of managed alarms is included in the appendix.

Note: The alarm number is not related to the SNMP trap number



3.3 Logs

3.3.1 UPS Measurements

Click on the ***"Measurements"*** section in the menu*.*

The following measurements are saved and time-stamped:

- **"Input voltage"**: Value of the utility voltage supplying your UPS (average of 3 phases for UPS' equipped with a 3-phase input)
- **"Input frequency"**: Value of the utility frequency feeding your UPS
- **"Output voltage":** Value of the output voltage of your UPS (average of the 3 phases for UPS' with a 3-phase output)
- **"Output load"**: Value of the percentage of load at UPS output (Value of the most loaded phase for 3-phase UPS')
- **" Output current Ph x":** Value of the output current for each phase on three-phase UPSs
- **"Battery capacity":** Percentage of charge available in the battery
- **"Remaining time"**: Estimation of the remaining backup time
- The save frequency of these values is defined in the ***"System"*** page (60 seconds by default). Approximately 1000 time-stamps are stored permanently on the card. The oldest time-stamps are automatically deleted.
- **"Save"** enables all saved values to be opened or saved in CSV format (compatible with Excel type spreadsheets)

"Clear" enables deletion of all records. The administrator must enter his login / password to validate this action if he has not already done so during the current session.

Select the time range to view

GALAXY 5000 60 kVA

Log Date (yyyy/mm/dd)	Log Time (hh:mm:ss)	Input Voltage (Volt)	Input Frequency (Hertz)	Output Voltage (Volt)	Output Load (%)	Output Current Ph1(A)	Output Current Ph2(A)	Output Current Ph3(A)	Battery Capacity (%)	Remaining Time (min)
2010/01/22	15:00:00	402	50	404	0	0	0	0	75	72
2010/01/22	15:01:00	402	50	404	0	0	0	0	75	72
2010/01/22	15:02:00	403	50	403	0	0	0	0	75	72
2010/01/22	15:03:00	402	50	404	0	0	0	0	75	72
2010/01/22	15:04:00	403	50	404	0	0	0	0	75	72
2010/01/22	15:05:00	401	50	403	0	0	0	0	75	72
2010/01/22	15:06:00	402	50	404	0	0	0	0	75	72
2010/01/22	15:07:00	399	49	404	0	0	0	0	75	72
2010/01/22	15:08:00	399	50	404	44	25	25	64	75	11
2010/01/22	15:09:00	398	50	403	44	25	25	64	75	11
2010/01/22	15:10:00	401	49	404	44	25	25	64	75	11
2010/01/22	15:11:00	402	50	404	44	25	25	64	75	11

3.3.2 STS Measurements

Click on the ***"Measurements"*** section in the menu***.***

The following measurements are saved and time-stamped:

- **"Source 1 voltage"**: Value of the utility voltage supplying your STS (value of the first phase)
- **"Source 1 frequency"**: Value of the utility frequency feeding your STS
- **"Source 2 voltage"**: Value of the utility voltage supplying your STS (value of the first phase)
- **"Source 2 frequency"**: Value of the utility frequency feeding your STS
- **"Output voltage":** Value of the output voltage of your STS (value of the first phase)
- **"Output load"**: Value of the percentage of load at STS output (value of loaded for the 3-phase)
- **" Output current Ph x":** Value of the output current for each phase on three-phase STSs
- The save frequency of these values is defined in the ***"System"*** page (60 seconds by default). Approximately 1000 time-stamps are stored permanently on the card. The oldest time-stamps are automatically deleted.

- **"Save"** enables all saved values to be opened or saved in CSV format (compatible with Excel type spreadsheets)

"Clear" enables deletion of all records. The administrator must enter his login / password to validate this action if he has not already done so during the current session.

Measurements index page

Select the time range to view

Measurements

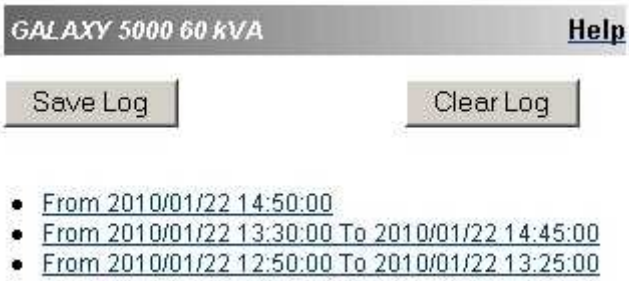
Upsilon STS 250 A

Log Date (yyyy/mm/dd)	Log Time (hh:mm:ss)	Source 1 voltage (Volt)	Source 1 frequency (Hertz)	Source 2 voltage (Volt)	Source 2 frequency (Hertz)	Output Voltage (Volt)	Output Load (%)	Output Current Ph1(A)	Output Current Ph2(A)	Output Current Ph3(A)
2010/02/08	14:30:00	400	49	404	50	404	0	1	0	0
2010/02/08	14:31:00	403	49	404	49	404	0	1	0	0
2010/02/08	14:32:00	400	49	404	49	404	0	1	1	0
2010/02/08	14:33:00	401	50	404	49	404	0	1	0	0
2010/02/08	14:34:00	402	50	404	49	404	0	1	0	0
2010/02/08	14:35:00	401	49	404	49	404	0	1	0	0
2010/02/08	14:36:00	400	49	405	49	405	0	1	0	0
2010/02/08	14:37:00	402	49	406	49	406	0	1	0	0
2010/02/08	14:38:00	401	50	405	49	405	0	1	0	0
2010/02/08	14:39:00	401	50	406	50	406	0	1	1	0

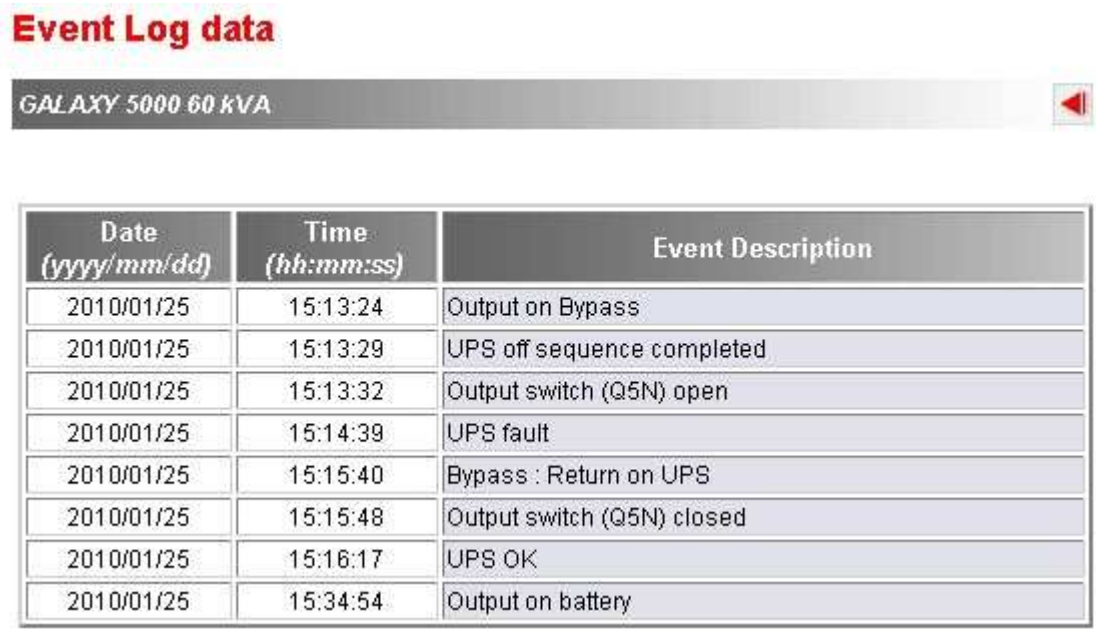
3.3.3 UPS Event log

Click in the ***"Event log"*** section of the menu.

- **"Save Log"** enables all values saved to be opened or saved in CSV format (compatible with Excel type spreadsheets).
- **"Clear Log"** enables deletion of all records. The administrator must enter his/her login / password to validate this action.



Select the time range to view:



Date (yyyy/mm/dd)	Time (hh:mm:ss)	Event Description
2010/01/25	15:13:24	Output on Bypass
2010/01/25	15:13:29	UPS off sequence completed
2010/01/25	15:13:32	Output switch (Q5N) open
2010/01/25	15:14:39	UPS fault
2010/01/25	15:15:40	Bypass : Return on UPS
2010/01/25	15:15:48	Output switch (Q5N) closed
2010/01/25	15:16:17	UPS OK
2010/01/25	15:34:54	Output on battery

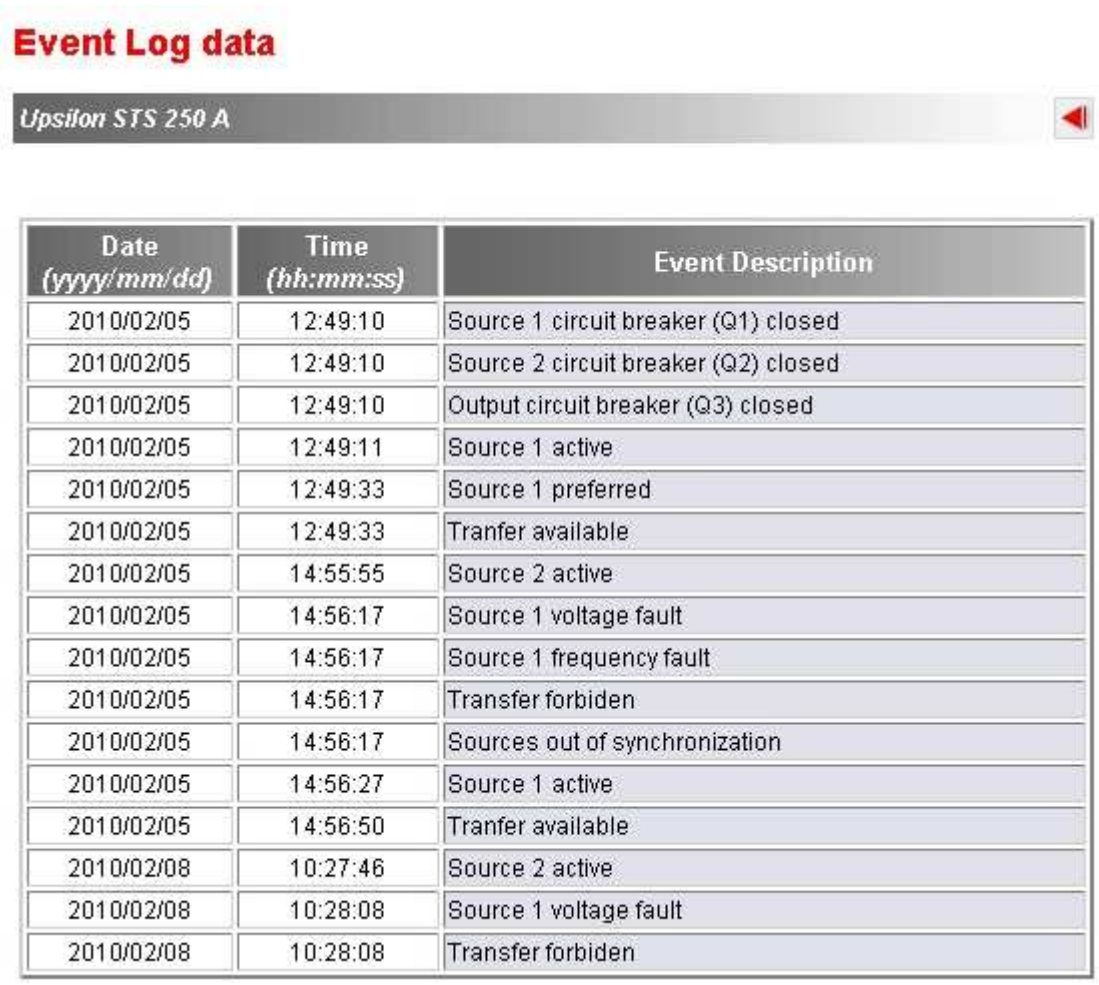
See the table of events generated in the UPS event table.

3.3.4 STS Event log

Click in the ***"Event log"*** section of the menu.

- **“Save Log”** enables all values saved to be opened or saved in CSV format (compatible with Excel type spreadsheets).
- **“Clear Log”** enables deletion of all records. The administrator must enter his/her login / password to validate this action.

Select the time range to view:



Date (yyyy/mm/dd)	Time (hh:mm:ss)	Event Description
2010/02/05	12:49:10	Source 1 circuit breaker (Q1) closed
2010/02/05	12:49:10	Source 2 circuit breaker (Q2) closed
2010/02/05	12:49:10	Output circuit breaker (Q3) closed
2010/02/05	12:49:11	Source 1 active
2010/02/05	12:49:33	Source 1 preferred
2010/02/05	12:49:33	Tranfer available
2010/02/05	14:55:55	Source 2 active
2010/02/05	14:56:17	Source 1 voltage fault
2010/02/05	14:56:17	Source 1 frequency fault
2010/02/05	14:56:17	Transfer forbiden
2010/02/05	14:56:17	Sources out of synchronization
2010/02/05	14:56:27	Source 1 active
2010/02/05	14:56:50	Tranfer available
2010/02/08	10:27:46	Source 2 active
2010/02/08	10:28:08	Source 1 voltage fault
2010/02/08	10:28:08	Transfer forbiden

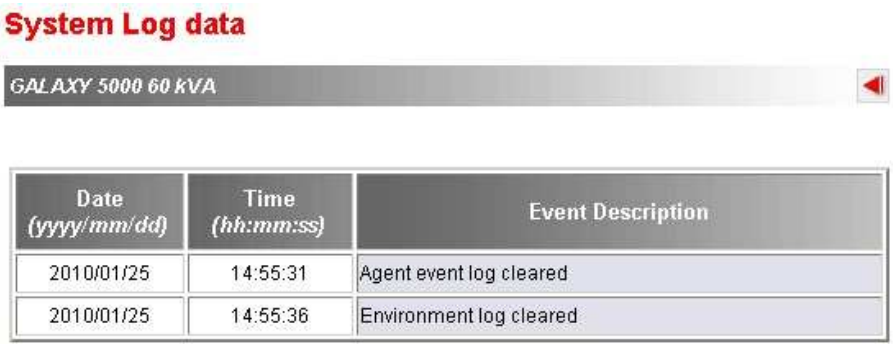
See the table of events generated in the STS event table.

3.3.5 System log

Click in the ***"System log"*** section in the menu.

- **"Save"** enables all values saved to be opened or saved in CSV format (compatible with Excel type spreadsheets).
- **"Clear"** enables deletion of all records. The administrator must enter his/her login / password to validate this action.

Select the time range to view:

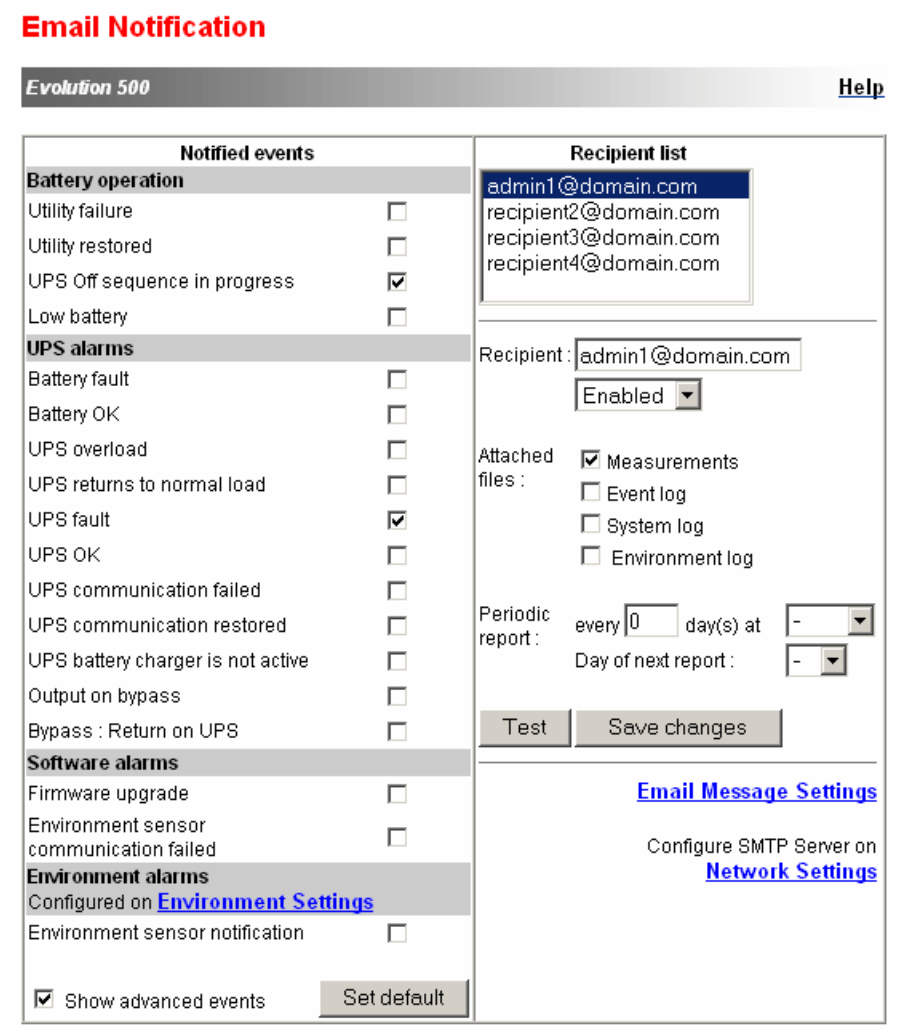


See the table of events generated in the System Alarm Table.

3.4 Notification

3.4.1 UPS Email Notification

The card offers the possibility of redirecting UPS alarms to an e-mail server. The format of these e-mails is compatible with mobile telephone transfer systems using text messages (SMS).



- **Notified events:**

The left side of the page shows the events that can be notified.
By default, only the main events of battery operation and a few UPS alarms are accessible. All the events appear if the **Show advanced events** option is ticked off.
By default, two events are selected for notification. The user can modify this pre-selection by ticking other events or can, on the contrary, restore the initial configuration by clicking on **By default**.

- **Environment alarms**: (accessible when **Show advanced events** option is ticked off)

Environment alarms must be selected to activate e-mail notification of events concerning the Environment Sensor. The detail of notified events is accessed via the Configure Environment link.

- **Recipient List:**

On the right side of this page, up to four recipients can be configured to receive e-mails from the card. Each addressee has its own trigger events, selected from the left side of the page, for which an e-mail is sent. The card's log indicates e-mail transmission errors.

Each recipient is configured with the following parameters:

Recipient: this is the e-mail address of the person or department to receive the e-mail.
The default value is *recipientx@domain.com*.

Attached files: The files selected (UPS measurements, Event log, System log or Environment measurements) are enclosed with each e-mail sent. The files are sent in CSV format.

Periodic report: In addition to the e-mails sent when events occur, a periodical e-mail containing the 4 log files can be sent to the recipient every *x* days at the time specified by the user.
To configure the first transmission, specify the day, time and frequency of the next transmission in the **Day of next report** box. After this date, the page will show the date and time of the next transmission.
Data are sent in CSV format.

Save: Saves any modifications.

Test: enables an e-mail to be sent to the recipient immediately. This is one way of checking e-mail transmission, particularly access to the SMTP server configured in "Network settings". A transmission report is added to the system log. In the event of failure, the card will repeat the transmission 3 times, at one minute intervals, before producing a transmission report.
The event label in the subject and text of the message is replaced with a test label.
If the user makes any modifications to the page, they must be saved before using the **"Test"** function.

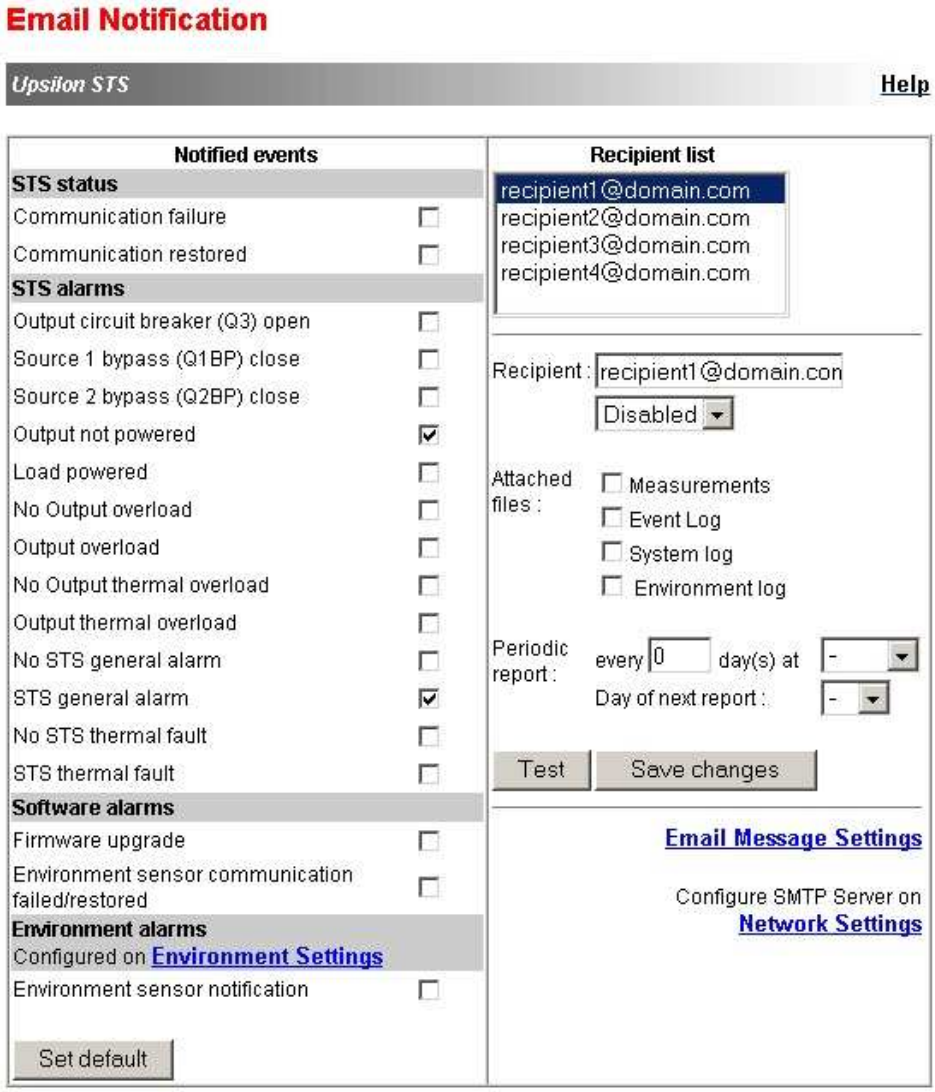
E-mail message configuration: see next page

Network settings: enables the name of the SMTP server to be entered. See "Network settings"

Security: The administrator has to click on **Save** and enter his login/password to save any modifications. The default login and password are**: MGEUPS**

3.4.2 STS Email Notification

The card offers the possibility of redirecting STS alarms to an e-mail server. The format of these e-mails is compatible with mobile telephone transfer systems using text messages (SMS).



- **Notified events:**

The left side of the page shows the events that can be notified.
By default, only the events Output not powered and the STS general alarm are selected.
The user can modify this pre-selection by ticking other events or can, on the contrary, restore the initial configuration by clicking on **By default**.

- **Environment alarms** must be selected to activate e-mail notification of events concerning the Environment Sensor. The detail of notified events is accessed via the Configure Environment link.

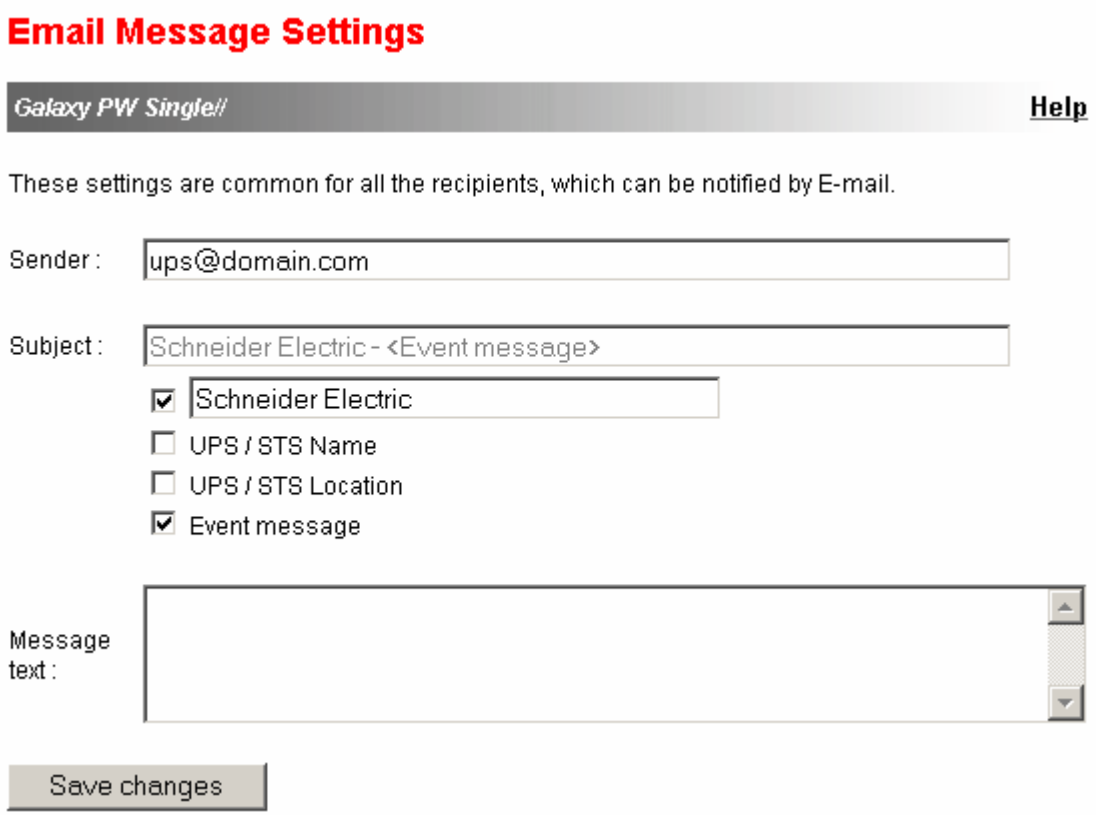
- **Other settings:**

See UPS Email notification

3.4.3 Email Message Settings

This page enables customisation of the content of the messages received by recipients of e-mails sent by the card.
Customisation is common to the four recipients that can be notified (see E-mail notification).

3.4.3.1 UPS Email Message Settings



- **Sender**

  (32 characters maximum) identifies the source of the message. The default value is *ups@domain.com*. This field is free. However, depending on the type of SMTP server configuration, it is possible that the server checks that the domain name contained in the From address exists, and even that the user in the From address belongs to this domain.

- **Subject**

  enables the user to specify the subject of the e-mail to be sent. By entering some free text and selecting from several optional fields, if desired, the message subject is built:

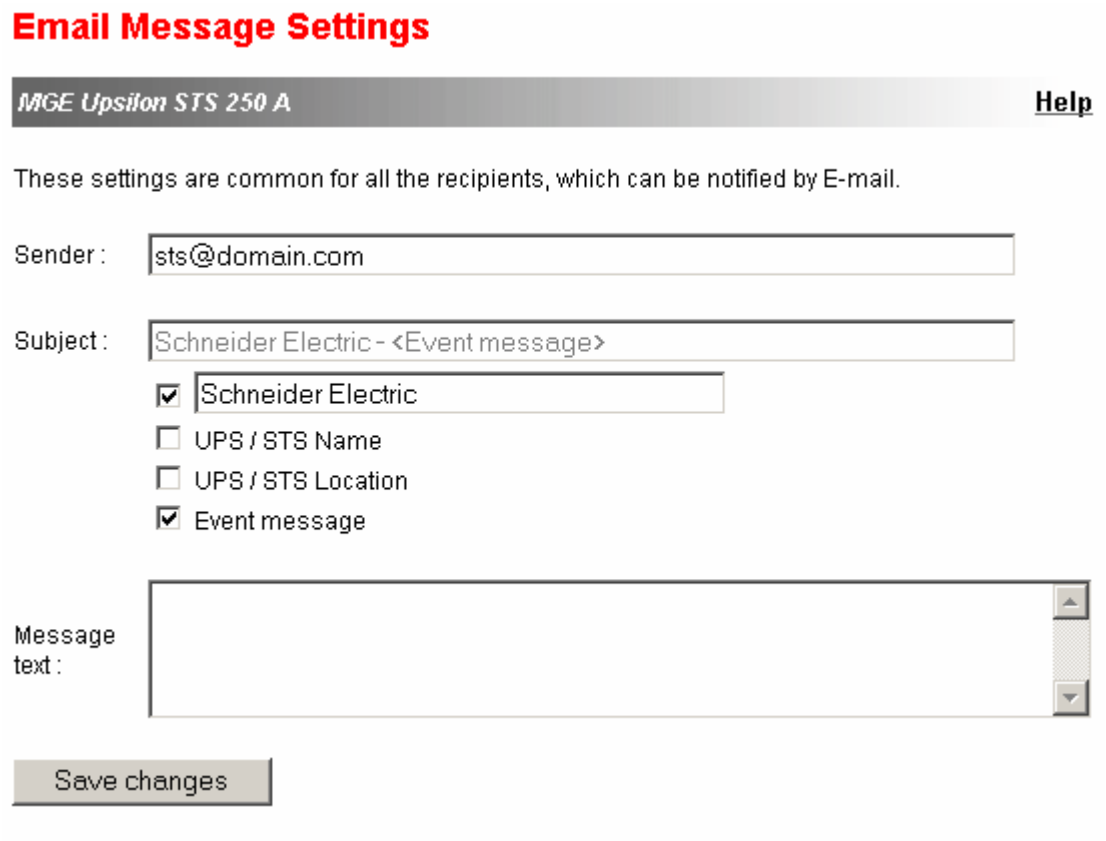
  - UPS / STS name recalls the name of the UPS, can be selected or not.

  – UPS / STS location recalls the geographic location of the UPS (see System Settings), can be selected or not.

  – Event message identifies the event generating the e-mail, can be selected or not.

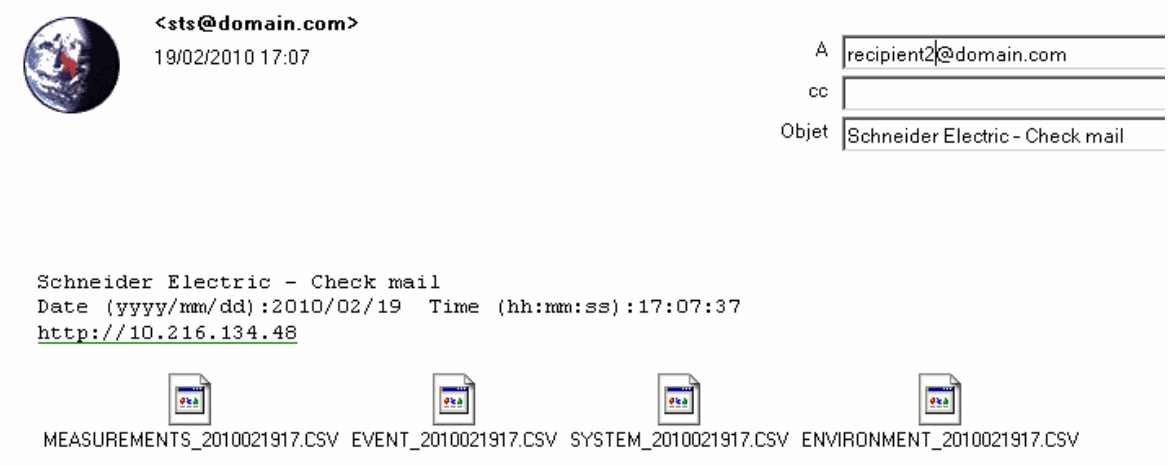
- **Message text** is a free zone.
  The body of the e-mail sent is composed of:
  - **Message text**, which is free text.
  - the date and time of the event, as saved in the log.
  - URL of the card, enabling a direct link with the card to be established.
  – Attachments, as configured for the e-mail recipients .- duplication of the subject, as configured.

3.4.3.2 STS Email Message Settings



Detail settings : see UPS Eamil setting

3.4.4 Email Example



3.5 Configuration

The parameters of this menu can only be modified after entering the “User Name” and “Password”. The following screen is proposed automatically:

User Name and password by default are: MGEUPS

Each field accepts up to 10 characters max.
After entering the login and password, these identifiers remain active as long as the browser is open, so you only have to enter them once.
If the browser is closed, they will have to be re-entered.

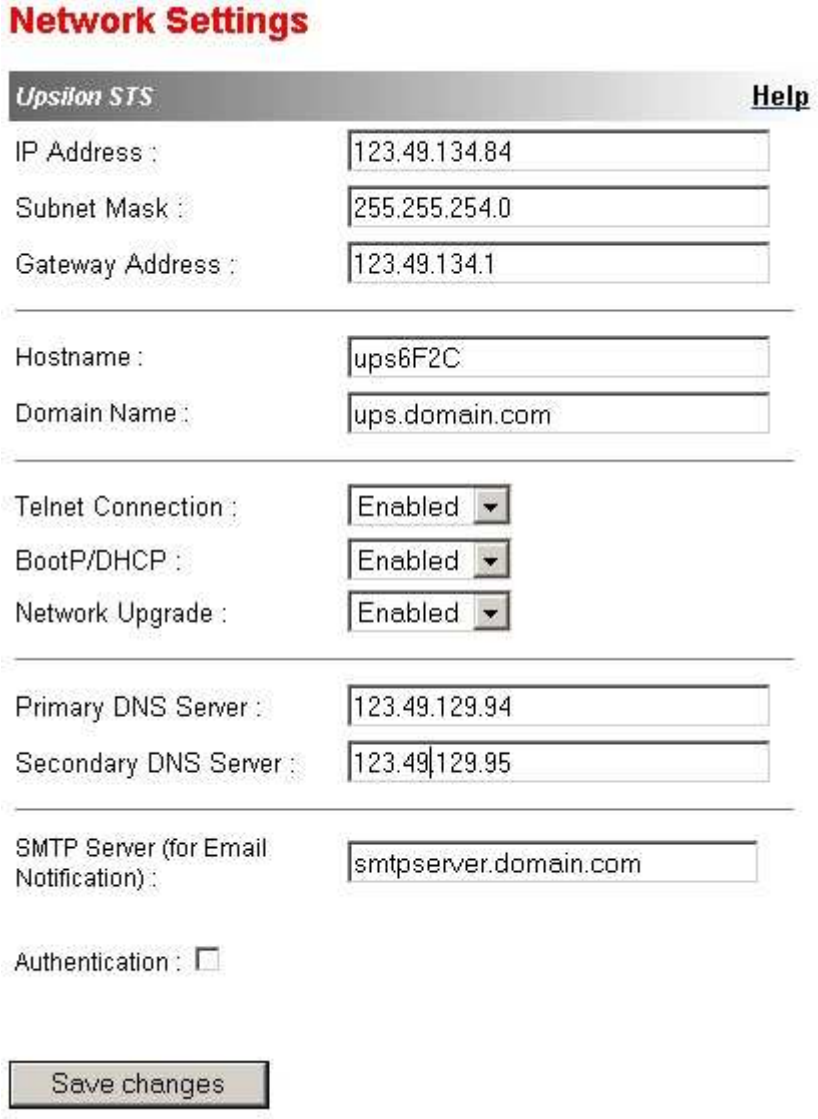
Tick the “Save this password in your password list” box if you want to avoid systematic re-entry.

An error in either field results in systematic rejection of the requested action (save, page access, card reboot, etc.). After three unsuccessful attempts, the browser must be rebooted.
These two fields do not travel “decoded” on the IT network, they are encrypted with an MD5 type algorithm, ensuring total confidentiality.

3.5.1 Network Settings

Click on the *"**Network**"* section in the menu.

This menu enables the administrator to configure the network parameters of the card and authorisation of the remote upgrade of the embedded system.



- **IP address:** The IP address of the card (e.g.: 123.49.134.36).
- **Subnet Mask**: The mask of the sub-network of your network (e.g.: 255.255.254.0).
- **Gateway Address**: Indicate the IP address of the gateway to access the stations located outside the card's sub-network (e.g.: 123.49.134.1).
- **Hostname** must be suited to the card. This is the first part of the full qualified domain name, used by the DNS (name must be compatible with DNS rules)

- **Domain name** is the domain to which the card belongs. This is the part of the full qualified domain name that follows the host name and is used by the DNS. The default value of the two parameters comprising the full qualified domain name: *ups.domain.com*
- **TELNET connection**: Authorises (choose enable) remote connection with a terminal to access the maintenance menu.
  See "Configuration in local mode and via Telnet " for more information
- **BootP/DHCP**: Authorises (choose enable) configuration of network parameters with your BootP/DHCP server when the card is booted

  Mode of card operation with server: after any reboot, if this option is enabled, the card tries to recover the network parameters from the server for 10 sec. If no response is received from the server, the card boots with the last saved parameters from the previous start. These parameters are those shown on the page
  The default value for this parameter is "Enable"

  . **Note**:
  The IP address supplied by the DHCP server must be fixed to maintain connection with the clients installed on the stations to be protected.

- **Network Upgrade:** Authorises (choose enable) remote upgrading of the embedded system on the card using the Mupgrade tool. Read the "Maintenance" section for more details.
- **Primary DNS server:** contains the IP address of the main DNS server ensuring conversion of the domain name to IP address.
- **Secondary DNS server:** contains the IP address of the secondary DNS server ensuring conversion of the domain name to IP address if the primary DNS server is not available.
- **SMTP server**: contains the name or IP address of the local server with which the card connects to send e-mails.
  It may be filled in either as host + domain name (DNS resolution), or directly with the IP address
  The default value is *stmpserver.domain.com* . The card uses port 25 to send e-mails.
- The **Authentication** option must be selected if the SMPT server requires this parameter for query submission (see the RFC 2554 for SMTP authentication) for commercial reasons, access control, etc.
  When authentication is selected, the **User** and **Password** parameters must be specified for identification with the local SMTP server.
  Default values are *MGEUPS/MGEUPS*.

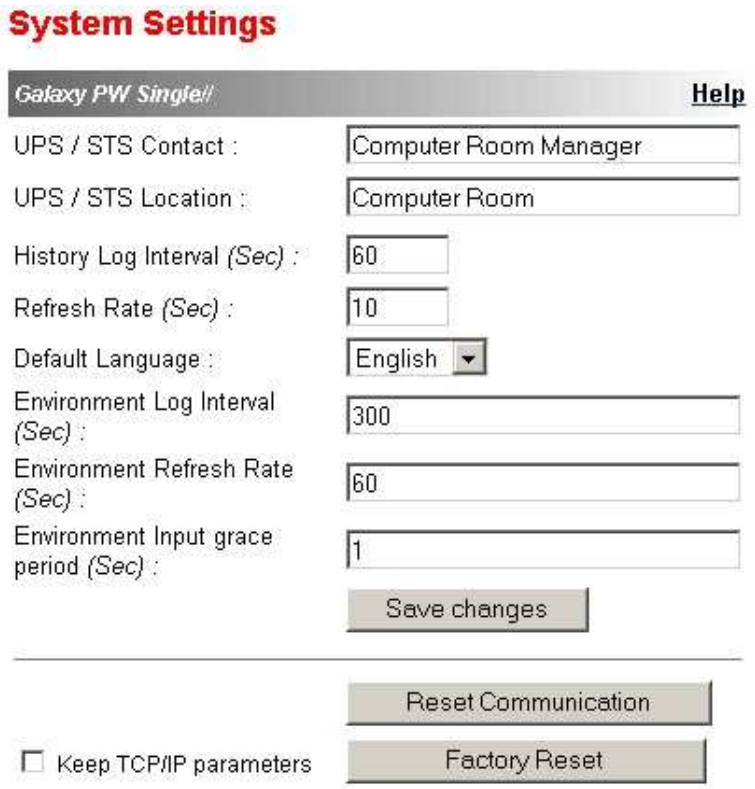
Note: The card must be rebooted after any changes to these parameters. See "System"

Security: the administrator must click on **Save** and enter his login/password to save any modifications.

3.5.2 System

Click the ***"System"*** section in the menu.

This menu enables the customisation of the information on the UPS properties / STS properties and Environment pages.



- **UPS contact:** This text field is limited to 32 characters. Enter the name of the person responsible for UPS administration at IT network level and/or electrical maintenance. This field does not appear on any other Web page. By default, its value is "Computer Room Manager".
- **UPS location:** Enter a description (limited to 32 characters) of the location of the UPS in your installation (e.g. Computer room E1-C066). This text is displayed on the home page at the top right, above the name of the UPS. Its value by default is "Computer room".
- **History Log interval**: [5 to 99999 seconds]. Measurement save period. Default value = 60 sec.
- **Refresh rate:** [5 to 99999 seconds]. Home page and alarms table refresh period. Default value = 10 sec.
- **Default language**: Enables initialisation of the browser language at card connection.

  Auto: Automatically displays the Web page texts in the same language as your browser. If the Network Management Card is not able to display the recognised language, the pages will be displayed in English.

Choice of one of the available languages: **English**, **French, Italian, German, Spanish** changes the language of the html interface pages

- **Note**:
  Alarm notification remains in English / French (reboot the browser after modification).
  SNMP message remain in English.
- **Environment log interval:** [from 5 to 99999 sec]. Temperature and humidity measurement save period. Default value = 300 sec. (only visible if the sensor is present).
- **Environment refresh rate:** [from 5 to 99999 sec]. **"Environment status"** page refresh rate. Default value = 60 sec. (only visible if the sensor is present).
- **Environment input grace period :** [from 0 to 9 sec]. Period during which a status change by one of the inputs is not considered. Default value = 1 sec. (only visible if the sensor is present).
- **"Reset communication" button:** performs a remote reboot of the card without modifying the configuration. This action is compulsory for consideration of any changes made on the "Network settings**"** page. Security of this operation is ensured by requesting Login and Password.
- **"Fatory Reset" button:** enables restoration of the default configuration of all the card's parameters. The TCP/IP parameters: IP address, subnet mask, gateway and BootP/DHCP value are maintained if the **"Keep TCP/IP parameters"** option is selected. Security of this operation is ensured by requesting Login and Password. Default login and Password are**: MGEUPS**
  Note:
  If any of these parameters are changed, the card must be rebooted.

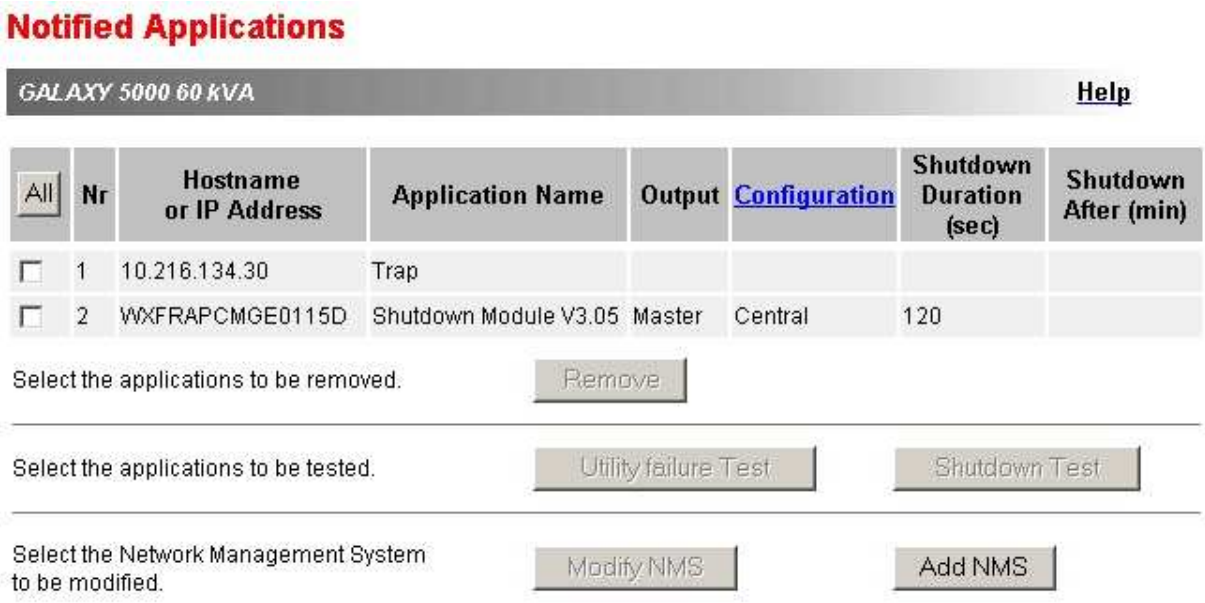
3.5.3 UPS Notified Applications

Click the ***"Notified Application"*** section in the menu.

Security: the administrator has to enter his login/password to view this information.

This menu enables:
- The addition of the supervision stations receiving traps and configuration of the trap type.
- To list all the Notified Applications and the main parameters.
- Simulate events to test notification and shutdown of the Notified Applications.

Up to 50 destinations can be managed by the card.
The card is compatible with the **Network Shutdown Module**
Note: It is not necessary to add the **Network Shutdown Modules** protecting your servers in this list as it is done automatically.



Select an entry in the list to modify the values in the edit zone at the bottom of the page. Note that the Network Shutdown Module must not be manually modified.
The applications in the table appears in the order they have subscribed to the card. Following informations are displayed :

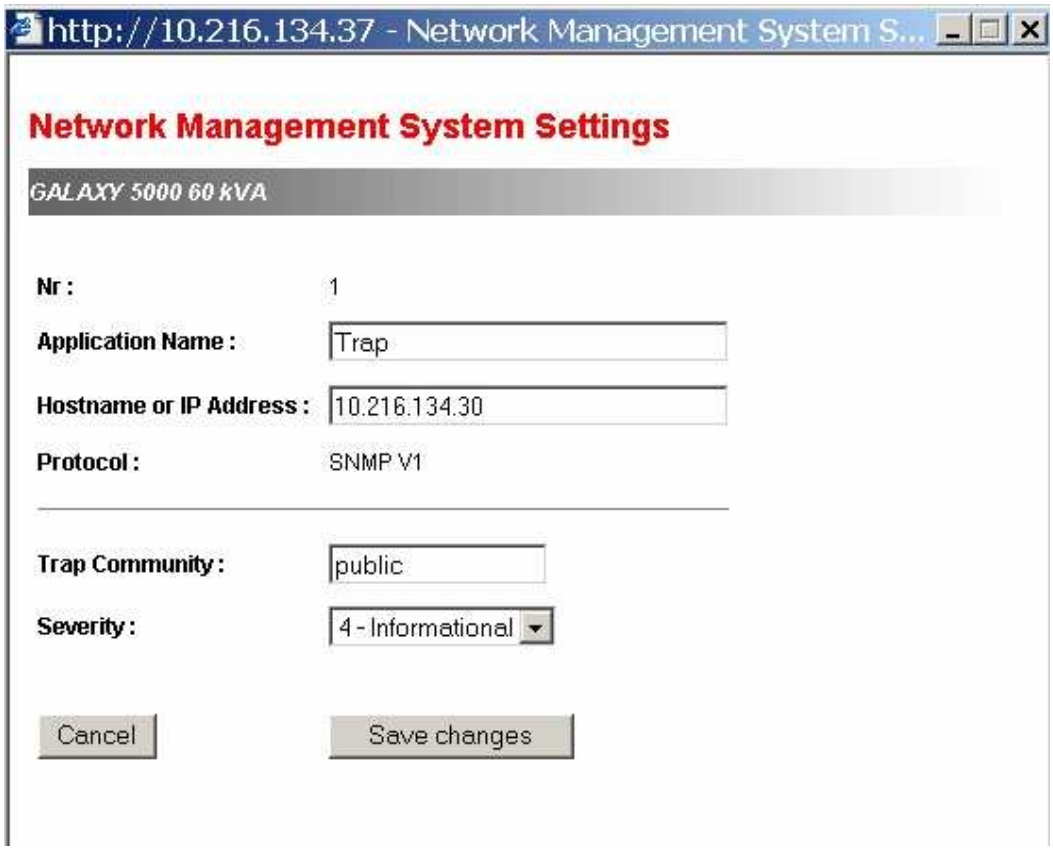
- **Nr :** is the index where the application is stored into the table.
- **Hostname or IP Address :** By priority the hostname of the computer is displayed when the IP address can be converted into a hostname with a DNS server or if the application has been entered as a hostname (see page Network Management System settings). Otherwise the IP address is displayed.
- **Application Name :** sent by the application at subscribe time or manually entered.
- **Output :** is the number of the output from which the client is powered.
- **Configuration :** shows where the parameters of Network Shutdown Module comes from : **Local**(coming from the application) or **Central**(coming from the card).
- The Central Shutdown Configuration is available by clicking on Configuration link.
- **Shutdown duration :** is the shutdown duration necessary to properly shutdown the computer.

- **Shutdown after :** is the time available to the user from the Power failure until the launch of the shutoff sequence of the UPS. This parameter is optionnal.

Many actions are available on this page :

- **Remove :** Depending on the kind of application, the selected ones will definitively disappear from the table as SNMP applications, or they will disappear and automatically re-subscribe as the Network Shutdown Module application.
- **Utility failure Test :** Two alarms 'Utility failure' and 'Utility restored' spaced of 60 seconds will be sent to the applications selected, making sure that the applications can be reached over the network.
- **Shutdown Test :** This test simulates a UPS on battery operation, it sends alarms to the selected applications. It enables an easy check to see if the server protection works correctly.- No intervention on the UPS is required.
  - Simulated alarms will be processed by the applications selected only.
  - Warning :This test will generate a REAL shutdown sequence of servers on which Network Shutdown Module is running.

Add NMS allows to add a SNMP trap receiver as a Network Management System.
Modify NMS allows to modify a SNMP trap receiver.
Both buttons makes appear a new window where it is possible to enter the Application name, the Hostname or IP Address, the Trap community and the severity.

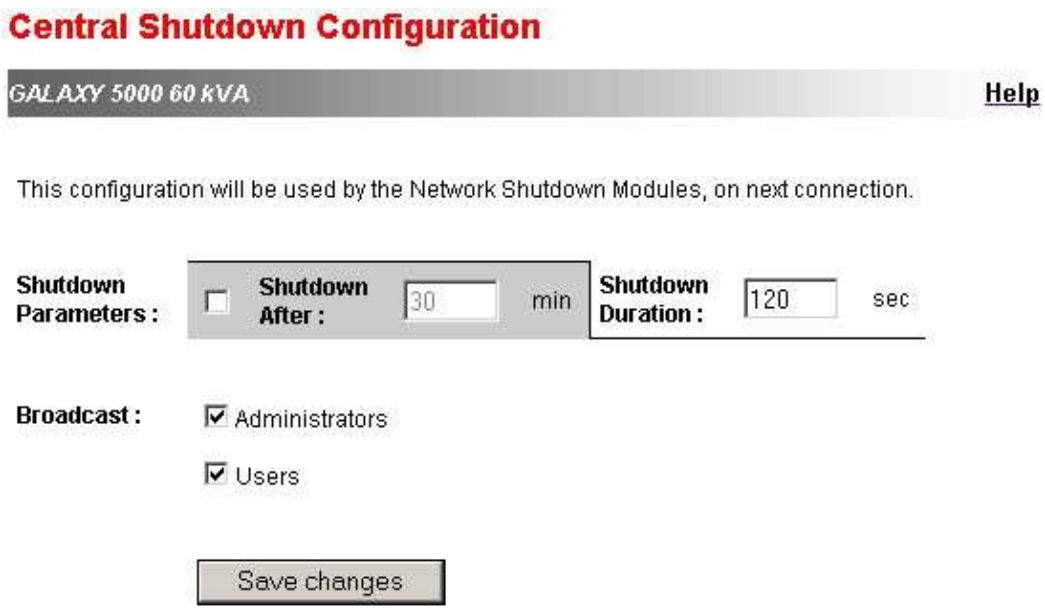


- **Trap community** indicates the name of the SNMP community

For more details, read the MIB description document: available on the www.apc.com site.

3.5.4 Central Shutdown Configuration

Click the ***"Notified Application"*** section in the menu then in "**Configuration**".



This page is used to define either the shutdown or the notification settings used by the Network Shutdown Modules that connect to Network Management Card. These settings are used by the Network Shutdown Modules if they are in centralized-configuration mode or if their configuration is not valid.

- **Shutdown After (time before shutdown)** This is the time in seconds that the system waits following failure of AC power before initiating the system-shutdown procedure. This value must be selected to provide users with enough time to close their applications and disconnect, but within the battery backup time provided by the UPS.
  If another criterion occurs before the end of the shutdown timer, the shutdown procedure is immediately run.
  This parameter is optional, uncheck it to invalidate
- **Shutdown Duration** : This is the time in seconds required by the system to go through its shutdown procedure.
- **Broadcast** : Send network notifications to the Administrators and Users groups on events

If you wish to set up a new configuration for the Network Shutdown Modules already set to centralized-configuration mode, proceed as indicated below.

- Change the Network Shutdown Module parameters in the page “Central Shutdown Configuration”.
- Click the **Save** button. Open the List of notified applications.

Select the Network Shutdown Modules to receive the new configuration.
Press the button “**Remove”** They reconnect and use the new configuration

3.5.5 STS Notified Applications

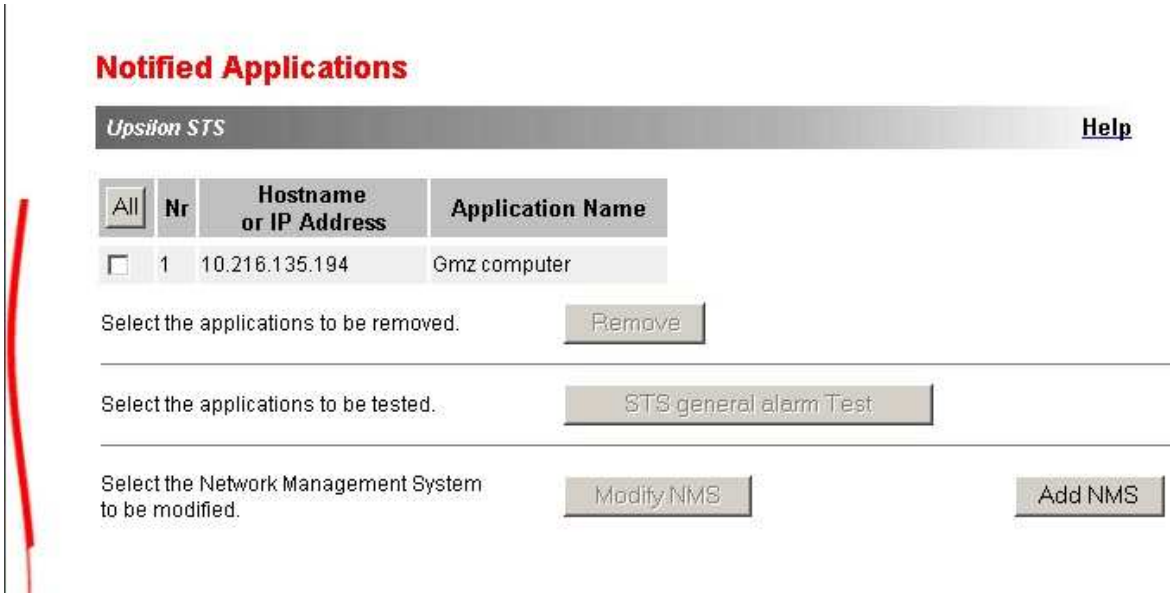
Click the ***“Notified Application”*** section in the menu.

Security: the administrator has to enter his login/password to view this information.

This menu enables:

- The addition of the supervision stations receiving traps and configuration of the trap type.
- To list all the Notified Applications and the main parameters.
- Simulate events to test notification and shutdown of the Notified Applications.

Up to 50 destinations can be managed by the card.

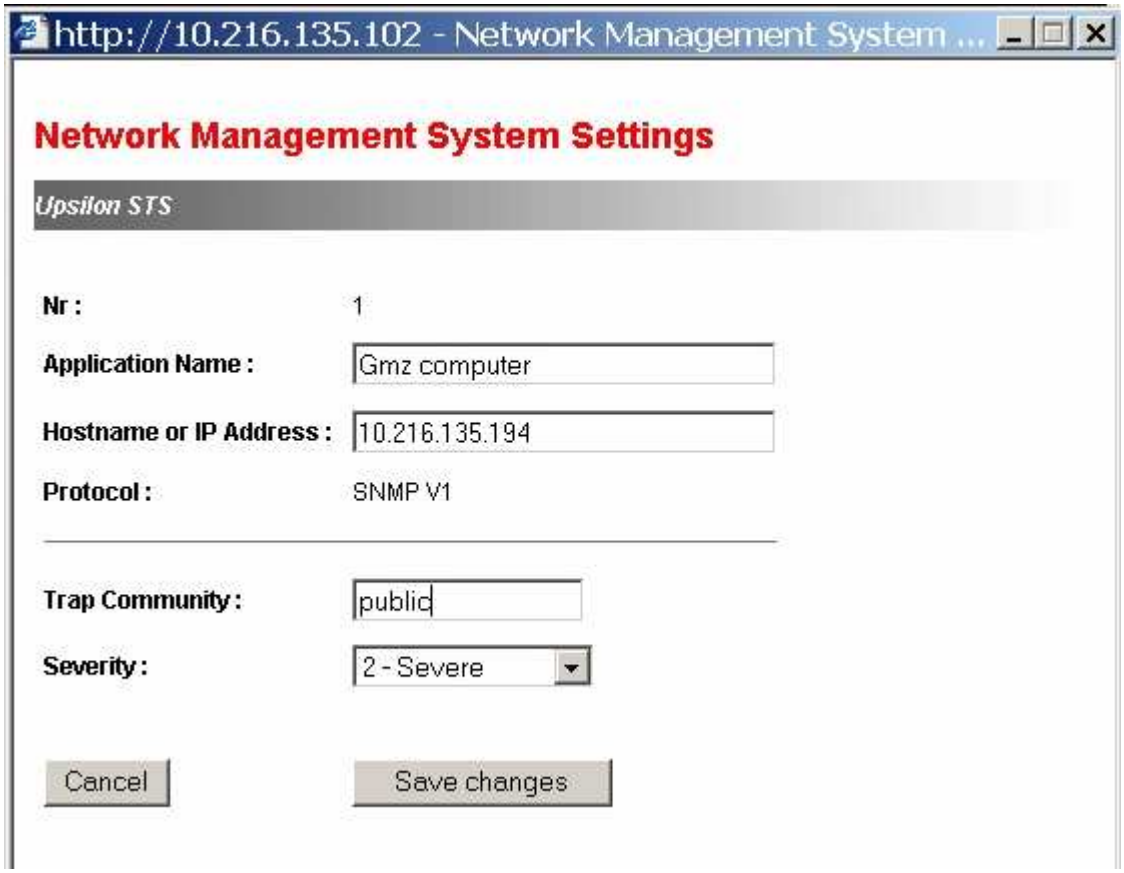


Select an entry in the list to modify the values in the edit zone at the bottom of the page. Note that the Network Shutdown Module must not be manually modified.
The applications in the table appears in the order they have subscribed to the card. Following informations are displayed :

- **Nr :** is the index where the application is stored into the table.
- **Hostname or IP Address :** By priority the hostname of the computer is displayed when the IP address can be converted into a hostname with a DNS server or if the application has been entered as a hostname (see page Network Management System settings). Otherwise the IP address is displayed.
- **Application Name :** sent by the application at subscribe time or manually entered.

Many actions are available on this page :

- **Remove :** Depending on the kind of application, the selected ones will definitively disappear from the table as SNMP applications, or they will disappear and automatically re-subscribe as the Network Shutdown Module application.
- **STS general alarm Test :** This test simulates alarm 'STS general alarm' , making sure that the applications can be reached over the network.
- **Add NMS** allows to add a SNMP trap receiver as a Network Management System.
  Modify NMS allows to modify a SNMP trap receiver.
  Both buttons makes appear a new window where it is possible to enter the Application name, the Hostname or IP Address, the Trap community and the severity.



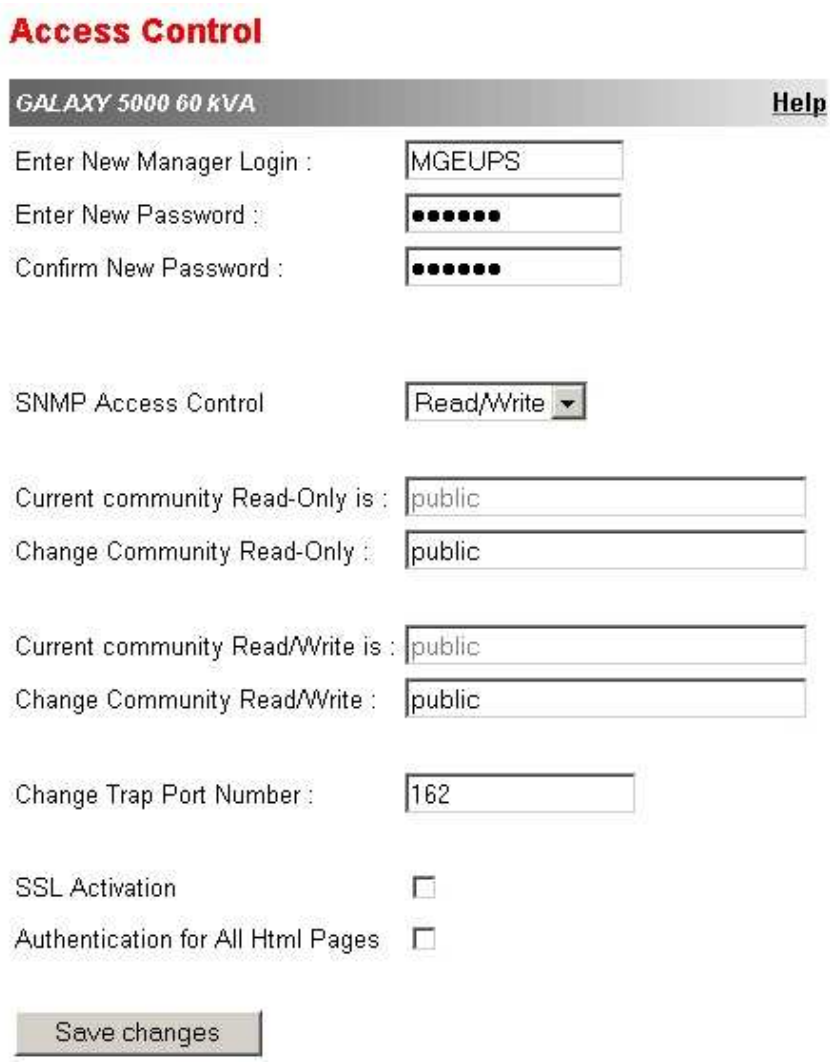
- **Trap community** indicates the name of the SNMP community

For more details, read the MIB description document: available on the www.apc.com site.

3.5.6 Access control

Click the ***"Access control"*** section in the menu.

To access this page, the login and password are systematically requested if they have not already been entered.
This menu enables configuration of the different parameters enabling secure access to the card via a browser or SNMP.



- **Enter New Manager Login:** Text field limited to 10 characters. Enables secure access and modification of pages. Default value “MGEUPS”.
- **Enter New Password:** Text field limited to 10 characters. Enables secure access to the sections of the Configuration menu. Default value “MGEUPS”.
- **Confirm New Password:** Text field limited to 10 characters. Must be strictly identical (including upper/lower case) to the field above .
- **SNMP Access Control:** permits to limit or disable SNMP access.
  - **Read / Write**: All SNMP operations are allowed
  - **Read only**: only read operations can be done. . When selecting this mode,
  - **Disable**: Card doesn't manage SNMP
- **Current Community Read-only is:** Enables read-only SNMP access control (GET). Default value “public”.

- **Change Community Read-only:** Text field limited to 31 characters. This field is only validated after clicking on ***"Save"*** . Default value "public".
- **Current Community Read/Write is:** Enables read and write SNMP access control (GET and SET). Default value "public".
- **Change Community Read/Write:** Text field limited to 31 characters. This field is only validated after clicking on ***"Save"*** . Default value "public".
- **Change Trap Port Number:** Numeric field limited to 65534. Enables forwarding of traps sent by the card to a port other than the port usually used for SNMP. Default value 162.
- **SSL Activation:** When selected, access to Web interface is made in secure mode (https). **Telnet access is disabled and the card is accessible in SSH.**

  Connections with Network Shutdown Modules stay in standard mode (secure TCP)

  SSL Security Implementation

  SSL ➔version 3.0
  Method ➔ TLS_RSA_WITH_RC4_128_MD5
  Auth ➔ RSA
  Key Exchange ➔ RSA
  Encryption ➔ RC4_128
  Digest ➔ MD5

  SSH Security Implementation

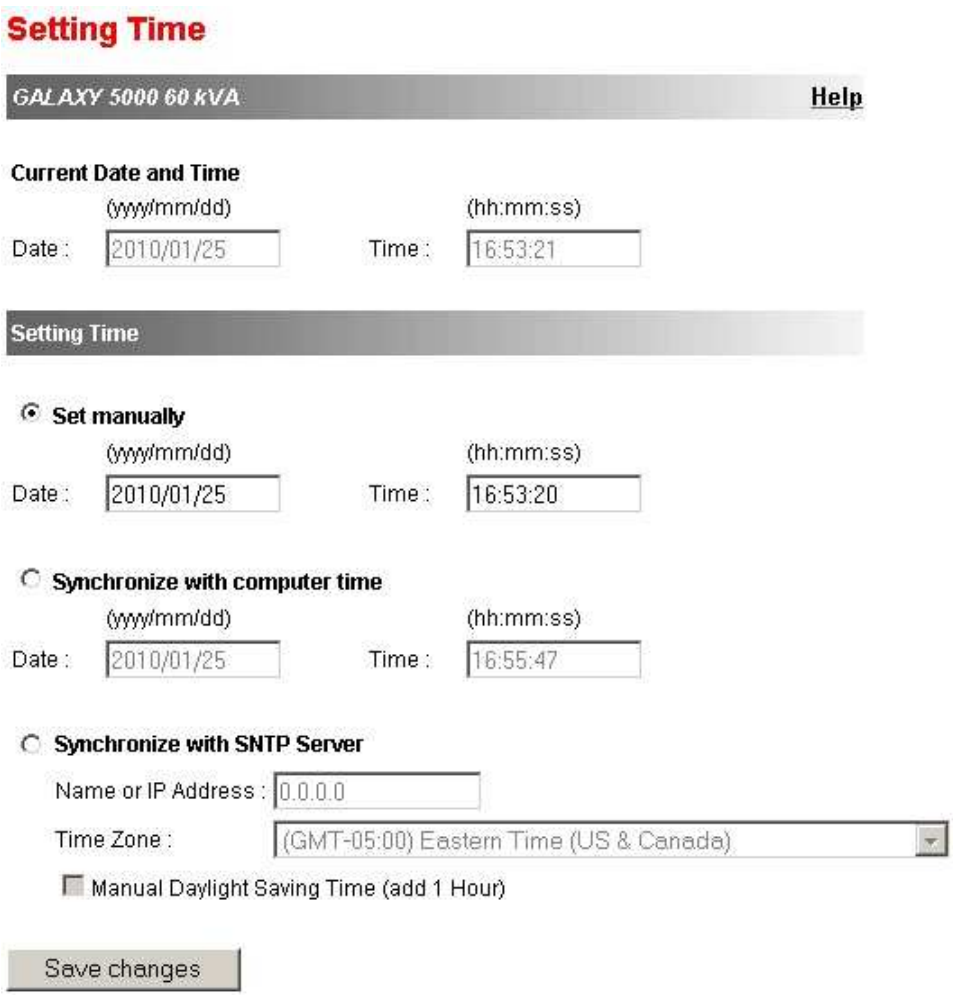
  SSH v1
  Method ==> SSH_CIPHER_3DES
  Encryption ==> Triple_DES in CBC mode

  This change takes effect after a card reboot.
- **Authentication for all html pages :** Login/password Authentication is required for all pages.

3.5.7 Time

Click the ***"Time"*** section in the menu.

This menu enables initialisation of the date and time of the card in three different ways.



- **Synchronise manually:** Enables initialisation of the date and time of the card, with the values entered in the Date and Time fields. Values are updated after clicking the **"Save"** button.
- **Synchronise with computer time:** Enables the date and time of your PC to be transferred to the card. This transfer is made after clicking on the "**Save" button**. Time is not adjusted regularly, it is set **one time** after clicking the **"Save"** button.
- **Synchronise with an NTP server:** Enables connection with a time server, either available on the company's internal network or on the Web. This server communicates GMT time. The IP address of the time server must be entered, and the time zone of your geographic area must then be selected from the

list. Connection is made with the server and the date and time are set after clicking on the ***"Save"*** button. Time is updated every hour.

The card uses the NTP protocol (UDP 123 port) and the firewall must be set accordingly, no error message is generated if the time server contact fails

- **Daylight Saving Time:** Enables corrections due to summer / winter time changes, this option must be supported by the NTP server.

Note 1:

Time drift is related to card electronics. It may be up to a maximum of +/- 2min/month.

3.6 Environment

The environment sensor is an option that enables temperature and humidity to be measured, and indication of the position of two external contacts. It is connected with a standard network cable to the **Card Settings** port of the Network Management Card.

On startup, the card automatically detects sensor presence. The main menu then displays an additional section **"Environment"** with the following elements:

- **Status**
- **Configuration**
- **Log**

Note 1 This function is only accessible with the DA version software (or superior) for the card. This software can be downloaded on the www.apc.com site, from the download section.

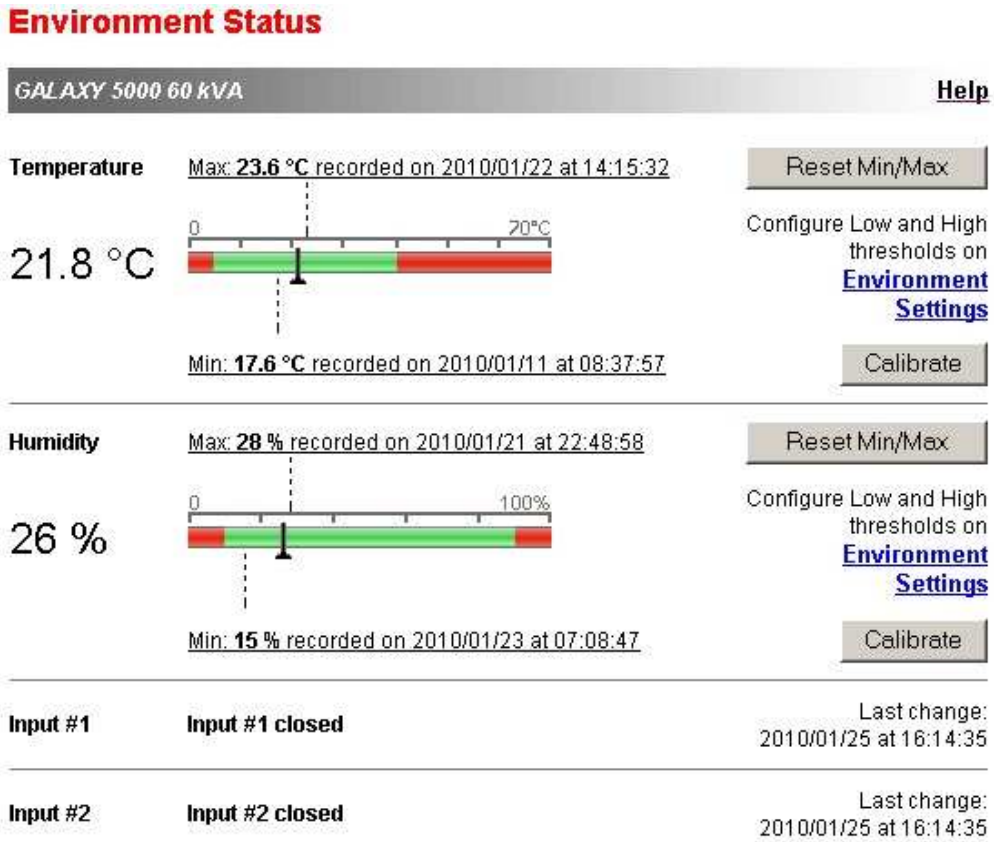
Note 2: To switch the serial port to the configuration mode, just disconnect the sensor cable and reinitialise the card by pressing "Reset". The reverse operation must be performed to manage the environment sensor once again.

3.6.1 Characteristics

- Temperature measurement from 0 to 70 ℃ with +/- 1° C accuracy
- Humidity measurement from 0 to 100 % with +/- 6 % accuracy
- Min. / max. time-stamped function for temperature and humidity
- Choice of displaying temperature in Celsius or Fahrenheit
- High and low thresholds, hysteresis and offset adjustment via Web interface
- Possibility of notification of status changes by e-mail, SMS or SNMP trap
- Position detection of 2 dry contacts (maximum sensor/contact distance: 20m)

- Name and status of each contact can be configured
- Recording of events and measurements in the card log
- Possibility of shutting down the installation safely if one of the thresholds is exceeded or if a dry contact closes
- Connection to the Network Management Card by CAT5 straight RJ45 network cables (maximum card/sensor distance: 20m)

3.6.2 Environment status



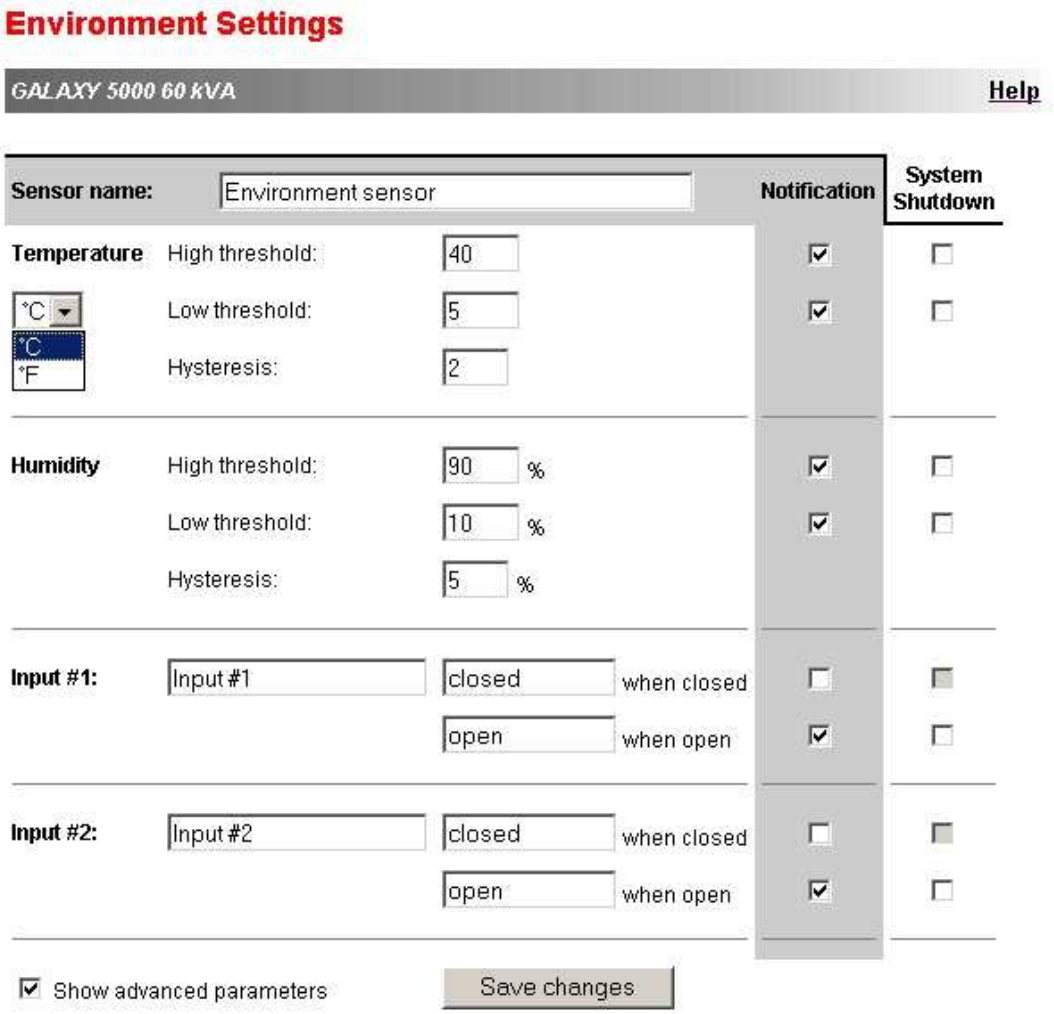
For both measurements, a graduated gauge proposes the following functions:
The cursor indicates the current value.
Two red zones to the left and right represent the high and low thresholds that can be set on the Environment Settings page.
When the measured value enters one of these zones, a alarm can be notified (see **Notification** parameter in the Environment Settings page).
Time-stamped minimum and maximum temperatures show the extreme values recorded since the last **Reset Min/Max**, a thin dotted line shows their positions on the gauge.
Min and Max can be forced at any time to the current value by clicking on the **Reset Min/Max** button.
Calibrate: the sensor is calibrated in the factory, but the user can apply an offset to adjust the measurement.
Input # 1 and **Input # 2** show the position of the two contacts acquired by the sensor.
The position is displayed with the parameters entered in the Environment Settings page.

The last status change of each contact is time-stamped.

The Internet browser updates this page regularly according to the **Environment refresh rate** parameter on the System settings page.

3.6.3 UPS Environment Settings

3.6.3.1 UPS Environment Settings



The environment sensor measures temperature, humidity and gives the status of the 2 contacts (used for door, alarms or generator unit).
The temperature and humidity thresholds can be adjusted and can trigger notification and correct shutdown of the protected system.
The **Sensor name** is the function name given to the sensor, usually it enables location of the sensor.
Temperature: choose the temperature unit (℃ or ℉) from the se lection box.
High threshold: if this value is exceeded, a **notification** is sent if this is validated. Default value is 40 ℃ / 104 ℉.
Low threshold: if this value is exceeded, a **notification** is sent if this is validated. Default value is 5 °C / 41 ℉.

Hysteresis must be set to prevent multiple notifications if temperature fluctuates around a threshold.
Default value is 2 ℃ / 3.6 ℉. (Advanced parameter s)

The high alarm cannot be reactivated while temperature remains above the ***High threshold – Hysteresis*** value.
The low alarm cannot be reactivated while temperature remains below ***Low threshold + hysteresis*** value.

Humidity
High threshold: if this value is exceeded, a **notification** is sent if enabled. Default value is 90%.
Low threshold: if this value is exceeded, a **notification** is sent if enabled. Default value is 5%.
Hysteresis must be set to prevent multiple notifications if humidity fluctuates around a threshold. Default value is 5%. (Advanced parameters)

The high alarm cannot be reactivated while humidity remains above the ***High threshold – Hysteresis*** value.
The low alarm cannot be reactivated while humidity remains below ***Low threshold + hysteresis*** value.

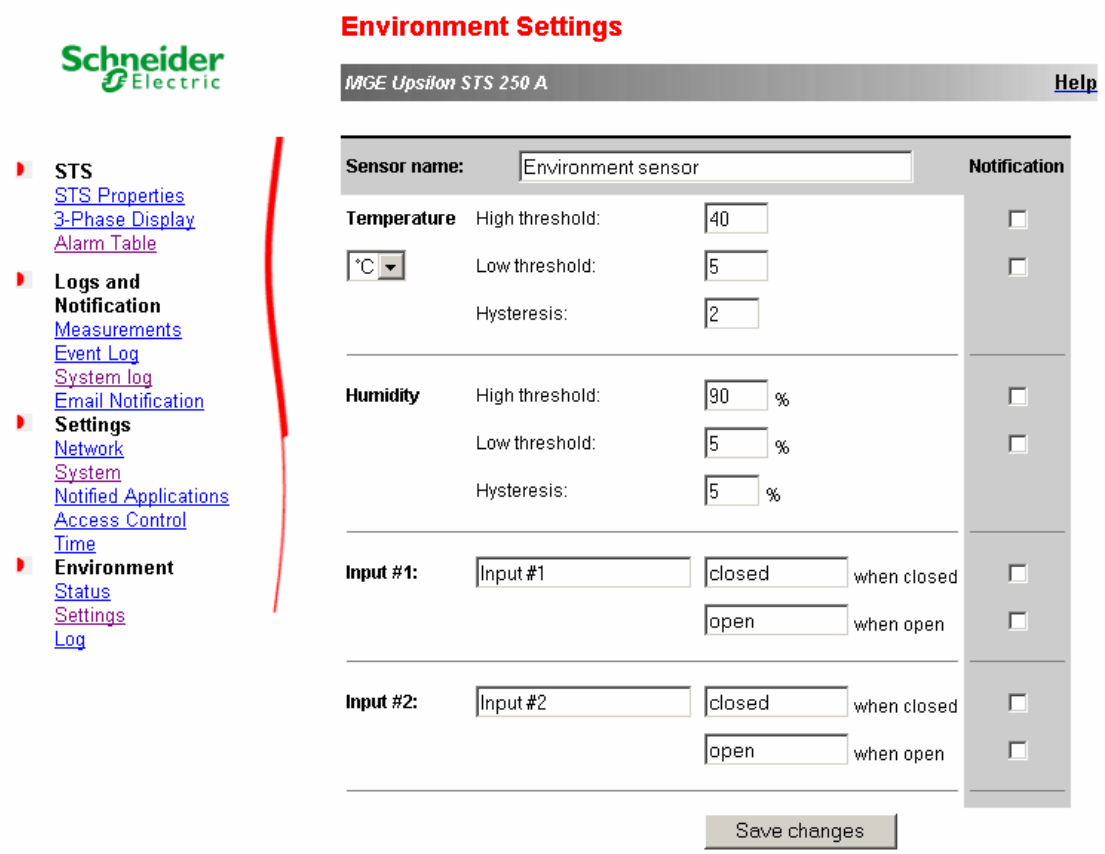
Input No 1 and **Input No 2:** enter an identifier corresponding to the acquired contact (e.g.: rack door, air conditioning, generator unit, etc.). Max. length is 28 characters.
If contact closed and **if contact open:** are the names associated to the two contact positions. (e.g.: "open" and "closed" for a door, "On" and "Off" for a generator).
Each status change triggers a **notification** if enabled.

Notification includes: Log, Notification by e-mail and generation of SNMP Trap. The list of messages is given in the appendix.

System shutdown can be triggered for each notification if this option is enabled. If notification is disabled, the Shutdown option cannot be used. (Advanced parameters)

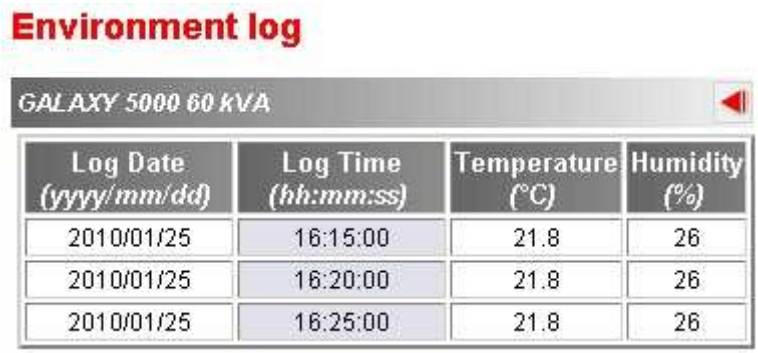
Security: the administrator has to click on Save and enter his login/password to save any modifications.

3.6.3.2 STS Environment Settings



Same feature than for UPS, without the system shutdown only available for UPS.
For detail see the UPS environment settings.

3.6.4 Log



Log Date (yyyy/mm/dd)	Log Time (hh:mm:ss)	Temperature (°C)	Humidity (%)
2010/01/25	16:15:00	21.8	26
2010/01/25	16:20:00	21.8	26
2010/01/25	16:25:00	21.8	26

The environment sensor's two measurements, Temperature and Humidity, are recorded at an interval defined by the **Environment log interval** parameter on the System settings page.
By default, this period is 300 seconds.
Each measurement is dated and stored in the log of the UPS' communication card.
The size of log files is limited by a time indexing system.
The user can **Save** the log on his workstation at any time, in a CSV format file.
He can also **Clear** the files contained in the card to reset the log.

4 Servers protection, UPS only

4.1 Set-up of the shutdown parameters

The Network Shutdown Module, on protected server boot, subscribes itself automatically to Notified Applications list and sends its essential data:

- **IP address or name of the server on which it is installed**, to be notified by the card of any power events
- **Time required to shutdown the server** (Shutdown Duration, configurable in the Shutdown Module “set-up” menu):

  The card takes into account the longest shutdown time of all the Network Shutdown Modules subscribed to manage UPS shutdown without affecting any of the servers protected.

In case of a major power event, the Shutdown Module receives messages from the card and regularly checks its accessibility. The most important messages can generate actions and are sent back to the administrator and users via the network.

When the server shuts down, the Shutdown Module unsubscribes itself from the Notified Applications.

4.1.1 Shutdown criteria managed by the Management Card

During an extended power failure, three criteria may cause the server shutdown procedure to be initiated. If several criteria are selected, the first criterion encountered will launch the shutdown procedure.
At the end of the shutdown procedure, when all servers have been shut down, the UPS may shut down to avoid unnecessary discharge of its batteries, depending on its configuration.

4.1.1.1 Backup time before initiating the shutdown procedure (Shutdown After)

When the UPS switches to battery, the **Network Management Card** starts the Shutdown Timer countdown and launches the system shutdown procedure at the end of the countdown.
This value must be chosen so that users have time to complete their tasks and disconnect, without exceeding battery backup time.
By default, this value is set to 30 minutes. Since GA release, this criterion is not selected in the default configuration

Note 1:
The Network Shutdown Module can also manages its own Shutdown Timer (configurable in the Shutdown Module “set-up” menu)
Note that if this criterion is selected to initiate system shutdown, automatic system reboot when power is restored is not guaranteed (e.g. power restoration if only this system was shut down).
By default, this parameter is not selected.

4.1.1.2 Initiating the shutdown procedure when the battery level is lower than: (if capacity under)

When the card detects that the remaining backup time percentage is less than the configured level, the shutdown sequence is started.
By default, the card uses the value set in the UPS.

Note:
Certain types of UPS only accept pre-defined minimum battery level values. Check the UPS documentation.

4.1.1.3 Shutdown when backup time is less than

When the Network Management Card detects that the percentage of backup time remaining is less than the value set, the shutdown sequence is started.

4.1.1.4 Shutdown duration

Duration required for the systems protected by the Shutdown Modules to shut down (in seconds).

4.1.2 Specific set-up for long autonomy installation (> 30 mn)

For installation where the backup period is longer than 30 minutes, the Network Management Card will initiate automatically a shutdown at the end of the shutdown timer if this parameter is selected on the “Shutdown parameters” page.

4.2 The different server and UPS shutdown sequences

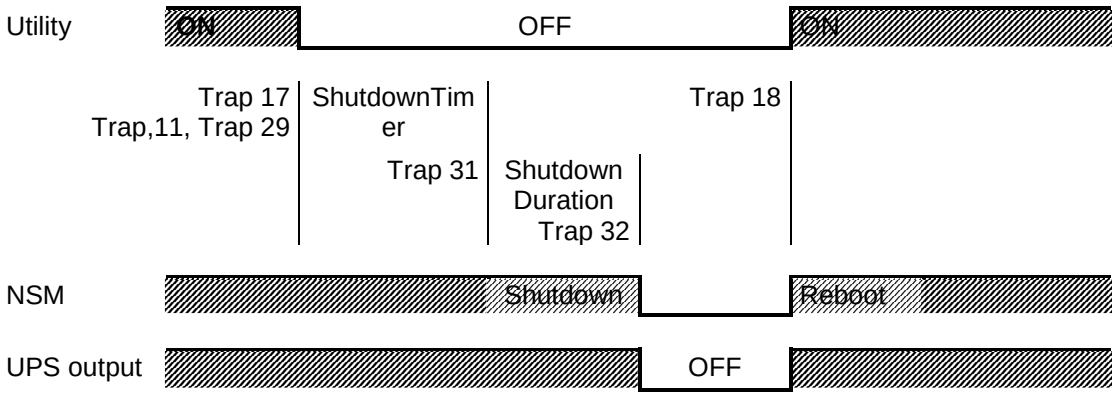
4.2.1 Extended power outage, shutdown initiated by the Shutdown Timer

During battery backup time, the **Shutdown Timer of the Network Management Card** is reached: after a user-defined backup time period, the shutdown of all servers is initiated, followed by the UPS shutdown (depending on its configuration). The UPS restarts when utility power is restored (depending on its configuration).

- **Shutdown Duration**: Maximum value of shutdown times of the Network Shutdown Modules subscribed to the card and depending on the main UPS output. This value is updated each time a client subscribes/ unsubscribes.

Note: During battery operation, these values are not updated.

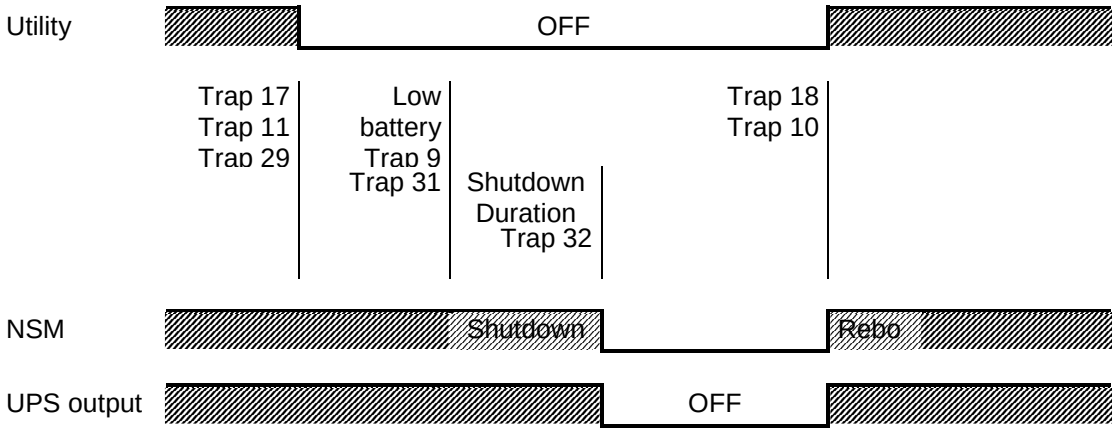
Shuts down after the ShutDown Timer + Shutdown Duration after having stopped the servers
Restarts when utility power is restored (possibility of programming a restart delay)



4.2.2 Extended power outage, shutdown initiated by the “Low battery power” message

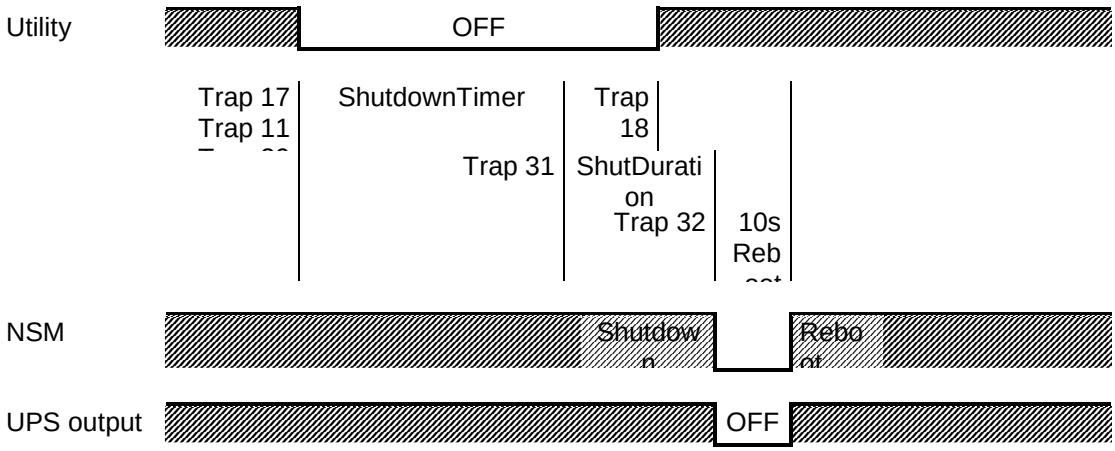
When the ”Low battery power” message is displayed, the UPS is shut off after taking into account the shutdown duration of the servers.

“Low battery power”: The message appears if either of the two following criteria is checked:
- Low Battery Level
- Minimum remaining backup time (Low Battery Delay)



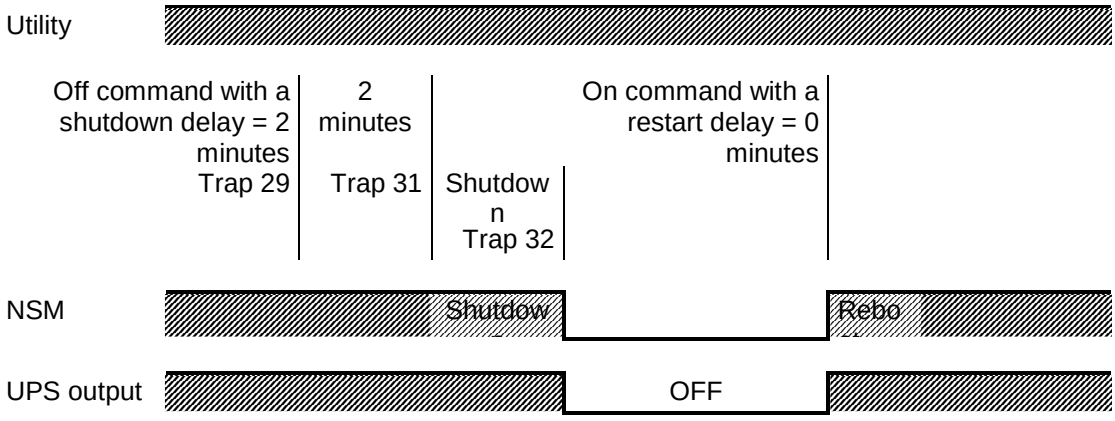
4.2.3 Extended power outage, shutdown initiated by the Shutdown Timer, but utility restoration before the end of the Shutdown Duration

If utility power is restored before the end of the Shutdown Duration, the UPS is shut off after the Shutdown Duration for a period equal to the forced reboot time delay



4.2.4 Off/On command

Off/On command is sent from the “UPS control” page
After a power on, controls are disabled during 120 secondes to allow the server to reboot.



5 Configuring a set of cards with Mupgrade

This feature is particularly useful to configure large UPSs / STSs installed base.

The Remote configuration features of Mupgrade allows you to import, modify and export configuration files from and to Network Management Cards.

Configure all your Network Management Cards in four step :

1. Configure a Network Management Card located on the network through the html interface to create a master configuration..

2. Import this configuration from the master card in Mupgrade.

3. Edit and change some parameters , **select the fields which must be overwritten in the destination cards** and save the new configuration in a file.

4. Export the new configuration to other cards which have **same firmware release** as the master card

Read the relevant documentation available for download on the www.apc.com web site.

6 Configuration in local mode and via Telnet or SSH

6.1 Configuration in local mode

- Use the cable supplied with the card.
- Connect the card to a computer equipped with a hyper-terminal type emulator. The serial link should be set at 9600 bauds, 8 bits, no parity, 1 stop bit and no flow control.
- Check that UPS power is on.
- A few seconds after terminal opening, press the "***Enter***" button. The menu asks you to enter your password (**MGEUPS** by default), and then press **"*Enter*".**
- The card will disconnect itself after 3 minutes of inactivity.
- The menu is in English only.

```
+=============================================================================
+
|       [ MGE UPS SYSTEMS SNMP/Web agent Configuration menu ]          |
+=============================================================================
+
Enter Password: ******

+=============================================================================
+
|       [ MGE UPS SYSTEMS SNMP/Web agent Configuration menu ]          |
+=============================================================================
+
  1. Agent Configuration
  2. UPS/STS Parameters
  3. Access Control Table
```

```
  4. Reset Configuration To Default
  5. Reset Agent
  0. Exit

Please Enter Your Choice =>
```

6.1.1 Choice 1: SNMP agent configuration menu

The blue lines are those displayed on screen.

```
+==============================================================================+
|              [ Agent Configuration Menu ]                    |
+==============================================================================+
```

SNMP/Web Agent Version : IAb6 (SN 49ej45007)
Indicates the version level of the software and the serial number of the card.

Ethernet address : 00 E0 D8 0D 6F 2A
MAC address of the card.

Agent BIOS Version : 6.16
Version number of the BIOS.

1. IP Address : 123.49.132.74
To change the IP address of the card, press “1” then ***“Enter”***. Specify an IP address, then press ***“Enter’***.

2. Gateway Address : 123.49.132.1
Enter the name of the gateway to be used to communicate with other sub-networks.

3. Network Mask : 255.255.254.0
Enter the mask of the sub-network defining the user group to which the card is connected.

4. sysContact : Computer Room Manager
Enter the name of the person responsible for the UPS.

5. sysName : MGEUPS
Enter a string of characters to identify the UPS.
32 characters maximum

6. sysLocation : Computer Room
Enter a string of characters to identify the installation location of the UPS.
32 characters maximum

7. Community Read-Only : public
Enter the name of the read-only community (by default = public)
31 characters maximum

8. Community Read/Write : public
Enter the name of the read/write community. This name is used by the NSM to subscribe to the table of notified Clients. It is recommended to personalise this name.
Value by default “public”.

31 characters maximum

9. HTTP Login Username : MGEUPS

Text field limited to 10 characters. Enables secure access to the sections of the Configuration menu. Default value “MGEUPS”.

a. Manager Password : *
Text field limited to 10 characters. Enables secure access to the sections of the Configuration menu. Default value “MGEUPS”.

b. BOOTP/DHCP Enabled : Enabled
Authorises the configuration of network parameters with your BootP/DHCP as a startup mode (choose enable). Card operating mode with the server: after all reboots, the card (if this option is enabled), attempts to recover the network parameters from the server for 10 seconds. If no response is obtained from the server, the card boots with the last parameters saved from the previous start.

0. Return to previous menu
Goes back to the previous menu.

6.1.2 Choice 2: UPS / STS parameters

The blue lines are those displayed on screen.

```
+=============================================================================+
|                  [UPS/STS Parameters Menu]                  |
+=============================================================================+
SNMP/Web Agent Version      : IAb6 (SN 49ej45007)
Ethernet address            : 00 E0 D8 0D 6F 2A
Agent BIOS Version          : 6.16

1. Log Periodicity          : 60
Value between 20 and 99999. Enables initialisation of the save frequency of Measurements, Events and System in the Log menu. Default value = 60 sec.

2. Trap Port Number         : 162
Numeric field limited to 65534. Enables forwarding of the traps sent by the card to a port other than the one usually used for SNMP. Default value 162

3. System Date (yyyy/mm/dd) : 2010/01/22
Enables adjustment of the date

4. System Time (hh:mm:ss)   : 12:43:21
Enables adjustment of the time

0.  Return to previous menu
```

6.1.3 Choice 3: Access control

```
+=============================================================================+
|  IP Address     Community String     Access                 |
+=============================================================================+
[1] 0.0.0.0       public               NotAccess
```

```
[2] 0.0.0.0       public          NotAccess
[3] 0.0.0.0       public          NotAccess
[4] 0.0.0.0       public          NotAccess

  COMMANDS -
  1. Modify - Modify an entry of table
  2. Reset - Reset an entry to default from table
  0. Return to previous menu

Please Enter Your Choice =>
```

This menu enables configuration of access to the four supervision stations (identified by the IP address) with read/write community names different to those already defined in the card “1” menu.
First enter the figure corresponding to the command to be carried out, then the number of the target input.
The example below shows how to configure the read/write rights for a station (172.17.1.1) with a community name **MyCom:**

```
Please Enter Your Choice => 1
Entry Number : 1
Enter IP address : [0.0.0.0] 172.172.1.1
Enter Community String : [public] MyCom
Select Access Type -
 [NotAccess]
  1. Read
  2. Read/Write
  3. NotAccess

Please Enter Your Choice => 2
+=============================================================================+
|  IP Address      Community String     Access                    |
+=============================================================================+
[1] 172.172.1.1          MyCom            Read/Write
```

6.1.4 Choice 4: Restore default configuration

Use this function to restore the card’s factory configuration. Reboot the card so that the network parameter changes are taken into account.

6.1.5 Choice 5: Reset the card

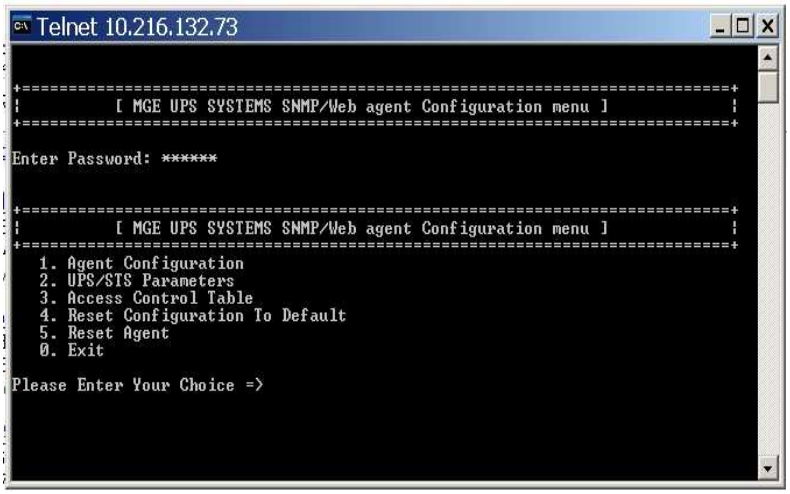
Use this function to reboot the card

6.2 Configuration via Telnet

You can access the configuration menu (see "configuration in local mode" section) from a station equipped with the Telnet protocol.
As soon as the card is accessible on the network, enter the command:

telnet < card IP address **>** to access the menu.

The password defined by default is MGEUPS.
The card will disconnect automatically after 3 minutes of inactivity.



6.3 Configuration via SSH

You can access the configuration menu (see "configuration in local mode" section) from a station equipped with the SSH protocol when https option is selected.

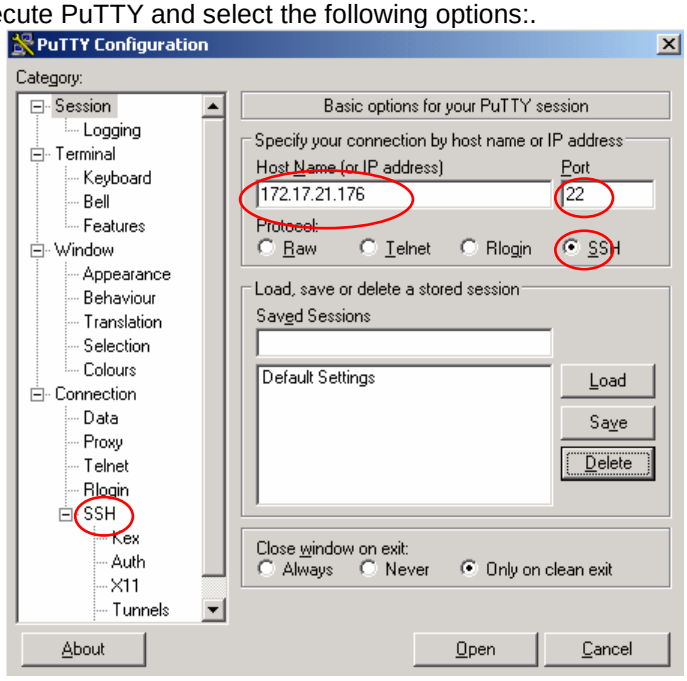
when user connect to NMC by SSH, the screen will hold about 10 seconds for process encryption cipher.

Note : SSH connection is allowed, when SSL Activation is checked in the Access Control Page.
In this case, the telnet connection will be not available.

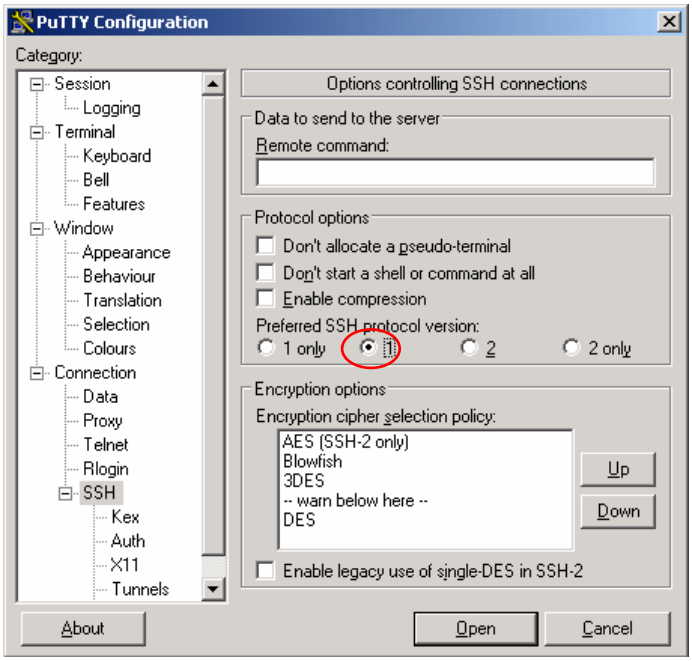
6.3.1 PuTTY SSH Client Program

PuTTY is a free implementation of Telnet and SSH for Win32 and Unix platforms, along with an xterm terminal emulator. You can get the PuTTY by http://www.chiark.greenend.org.uk/~sgtatham/putty/
Here after, we will show you how to set up PuTTY programme for connecting to NMC card by SSH V1 protocol.

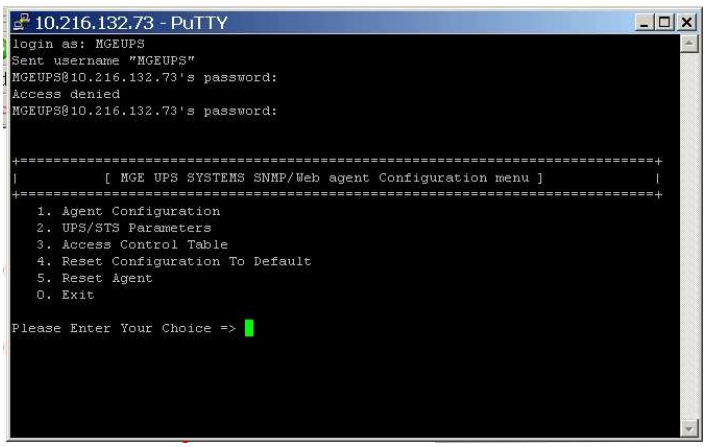
Execute PuTTY and select the following options:.



Select SSH :



and Clic on « Open » to start connection



7 Maintenance

7.1 Software upgrade

7.1.1 Card firmware upgrade using Mupgrade (Windows)

This feature is particularly useful to upgrade a large UPS installed base in one operation.

Read the relevant documentation available for download on the www.apc.com web site.

7.1.2 Card software upgrade via TFTP (UNIX and Windows)

Upgrading is also possible with TFTP command.

Generic command, with default value, is:
tftp -i @IP put nmc_fb.bin **upgrade@MGEUPS@MGEUPS**

Where:
-i indicates binary mode
@IP is the address of the NMC card
nmc_fb.bin is the firmware name

Caution the last parameter **upgrade@MGEUPS@MGEUPS,** represent the default value of **upgrade@*password*@*username*.** This parameter is build like an unique word, without any blank character inside.
password value defined in the acces control page
username value defined in the acces control page

Check syntax depending of your operating system

7.1.3 Recovery tool software Msupgrade (Windows) via the serial link

Read the relevant documentation available for download on the www.apc.com web site.

8 Appendices

8.1 Tables of alarms and events

8.1.1 UPS Alarm table

English	French
Battery Fault	Défaut batterie
Output On Battery	Sortie alimentée par batterie
Low Battery	Fin d'autonomie
UPS Over Temperature	Défaut température
Output not protected	Sortie non protégée
UPS Overload	Surcharge onduleur
Output On Bypass	Sortie sur Bypass
Charger Fault, Not Charging Battery	Défaut chargeur
Utility failure	Perte secteur
No Battery	Pas de batterie
Replace Battery	Batterie à remplacer
Unavailable Battery	Batterie indisponible
Boost Activated on UPS	Onduleur en mode Boost
Buck Activated on UPS	Onduleur en mode Buck
<Sensor name>: Temperature is above high threshold xx ℃	<Sensor name>: La température est au dessus du seuil haut xx ℃
"<Sensor name>: Humidity is above high threshold xx %",	<Sensor name>: L'humidité est au dessus du seuil haut xx %",
<Sensor name>: Temperature is below low threshold xx ℃	<Sensor name>: La température est en dessous du seuil bas xx ℃
<Sensor name>: Humidity is below low threshold xx %	<Sensor name>: L'humidité est en dessous du seuil bas xx %
<Sensor name>: <Input #1 label> <when closed label>	<Sensor name>: <Input #1 label> <when closed label>
<Sensor name>: <Input #1 label> <when open label>	<Sensor name>: <Input #1 label> <when open label>
<Sensor name>: <Input #2 label> <when closed label>	<Sensor name>: <Input #2 label> <when closed label>
<Sensor name>: <Input #2 label> <when open label>	<Sensor name>: <Input #2 label> <when open label>

8.1.2 STS Alarm table

English	French
Source 1 Static Switch fault	Défaut Contacteur Statique source 1
KM1 fault	Défaut Contacteur source 1 (KM1)
Source 2 Static Switch fault	Défaut Contacteur Statique source 2
KM2 fault	Défaut Contacteur source 2 (KM2)
Source 1 voltage fault	Défaut tension source 1
Source 1 frequency fault	Défaut frequence source 1 hors tolerances
Source 2 voltage fault	Défaut tension source 2
Source 2 frequency fault	Défaut frequence source 2 hors tolerances
Output not powered	Charge non alimentée
Transfer forbiden	Transfert interdit

Sources out of synchronization	Déphasage sources 1 / 2
Emergency stop actived	Défaut arrêt d'urgence active
Output Thermal overload	Défaut surcharge thermique
Output overload	Défaut surcharge
STS internal fault	Défaut interne
STS general alarm	Défaut Alarme Générale
STS communication failure	Défaut Communication interne
<Sensor name>: Temperature is above high threshold xx ℃	<Sensor name>: La température est au dessus du seuil haut xx ℃
"<Sensor name>: Humidity is above high threshold xx %",	<Sensor name>: L'humidité est au dessus du seuil haut xx %",
<Sensor name>: Temperature is below low threshold xx ℃	<Sensor name>: La température est en dessous du seuil bas xx ℃
<Sensor name>: Humidity is below low threshold xx %	<Sensor name>: L'humidité est en dessous du seuil bas xx %
<Sensor name>: <Input #1 label> <when closed label>	<Sensor name>: <Input #1 label> <when closed label>
<Sensor name>: <Input #1 label> <when open label>	<Sensor name>: <Input #1 label> <when open label>
<Sensor name>: <Input #2 label> <when closed label>	<Sensor name>: <Input #2 label> <when closed label>
<Sensor name>: <Input #2 label> <when open label>	<Sensor name>: <Input #2 label> <when open label>

8.1.3 UPS event table

English	**French**
Battery fault	Défaut batterie
Battery OK	Fin défaut batterie
Replace battery	Batterie à remplacer
Battery replaced	Batterie remplacée
Low battery	Fin d'autonomie
UPS return from low battery	Fin préalarme d'autonomie
UPS battery charger is not active	Chargeur batterie arrêté
UPS battery charger is active	Chargeur batterie en marche
UPS battery entering minimum condition	Batterie en charge minimum
UPS battery exiting from minimum condition	Fin batterie en charge minimum
Output on battery	Sortie alimentée par batterie
Return on UPS	Sortie sur onduleur
Output on Bypass	Sortie sur Bypass
Bypass : Return on UPS	Sortie sur onduleur
UPS bypass unavailable	Bypass indisponible
UPS bypass available	Bypass disponible
Utility failure	Perte secteur
Utility restored	Retour secteur
Boost activated on UPS	Onduleur en mode Boost
Boost de-activated on UPS	Mode Boost désactivé
UPS overload	Surcharge onduleur
UPS return to normal load	Fin de surcharge onduleur
UPS over temperature	Défaut température

UPS return to normal temperature	Fin de défaut température
%s on sequence started	Début séquence de démarrage %s
%s on sequence cancelled	Arrêt séquence de démarrage %s
%s on sequence in progress	Séquence de démarrage %s en cours
%s on sequence completed	Fin séquence de démarrage %s
%s off sequence started	Début séquence d'arrêt %s
%s off sequence cancelled	Arrêt séquence d'arrêt %s
%s off sequence in progress	Séquence d'arrêt %s en cours
%s off sequence completed	Fin séquence d'arrêt %s
%s toggle (off/on) sequence started	Début séquence d'arrêt/marche %s
%s toggle (off/on) sequence cancelled	Arrêt séquence d'arrêt/marche %s
%s toggle (off/on) sequence in progress	Séquence d'arrêt/marche %s en cours
%s toggle (off/on) sequence completed	Fin séquence d'arrêt/marche %s
UPS	onduleur
UPS communication failed	Perte de communication avec l'onduleur
UPS communication restored Unavailable battery	Retour de communication avec l'onduleur Batterie indisponible
Battery available	Batterie disponible
UPS waiting for battery charging condition	UPS waiting for battery charging condition
UPS reached battery charging condition	UPS reached battery charging condition
UPS fault	défaut interne
UPS OK	Fin défaut interne
UPS passed battery test	Test batterie terminé
UPS failed battery test	Test batterie en défaut
UPS enter environment external alarm	UPS enter environment external alarm
UPS exit environment external alarm	UPS exit environment external alarm
Buck activated on UPS	Onduleur en mode Buck
Buck de-activated on UPS	Mode Buck désactivé
Normal input switch (Q1) closed	Interrupteur d'entrée (Q1) fermé
Normal input switch (Q1) open	Interrupteur d'entrée (Q1) ouvert
Bypass switch (Q4S) closed	Interrupteur bypass (Q4S) fermé
Battery switch (QF1) closed	Disjoncteur batterie QF1 fermé
Battery switch (QF1) open	Disjoncteur batterie QF1 ouvert
Manual bypass switch (Q3BP) closed	Interrupteur bypass manual (Q3BP) fermé
Manual bypass switch (Q3BP) open	Interrupteur bypass manual (Q3BP) ouvert
Output switch (Q5N) closed	Interrupteur de sortie (Q5N) fermé
Output switch (Q5N) open	Interrupteur de sortie (Q5N) ouvert
Output not protected	Sortie non protégée
Output On	Sortie alimentée
<Sensor name>: Temperature is below low threshold %d ℃	<Sensor name>: La température est en dessous du seuil bas %d ℃
<Sensor name>: Temperature is above high threshold %d ℃	<Sensor name>: La température est au dessus du seuil haut %d ℃
<Sensor name>: Temperature is in normal range	<Sensor name>: La température est revenue à un niveau normal
<Sensor name>: Humidity is below low threshold %d %	<Sensor name>: L'humidité est en dessous du seuil bas %d %
<Sensor name>: Humidity is above high threshold %d %	<Sensor name>: L'humidité est au dessus du seuil haut %d %

<Sensor name>: Humidity is in normal range	<Sensor name>: L'humidité est revenue à un niveau normal
<Sensor name>: <Input #1 label> <when closed label>	<Sensor name>: <Input #1 label> <when closed label>
<Sensor name>: <Input #1 label> <when open label>	<Sensor name>: <Input #1 label> <when open label>
<Sensor name>: <Input #2 label> <when closed label>	<Sensor name>: <Input #2 label> <when closed label>
<Sensor name>: <Input #2 label> <when open label>	<Sensor name>: <Input #2 label> <when open label>

8.1.4 STS event table

English	French
Source 1 Static Switch fault	Défaut Contacteur Statique source 1
KM1 fault	Défaut Contacteur source 1 (KM1)
Source 2 Static Switch fault	Défaut Contacteur Statique source 2
KM2 fault	Défaut Contacteur source 2 (KM2)
Source 1 voltage fault	Défaut tension source 1
Source 1 frequency fault	Défaut frequence source 1 hors tolerances
Source 2 voltage fault	Défaut tension source 2
Source 2 frequency fault	Défaut frequence source 2 hors tolerances
Load not powered	Charge non alimentée
Transfert forbiden	Transfert interdit
Displacement source 1 / source 2	Déphasage sources 1 / 2
EPO present	Défaut arrêt d'urgence activé
Thermal overload	Défaut surcharge thermique
Overload fault	Défaut surcharge
Internal failure	Défaut interne
General alarme	Défaut Alarme Générale
Communication failure	Défaut Communication interne
Source 1 circuit breaker (Q1) closed	Interrupteur Q1 fermé
Source 1 circuit breaker (Q1) open	Interrupteur Q1 ouvert
Source 2 circuit breaker (Q2) closed	Interrupteur Q2fermé
Source 2 circuit breaker (Q2) open	Interrupteur Q2ouvert
Output circuit breaker (Q3) closed	Interrupteur Q3fermé
Output circuit breaker (Q3) open	Interrupteur Q3ouvert
Source 1 bypass switch (Q1BP) closed	Interrupteur Q1BP ferme
Source 1 bypass switch (Q1BP) open	Interrupteur Q1BP ouvert
Source 2 bypass switch (Q2BP) closed	Interrupteur Q2P ferme
Source 2 bypass switch (Q2BP) open	Interrupteur Q2P ouvert
Source 1 active	Source 1 active
Source 2 active	Source 2 active
Source 1 preferred	Source 1 prioritaire
Source 2 preferred	Source 2 prioritaire
Tranfer available	Transfert autorisé
<Sensor name>: Temperature is below low threshold %d ℃	<Sensor name>: La température est en dessous du seuil bas %d ℃
<Sensor name>: Temperature is above high threshold %d ℃	<Sensor name>: La température est au dessus du seuil haut %d ℃
<Sensor name>: Temperature is in	<Sensor name>: La température est revenue à

normal range	un niveau normal
<Sensor name>: Humidity is below low threshold %d %	<Sensor name>: L'humidité est en dessous du seuil bas %d %
<Sensor name>: Humidity is above high threshold %d %	<Sensor name>: L'humidité est au dessus du seuil haut %d %
<Sensor name>: Humidity is in normal range	<Sensor name>: L'humidité est revenue à un niveau normal
<Sensor name>: <Input #1 label> <when closed label>	<Sensor name>: <Input #1 label> <when closed label>
<Sensor name>: <Input #1 label> <when open label>	<Sensor name>: <Input #1 label> <when open label>
<Sensor name>: <Input #2 label> <when closed label>	<Sensor name>: <Input #2 label> <when closed label>
<Sensor name>: <Input #2 label> <when open label>	<Sensor name>: <Input #2 label> <when open label>

8.1.5 System alarm table

English	French
Cold boot	Démarrage de la carte
Warm boot	Réinitialisation de la carte
Network link up	Carte connectée au réseau
Network link down	Carte déconnectée du réseau
Agent Card Restart	Redémarrage de la carte
Parameters reset to default	Paramètres par défaut reprogrammés
Firmware upgrade with version xx	Carte reprogrammée avec version xx
History log cleared	Historique des mesures effacé
UPS event log cleared	Historique des événements effacé
Agent event log cleared	Historique système effacé
History log interval changed	Période des historiques modifiée
Communication failure	Perte de communication
Communication restored	Retour de communication
Time changed by user	Date et heure réglées manuellement
Time changed by server	Date et heure synchronisées par serveur
Time changed by RTC	Date et heure réglées par RTC
Access to SMTP server failed to mail to recipient	L'accès au serveur SMTP a échoué pendant l'envoi au destinataire de mail
Access to SMTP server succeed to test mail to recipient	L'accès au serveur SMTP a réussi pour le test d'envoi au destinataire de mail
Environment log cleared	Historique des mesures environnement effacé
<Sensor name> communication failed	<Sensor name> communication restored

8.2 Glossary

Bootp:
Protocol based on UDP used to allocate an IP address corresponding to an Ethernet card during the startup phase. Defined by the RCF 951

Community name:
Access key to access SNMP agent information

DHCP Dynamic **H**ost **C**onfiguration **P**rotocol
This IETF protocol enables remote, automatic, self-configuration of the IP addresses of a workstation.

DNS Domain **N**ame **S**evicel
The DNS protocol ensure correspondence between the name of a machine and its IP address

DST Daylight **S**aving **T**ime
Extension of the NTP protocol to manage time changes in summer and winter

E-mail
Electronic means of transmitting messages and/or files.

Gateway
Interconnection equipment between networks with different conventions, to enable communication between them

HTML
(HyperText Markup Language) Language used to describe hypertext pages on the web.

HTTPS : is the secure version of HTTP, the communication protocol of the World Wide Web. It was invented by Netscape Communications Corporation to provide authentication and encrypted communication and is used in electronic commerce.

IP
Internet Protocol. Network layer protocol in the TCP/IP stack offering a no-connection inter-network service . The IP protocol offers functions for addressing, service type specification, fragmentation and re-assembling and security. Defined in RFC 791.

MD5
Message Digest 5. Algorithm producing an output message from an input message of arbitrary length, in the form of a replica or s
mary 128 bit message. Intended for digital signature applications requiring large files to be compressed in total security before being coded with a private key, using a public key algorithm, like RSA.

MIB MANAGEMENT **I**NFORMATION **B**ASE
- Group of software commands to control and administrate a device through the network. Each type of device (server, hub, PC, UPS, etc.) has its own MIB
– The IETF has proposed a standard MIB for each group of devices (hubs, for example) to simplify administration if they come from different suppliers

MultiSlot
Expander module for MGEUPS communication card.

NETWORK **M**ANAGEMENT **C**ARD
Communication cards to supervise UPS and communicate with Network Shutdown Module to insure power protection on servers

NMS **N**ETWORK **M**ANAGEMENT **S**TATION (SNMP)
The dedicated PC or workstation is used on the company's networks to administrate all devices connected to the network. Data are transmitted using the SNMP protocol. Popular NMS systems include HP OpenView, IBM Tivoli, CA Unicenter, etc.

NETWORK **S**HUTDOWN **M**ODULE
Protection software installed on a PC or server to protect it

NTP **N**etwork **T**ime **P**rotocol
Protocol to position a set of machines on a network at the same time.

REBOOT –
To restart a system after an interruption.
– To perform an obstacle-free "reboot", it is essential that the system is correctly and carefully shut down beforehand.
– The reboot is usually automatic if the computer is re-supplied with electricity (from the utility or from the UPS).

RFC
Request for Comments. All documents defining internal Internet operation.

SNMP (SIMPLE NETWORK MANAGEMENT PROTOCOL)
Protocol used to remote-supervise, administrate and control devices connected to a company network.

SMTP (SIMPLE MAIL TRANSFER PROTOCOL)
Enables message transfer between e-mail servers or between the client and its server. It is based on the server's port 25. It is described in RFC 821

SSL (Secure Sockets Layers) is a protocol developed by Netscape Communications Corporation for securing data transmission in commercial transactions on the Internet. Using public-key cryptography, SSL provides server authentication, data encryption, and data integrity for client/server communications

Subnet mask:
Mask of bits used to identify and differentiate the network address and the equipment address in an IP address. Normally, the mask is automatically determined by the class of address, which defines in a unique manner the network part/equipment part division of the IP address.
- Class A: internet address: 255.0.0.0.
- Class B: internet address: 255.255.0.0.
- Class C: internet address: 255.255.255.0.

TCP/IP
Transmission Control Protocol/Internet Protocol. Common name of a series of protocols developed by the DOD in the US to help build Internet networks throughout the world.

Telnet
Internet protocol used for terminal emulation, i.e. enabling a computer to connect with a server as if it was a simple terminal locally connected to this server.

Trap (SNMP)
This term describes an event that affects an MIB variable. Traps are sent to the manager, which is programmed to perform specific tasks upon reception of the traps.