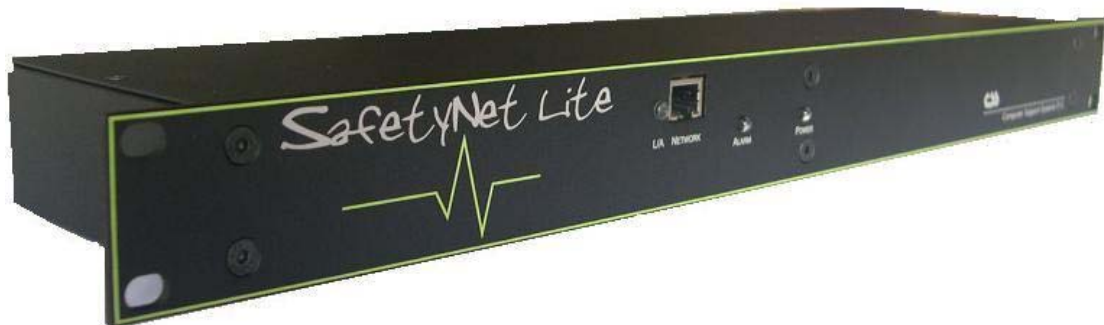




SafetyNet Lite User Manual



Document Revision CSSSN 01/09
SafetyNet Lite

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Disclaimer and Revisions

Operation of this equipment in a residential area may cause interference in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Date	Revision	Comments
01/08/2005	NK A	Added new analogue sensor comments.
25/09/2005	NK A 1.1	Formatting
05/05/2006	NK A 1.2	Sensor calibration, model updates
13/01/2009	NK	Updated modem init strings

Declaration of Conformity

Manufacturer's Name & Address:

Computer Support Systems Pty Ltd, 373 Johnston Street, Abbotsford VICTORIA
3067, Australia.

Product Name Model: SafetyNet Lite Environmental Monitoring System

Warranty

Computer Support Systems warrants SafetyNet Lite:

- If used in accordance with all applicable instructions
- To be free from defects in material and workmanship for a period of one year from the date of initial purchase.

This warranty is voided if the customer uses SafetyNet Lite in an unauthorized or improper way, or in an environment for which it was not designed. Warranty does not apply to normal wear or to damage resulting from accident, misuse, abuse or neglect.

Safety Instructions

When using this product, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

1. Read and understand all instructions.
2. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
3. Do not use this product in an outdoor environment or near water, for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.
4. Do not place this product on an unstable surface. The product may fall, causing serious damage to the product.
5. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
6. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on or over it.
7. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
8. Never push objects of any kind into this product through the slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.
9. To reduce the risk of electrical shock, do not disassemble this product. Opening or removing covers will expose you to dangerous voltages or other risks. Incorrect re-assembly can cause electric shock when the appliance is subsequently used.
10. Unplug this product from the wall outlet and return to CSS for repairs under the following conditions:
 - a) When the power supply cord or plug is damaged.
 - b) If liquid has been spilled into the product.
 - c) If the product has been exposed to rain or water.
 - d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - e) If the product has been dropped or has been damaged.
 - f) If the product exhibits a distinct change in performance.
11. Do not use sensors that are not supplied by Computer Support Systems

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1 Introduction to SafetyNet Lite

SafetyNet Lite is a modern network based Environmental Monitoring System (EMS) for small and medium applications. It is capable of notifying error conditions via SNMP (Simple Network Management Protocol), via SMS or by a web page. Blinking LED's, a buzzer and a strobe is also activated on alarms and will attract attention on error conditions.



It is capable of driving a relay on alarms to activate a desired external product. This product is ideal to monitor facility services and notify of potential environmental problems, which may impact on the network operations. The unit can even monitor an IP address and reboot servers if it stalls with the appropriate accessories.

SafetyNet Lite comprises an embedded web server. With a standard Java enabled web browser installed in almost all computers today, you can easily view SafetyNet Lite web pages to monitor status and change settings remotely. On the main web page, you get a total overview of the present status of the sensors connected.

Features

- Powerful embedded microprocessor driven, with networking features.
- Up to 2.5 hours of internal battery backed operation. (Optional)
- 19" inch rack mountable and compact size.
- SNMP features to notify error conditions or to poll data.
- SMS messaging via the Internet, or the option of selecting a network independent internal modem to send SMS messages. *
- Remote configuration and monitoring capabilities.
- A dual analogue (temperature & humidity) and three contact sensor (digital) inputs.
- Configurable trigger delays for digital contact sensors.
- An individual relay, capable of being driven via the web interface or by sensors.
- Selectable power sources at ordering. I.e. 240 AC or 48V DC
- Remote IP monitoring feature with physical rebooting of servers/systems when failed or stalled. **
- A strobe, a buzzer and a LED to indicate error conditions.
- Graphical plotting for the ambient analogue sensor.
- Up to 40 entries of alarm and event logs.

* Optional & recommended. Applicable to models ZSN4002M & ZSN4002MD.

** With the option of using a SafetyBoot device.

Applications

- Computer server room monitoring.
- Computer rack monitoring and management.
- Alarm consolidation from other non-net enabled systems.
- Monitoring of other controlled environments
- Monitoring of servers or PC's and rebooting when stalled. ** (See above)
- Water monitoring systems.
- Remote door controlling applications.

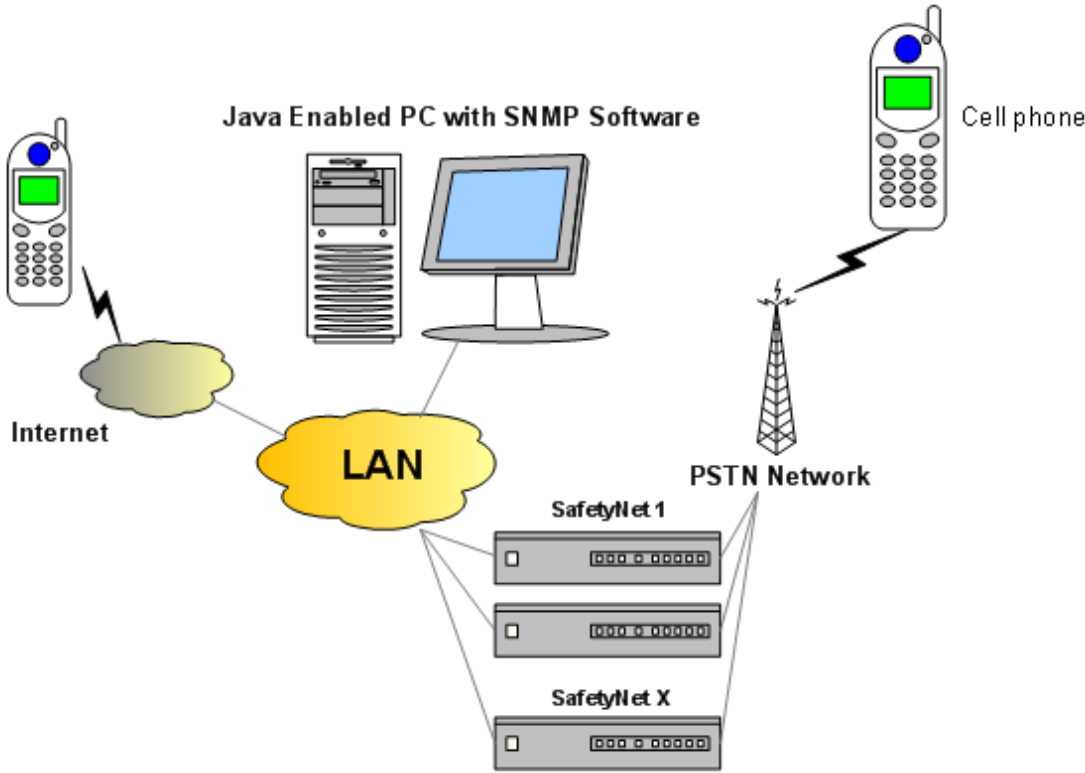


SafetyNet Lite Environmental Monitoring System
ZSN4002

1.1 Available SafetyNet Lite Models

Model Number	Description
ZSN4002NB	Powered by 240 Volt A/C
ZSN4002	Powered by 240 Volt A/C, includes battery backup
ZSN4002D	Powered by 48 Volt D.C, includes battery backup
ZSN4002M	Powered by 240 Volt A/C input, includes a PSTN modem & battery backup
ZSN4002MD	Powered by 48 Volt D.C, includes a PSTN modem & battery backup

1.2 SafetyNet Product Family Concept



2 Assumptions

We assume that you have: -

- Configured SafetyNet Lite network parameters according to the **SafetyNet Lite Quick Install Guide**, and that the IP address of the device is known. This manual is to explain how to use SafetyNet Lite once successfully installed on the network. You can find information on how to get SafetyNet Lite on the network in the **SafetyNet Lite Quick Install Guide** found on your product CD.
- Installed SafetyNet Lite with all necessary sensors supplied by Computer Support Systems.
- All requirements specified on the **SafetyNet Lite Getting Started Manual** are met.

3 Introduction to SafetyNet Lite Web Interface

SafetyNet Lite web interface is controlled by Java applets. The Java™ Runtime Environment version 1.6.0 or higher is required to be installed on your computer to load the applets. See section 2 (Requirements) under the **SafetyNet Lite Getting Started Manual** for further details.

The product uses applets to represent its Graphical User Interface (GUI). This user interface consists of a structural menu for easy navigation.

The SafetyNet Lite web interface is password protected and case sensitive. Factory default password is set as "password".

A simple description of each web interface is described below. Further details of each web interface and how to use them can be found under chapter 5, *Configuring SafetyNet Lite*.

The web interface is loaded simply using a Java enabled browser, and by pointing it to the IP address of SafetyNet Lite. Alternatively, you may configure your WINS (Windows Internet Name Service) to provide a name resolution for SafetyNet Lite from NetBIOS names to IP addresses for Windows PCs. This will enable to type the given name instead of the IP address.

3.1 SafetyNet Lite Main Menu

The Safety Net main menu controls the navigation. It shows the current Software Version, the unit name, the MAC address (serial number) and the features that are enabled.

Features that are disabled will have their configuration menu entry access denied or disabled.

CS SafetyNet Lite Main Menu

- SafetyNet Lite Viewer
- Administration Configuration
- Sensor/Relay Configuration
- SNMP Configuration
- SMS Configuration

Features	Status
SNMP	Registered
IP Monitoring	Registered
SMS Messages	Registered

Device name: S'NetLite System
Serial number: 0090C2C5899F

- Licensing/Registration Keys

Software version 1.00
To obtain a license key contact sales@csspl.com.au
[Computer Support Systems](http://www.computersupportsystems.com.au)

3.1.1 Enabling Features on your product (Registration Keys)

SafetyNet Lite has the following features controlled by registration keys.

- SNMP trap messages
- SNMP graphing
- SMS messages (Only on models ZSN4002NB, ZSN4002 & ZSN4002D)

The product CD label on the provided CD-ROM will contain the appropriate registration key for each feature purchased.

To enable features, enter the registration keys on the Registration Control web page. Click on “*Licensing/Registration Keys*” under the main menu to enter this page.

Enter the correct registration keys and click on “*Update*”. Any incorrect entry will be notified. Once you enter the correct keys the feature status will be updated to “*enabled*”. Click on main menu to exit.

Notice that you have access to the configuration settings of the features that are enabled only. Features that are not registered cannot be configured and access to the configuration web pages would be denied.

3.1.2 Introduction to SafetyNet Lite Viewer

This is the main remote interface that allows you viewing of your current sensor and relay status. It also gives access to control the relay remotely if the relay is manually controlled.

The temperature/humidity and digital-alarm status are clearly indicated and any fault will attract attention by blinking indicators.

This interface also provides navigation shortcuts to view the analogue sensor graphs and the alarm and event logs.

Chapter 4, SafetyNet Lite Viewer discusses further about the Viewer.

3.1.3 Introduction to Administration Configuration

Allows network-setting changes, password changes, hardware resets, loading factory defaults and updating the time on SafetyNet Lite.

3.1.4 Introduction to Sensor/Relay Configuration

Allows installing sensors, making changes to sensor settings and configuring the relay. IP monitoring is setup under this menu. This also allows clearing existing data used for graphing purposes and the alarm & event log.

3.1.5 Introduction to SNMP Configuration

Allows SNMP configuration changes; such as communities and network manager IP address insertion.

3.1.6 Introduction to SMS Configuration

This interface is applicable to models ZSN4002NB, ZSN4002 & ZSN4002D only. These models are capable of sending SMS messages via the network.

This interface allows configuring the SMS operation of SafetyNet Lite.

3.1.7 Introduction to Modem Configuration

This interface is applicable to models ZSN4002M & ZSN4002MD only. These models have an in-built modem that can send SMS messages independent of the network when configured.

This interface allows configuring the modem and the SMS customisation of SafetyNet Lite.

3.2 Security on SafetyNet Lite

3.2.1 Password

A password secures entry to the important configuration pages of the SafetyNet Lite.

The factory default password is set to be "password". We recommend that you change it to a desired password with at least four characters.

Note: SafetyNet Lite password is case sensitive. The password is limited to a maximum number of eight characters.

3.2.1.1 Changing the Password

You are able to change the password on the administration configuration web interface. Read section chapter 5.1 *Administration Configuration* to find out how to change your password.

3.2.2 Forgotten Password

Entering an incorrect password for more than three times on the web interface will direct you to a web page where it provides details of how to enter a new password.



Have you forgotten your SafetyNet Lite Password?

If you have forgotten S'NetLite System's password and wish to have a new password set on SafetyNet Lite follow the instructions given below.

1. Contact [Computer Support Systems](#) and fax a password unlock key request on your company letterhead authorised by an authorised personnel. Make sure you have the following details available for us.

Your contact details and company details.
The serial number of your product, which is: 0090c2c5699f
2. Computer Support Systems will then provide you with a password unlock key.
3. Enter this given key at the field below and click on submit.
4. If the key is a valid key it will allow you to enter a new password on SafetyNet Lite.

Enter Password Unlock Key

Upon a successful password unlock key submission it will then allow to enter a new password.

3.2.3 Inactivity Timed Redirection

If SafetyNet Lite configuration pages that are logged in are inactive for more than five minutes, it will automatically log out from the web interface and will direct back to the main menu. This feature will protect users from forgetting to logout from the configuration pages and will attempt to prevent unauthorised access to the configuration aspects of the unit.

This does not apply to the SafetyNet Lite Viewer, the analogue sensor graphs or the alarm & event log interfaces.

4 SafetyNet Lite Viewer

SafetyNet Lite viewer is the key remote interface that allows viewing the current status of the monitored environment.

It shows the label of each sensor, what type of a sensor it is, the current status or the reading of the sensor.

For temperature or humidity type sensor types it gives visual interpretation of the current level with respect to the upper and lower range settings of the sensor limits. This will enable an immediate impression of what level of threat you are in, if at an alarm stage.

The viewer also shows the current output status of the relay. If the relay is manually controlled, it allows controlling the relay via this interface. When the relay is latched, and no alarms are active it is able to reset the latched relay via this interface.

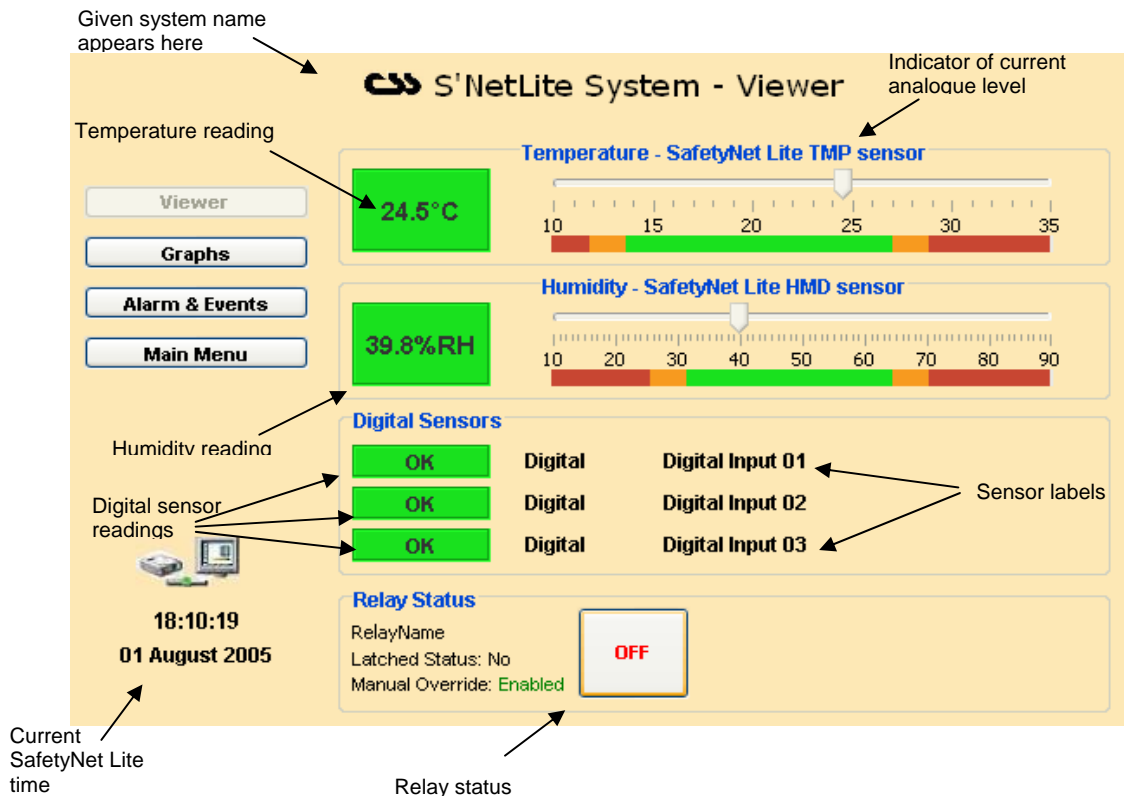
IP monitoring errors, hardware errors, mains failure type or low battery errors, no dial tone detection* errors are also shows on the viewer if they occur.

The time display on the left bottom of the viewer interface is the time extracted from SafetyNet Lite.

The two alternating images at the bottom left corner is an indicator that the interface is communicating with the SafetyNet Lite via the network.

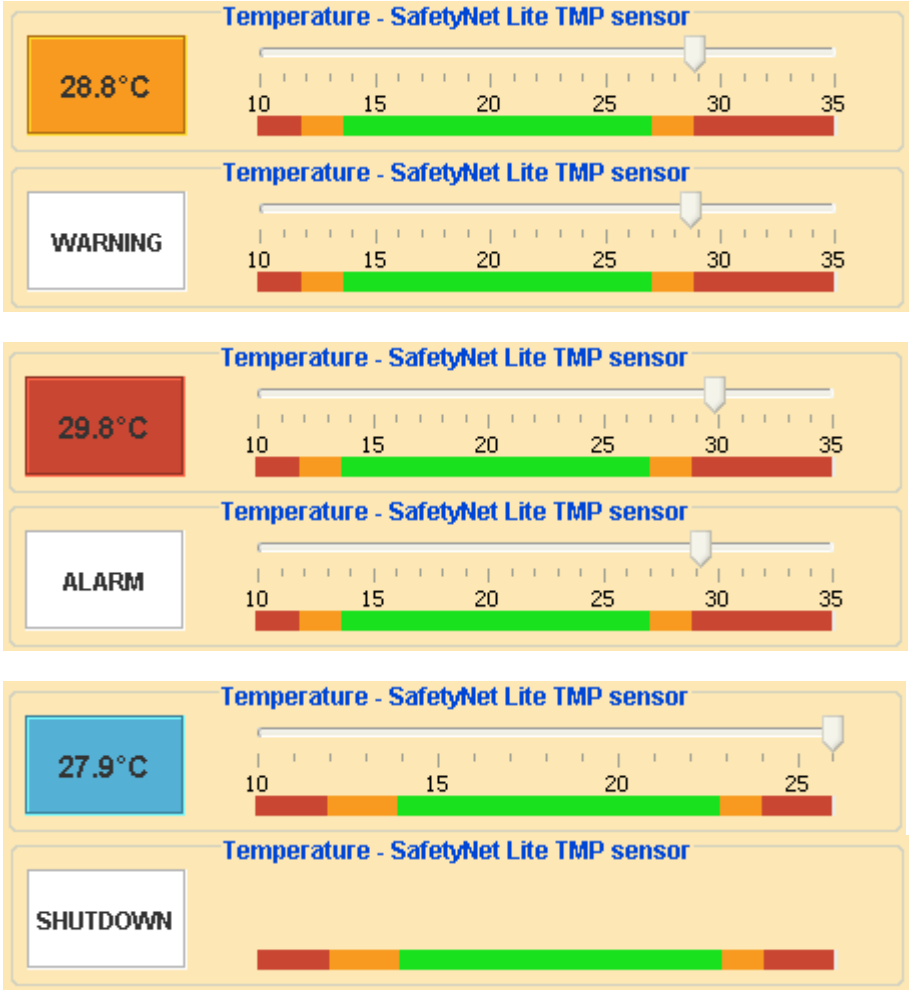
The sub-menu on the right will allow to view the graphs for temperature/humidity type sensors and to view the alarm & event log.

A typical "All's well" status will give you an interface such as.

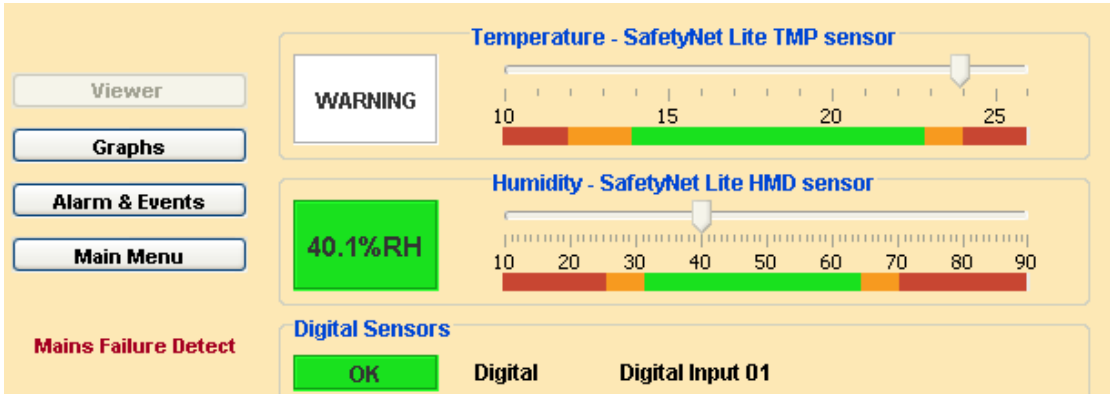


* Only on models ZSN4002M and ZSN4002MD

Any warning, alarm or a shutdown of an analogue sensor will be indicated on the screen as below.

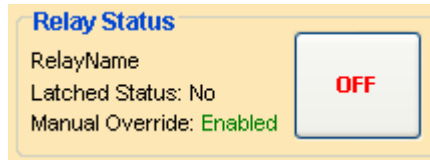


If the analogue sensor is faulty, IP monitoring alarm has triggered, no dial tone is detected, mains have failed, or the internal battery is low, notification is set by a text field describing the error as illustrated below.



4.1 Relay Status

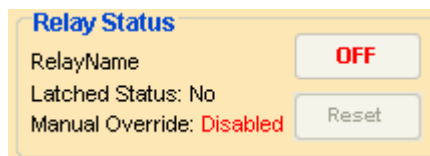
If the relay is configured as driven manually, (manual override enabled under Sensor/Relay Configuration) it is able to control the relay manually over the network via the viewer interface.



Clicking the ON button will turn the relay OFF, (This is a toggle button) and clicking the OFF button will turn the relay ON. The current text on these buttons represents the current status of the relay. (This button gives the current status of the relay)

The above image describes that the relay at the "RelayName" is ON.

If sensors drive the relay you will see the following



The "Reset" button would be disabled at all times, except: -

- A. If latching were enabled and,
- B. If there is no active alarms that drive the relay.

4.2 Graphs

Click on the "Graphs" button on the left side of the viewer to view the ambient analogue sensor data using line graphs. This allows viewing the trend of the temperature and humidity up to the last month. It is vital to view these graphs as an audit trail, as well as to analyse the trend of future data based on previous records.

There are 4 different graphs offered with SafetyNet Lite local graphing. They are:

- o 2 Hour Graph (1 minute average)
- o Daily Graph (6 minute average)
- o Weekly Graph (1 hour average)
- o Monthly Graph (3 hour average)

Read chapter 6 to learn more about graphs.

4.3 Alarm and Event Log

Click on the "Alarm & Events" to check the log entries. These log entries will allow to keep track of previous alarms and event entries.

Read chapter 7 to learn more about log entries.

5 Configuring SafetyNet Lite

Configuring SafetyNet Lite is purely done remotely using web interfaces that embed Java™ applets. Any configuration change does not reboot SafetyNet Lite. All configuration changes are performed at runtime.

Once all configuration aspects have been performed, we recommend that you initiate a hardware reset by clicking the “*Hardware Reset*” sub menu button found in the administration configuration interface on SafetyNet Lite.

As a **backup of the configuration**, we recommend keeping a listing of each of the settings stored elsewhere. Viewing the summary of the complete settings can be obtained via the Administration Configuration page. **Retain a hardcopy of the settings as backup.**

5.1 Administration Configuration

To enter this configuration interface click on “*Administration Configuration*” button on the main menu of SafetyNet Lite.

Use this interface to

- Set network parameters
- Set a device name
- Set/Change the time on SafetyNet Lite
- Perform a hardware reset via software
- Load factory defaults of the product
- Change the current password
- View and store the current configuration settings as a backup

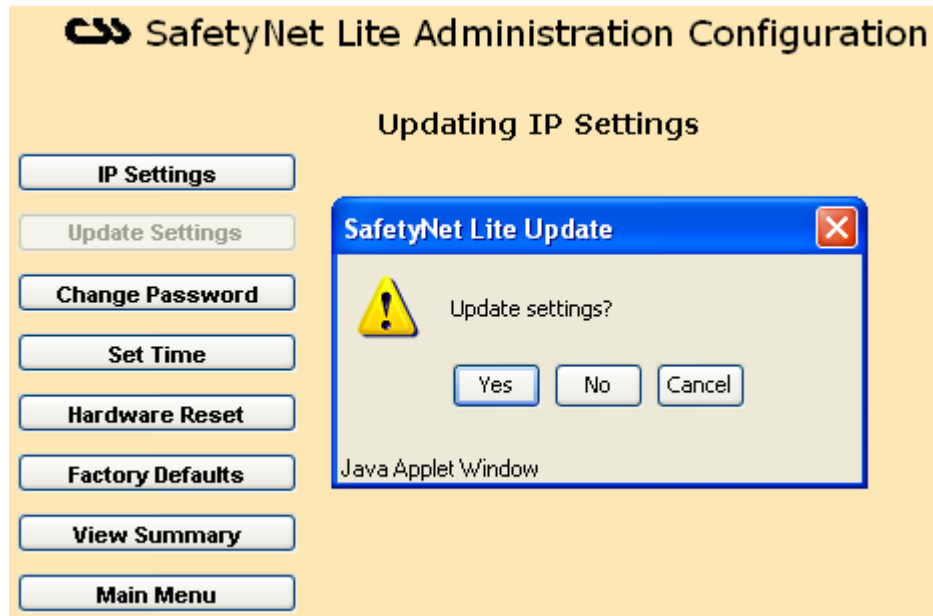
IP Settings

Device Name: A 17-character device name to uniquely identify each SafetyNet Lite units on the network.

IP Address: Enter new IP address or 0.0.0.0 to enable DHCP.

Subnet Mask: Indicates the number of subnets in the network. Contact your network administrator for further details on your subnet mask. DHCP will automatically allocate the subnet mask.

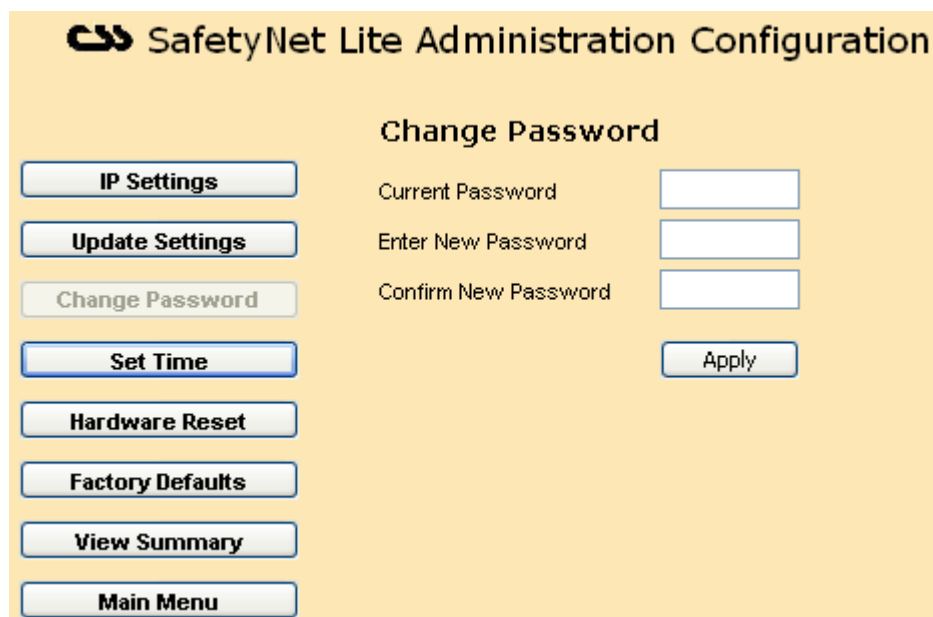
Gateway: Contact your network administrator for further details.



Update Settings

When clicked on “*Update Settings*” it will prompt a confirmation dialog box to proceed. Click “*Yes*” to apply your settings or click “*No*” or “*Cancel*” to cancel new settings.

If clicked “*Yes*”, the new settings are applied to SafetyNet Lite. Updating settings take approximately about 5 seconds.



Change Password

Password Settings: Change the password here and click “Apply”. It will automatically log you out from the device and the new password is required to log back in.

Set Time

This allows setting the real time clock of SafetyNet Lite. When the “Set Time” button is clicked, the time and date is extracted from SafetyNet Lite and displayed. The date format should be DD/MM/YYYY and the time format should be HH:MM:SS in 24-hour format.

Refresh Date/Time: The web interface will read the SafetyNet Lite current time and date updates the appropriate fields.

Insert System Time: This will extract the system time & date from your machine and place them on fields.

Update Date/Time: Will confirm the update and set the current field time and date on to SafetyNet Lite. Once the update is completed, the time is refreshed on fields with the new time and date on SafetyNet Lite.

SafetyNet Lite Administration Configuration

Hardware Reset

Click button below for a **hardware reset** of SafetyNet Lite.

Any active alarms/warnings will be reset.
The relay will be reset (Off position)

Buttons: IP Settings, Update Settings, Change Password, Set Time, Hardware Reset, Factory Defaults, View Summary, Main Menu. A large **Hardware Reset** button is also present.

Hardware Reset

This is similar to toggling power to the unit and resetting the device. It will cause all alarms to be redetected if present, and the relay to be turned off at start up.

SafetyNet Lite Administration Configuration

Factory Defaults

Click below to load **factory defaults** on SafetyNet Lite.

- * All sensors will be **disabled** and set to default sensor type
- * Analogue sensor related **graphs** will be cleared.
- * **Event & alarm log** will be cleared.
- * **SMS configuration** will be cleared.
- * Any **active alarms/warnings** will be reset.
- * Relay will be set to be **off**.
- * **SNMP configuration** will be cleared.

Buttons: IP Settings, Update Settings, Change Password, Set Time, Hardware Reset, Factory Defaults, View Summary, Main Menu. A large **Load Factory Defaults** button is also present.

Factory Defaults

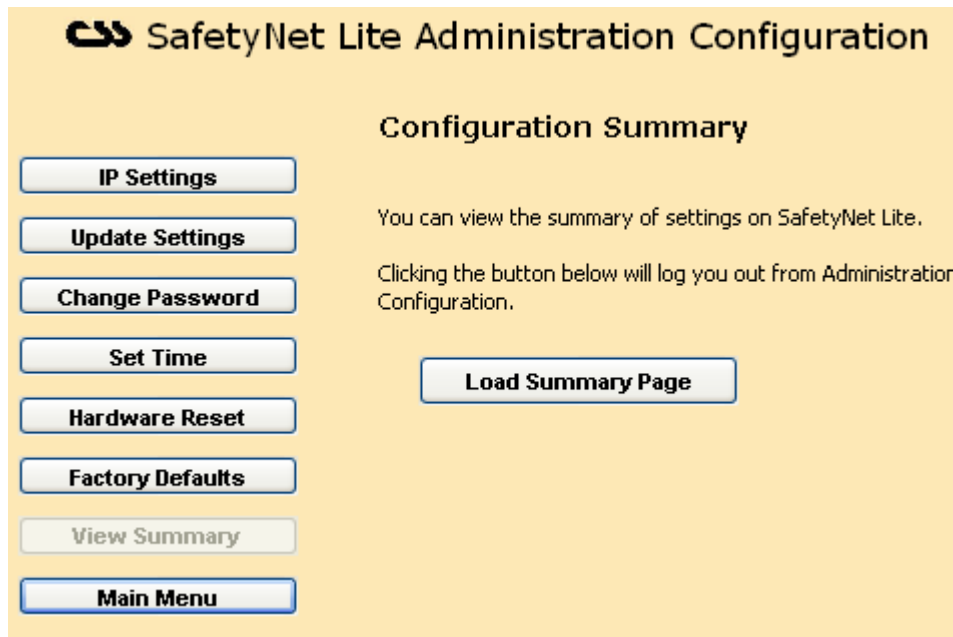
This will give a method to set factory defaults on SafetyNet Lite. The following will be activated on the product.

All sensors will be set back to its original sensor types, labels & threshold values. All sensors will be disabled. IP monitoring cleared and disabled.

- All analogue-sensor related graph data would be cleared.
- Both alarm and event logs will be cleared.
- SMS configuration cleared.
- SNMP configuration cleared.
- Relay configuration cleared.

Click on “*Load Factory Defaults*” to set the above settings.

Note: *IP address or the password will not be changed when loading defaults.*



View Summary

Click on “*View Summary*” to view the current settings as a summary. It will prompt to refresh the page to prevent items loading from the cache memory. This page is for the purpose of keeping a backup of the configuration saved/printed elsewhere. In any circumstance, if the site is to be restored, having the summary page will assist to bring up the site in no time.

Main Menu

The main menu can be reached by clicking “*Main Menu*” button at any given time.

Staying inactive for over 5 minutes will automatically direct you out from the SafetyNet Lite configuration back to the menu page.

5.2 Sensor/Relay Configuration & IP Monitoring Configuration

To enter this configuration interface click on the “*Sensor/Relay Configuration*” button on the main menu of SafetyNet Lite.

Use this interface to

- Enable or disable any sensor/s (making sensors active or inactive).
- Change any of the sensor parameters, such as the trigger delay, temperature limits or the sensor label.
- Associate sensors with the relay and configure the relay properties.
- Configure the IP monitoring parameters.
- Clear analogue sensor related data that plots graphs, or clear the alarm & event log.

Sensor Name	Installed	Drive Relay	More
Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	>>
Humidity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	>>
Digital Input 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	>>
Digital Input 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	>>
Digital Input 3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	>>

Sensor Settings

This section allows installing sensors and associating them with the relay on the unit. Click on the ">>" button to expand each sensor/s further setting.

It is not possible to drive the relay for temperature or humidity type sensors from this page. You need to click on the ">>" button and associate the relay to a limit associated drive setting.

Low Range		Relay	High Range		Relay
Shutdown	10 °C	<input type="checkbox"/>	Shutdown	35 °C	<input type="checkbox"/>
Alarm	12 °C	<input type="checkbox"/>	Alarm	29 °C	<input type="checkbox"/>
Warning	14 °C	<input type="checkbox"/>	Warning	27 °C	<input type="checkbox"/>

Temperature or Humidity Sensor Detail Expansion

Sensor Name: A 32-character label for the sensor

Sensor Type: Temperature or humidity type (Non - modifiable)

Sensor Calibration: Adjustment of up to ± 3.0 with intervals of 0.1 (Section 8.2.1.1)

Range Settings: Insert your lower and higher end analogue sensor cutoff limits. It is able to associate them with the relay. (The relay should not be selected as driven manually). If the relay is selected as driven by any of these limits it will be activated upon this limit associated alarm/warning or shutdown.

The preferred temperature or humidity range of the monitored environment should be between the low warning and high warning limits.

Click “Done” when finished configuring the sensor.

The screenshot shows the 'Settings of Digital Sensor 1' configuration page. On the left is a vertical sidebar with buttons for 'Sensor Settings' (highlighted), 'Relay Settings', 'IP Monitoring', 'Update Settings', 'Clear Data', and 'Main Menu'. The main area contains the following settings:

- Sensor Name:** A text input field containing 'Smoke Sensor Above Server' with a '(32 chars. max)' label.
- Sensor Type:** A dropdown menu showing 'Smoke', with three radio buttons: 'Smoke' (selected), 'Fluid', and 'Other'.
- Trigger Delay:** A text input field containing '10' with '(in seconds)' label.
- Contact Closure:** A dropdown menu showing 'Normally Closed'.

At the bottom right of the main area is a 'Done' button.

Digital Sensor Detail Expansion

Sensor Type: If selected “Other”, a 10-character type label, e.g. A/C, External, Security, Lock, and Power, etc. To set the sensor as a smoke or fluid, click on the appropriate radio button to make the selection.

Trigger Delay: Enter a trigger delay for digital type sensors. An actual alarm is raised only if the alarm was active for this period. The accepted range of values for this field is 0-120 seconds. Any sensor input that activates or deactivates before the trigger delay period is elapsed is not treated as an alarm. For immediate triggers of digital alarms set this value as zero. (PS: this value is recommended as 10 for smoke or fluid sensors)

Contact Closure: Digital sensors can be either “Normally Open” or “Normally Closed”. Smoke sensors are typically normally closed.

Click on “Done” when finished configuring the sensor.

The screenshot shows the 'Relay Settings' configuration page. On the left is a vertical sidebar with buttons for 'Sensor Settings', 'Relay Settings' (highlighted), 'IP Monitoring', 'Update Settings', 'Clear Data', and 'Main Menu'. The main area contains the following settings:

- Use Manual Override:** A checkbox that is currently unchecked.
- Use Latching:** A checkbox that is currently unchecked.
- Name of Relay:** A text input field containing 'RelayName'.

At the top right of the main area is a 'Read More...' button.

Relay Settings

This section allows configuring the relay on SafetyNet Lite.

Use Manual Override: It is able to control the relay manually via the SafetyNet Lite Viewer interface. To enable this, have none of the sensors driving the relay. Also latching this relay is not possible if selected.

Use Latching: A sensor may activate the relay, but on deactivation of the alarm the relay remains active and is never reset. The only way to reset the relay is to reset the unit or to click on “Reset” under the relay status of SafetyNet Lite Viewer.

Tick this option if the relay is to be latched. “Manual Override” selection prevents the relay being set as latched.

Relay Name: The relay can be identified by a convenient 10-character name. This name is displayed on SafetyNet Lite Viewer for easy identification.

The screenshot shows the 'SafetyNet Lite Sensor & Relay Configuration' window. On the left is a sidebar with buttons for 'Sensor Settings', 'Relay Settings', 'IP Monitoring', 'Update Settings', 'Clear Data', and 'Main Menu'. The main area is titled 'IP Address Monitoring' and contains a checked checkbox for 'Enable IP address monitoring'. Below this are two sections: 'Settings' with input fields for 'IP address to ping' (210.23.143.19) and 'Ping frequency' (30 minutes), and 'Options' with radio buttons for 'None (Alarm only)', 'Drive Relay' (selected), and 'Cycle Power - SafetyBoot'.

IP Monitoring

Settings: Insert the IP address that needs to be monitored and the frequency of the ICMP command. SafetyNet Lite will produce an ICMP request based on this frequency to monitor the specified network device.

Options: On IP Monitoring alarm, one of the options would be triggered as an action. It is able to

- Trigger the alarm only
- Drive a selected relay(s)
- Cycle power of a specified SafetyBoot device.

This screenshot shows a close-up of the configuration options. The 'Options' section has three radio buttons: 'None (Alarm only)', 'Drive Relay', and 'Cycle Power - SafetyBoot' (which is selected). To the right, the 'SafetyBoot Parameters' section includes input fields for 'IP address' (192.168.1.98) and 'Cycle time (Sec's)' (15), along with a 'SafetyBoot Webpage' button.

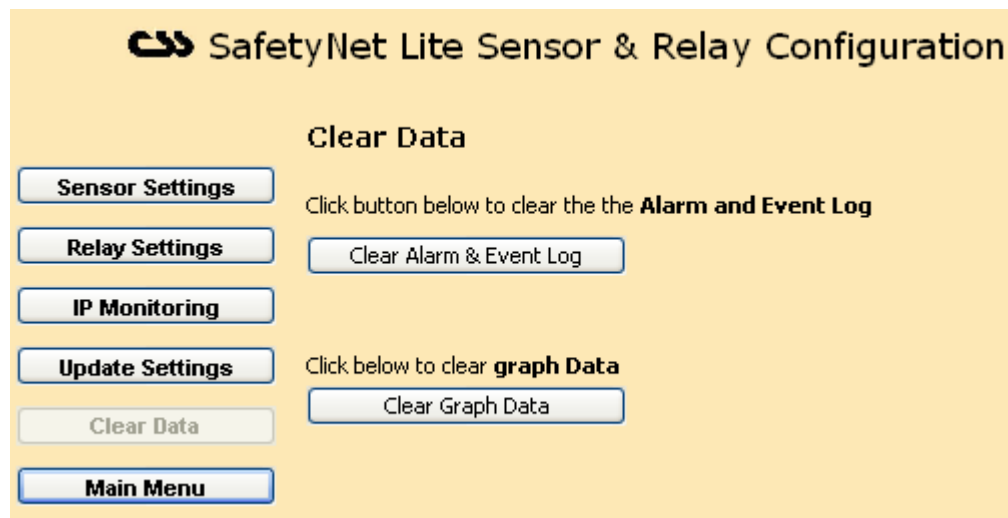
Update Settings

When clicked on “*Update Settings*” it will prompt a confirmation dialog box to proceed. Click “*Yes*” to apply your settings or click “*No*” or “*Cancel*” to cancel new settings.

If clicked “*Yes*”, the new settings are applied to SafetyNet Lite. Updating settings take approximately about 5 seconds.

Clear Data

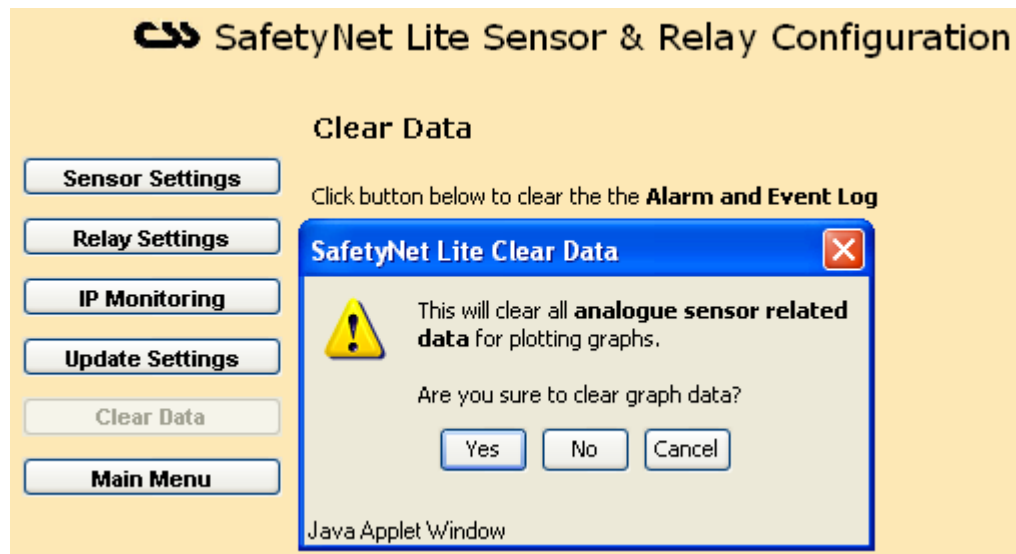
When clicked on “*Clear Data*”, it gives the option to clear the analogue sensor related graph contents and the alarm & event log.



Click the appropriate button to clear data. A confirmation dialog box is prompted to proceed. Click on “*Yes*” to clear the relevant data.

Clearing the graph data will give a blank graph to start with. This is ideal if the product was moved to a new site.

Clearing the alarm & event log will wipe all the entries in both logs and create a new event entry stating the clearance of the logs.



The action is performed immediately and a confirmation box will indicate the success of the command.

Main Menu

The main menu can be reached by clicking “*Main Menu*” button at any given time.

Staying inactive for over 5 minutes will automatically direct you out from the SafetyNet Lite configuration back to the menu page.

5.3 SNMP Configuration

Click on the “*SNMP Configuration*” button on the main menu of SafetyNet Lite to enter this configuration interface.

Use this interface to:

- Configure the read and write SNMP communities.
- Configure the SNMP manager IP addresses.

PS: Obtain these from your network administrator

SNMP Settings

SNMP Read Community: Select public, private or other (default: public). If other is selected, a field is displayed for entry of community type.

SNMP Write Community: Select public, private or other (default: private). If other is selected, a field is displayed for entry of community type.

Network Manager Addresses: Enter IP addresses (up to four) of the Network Management Software hosts. If no IP addresses are entered, SNMP traps are not sent.

Update Settings

Same as other configuration interfaces.

SafetyNet Lite SNMP Configuration

SNMP Settings

SNMP community name for read: public

SNMP community name for write: private

Network Manager 1: 192.168.1.80

Network Manager 2:

Network Manager 3:

Network Manager 4:

Main Menu

The main menu can be reached by clicking “*Main Menu*” button at any given time.

Staying inactive for over 5 minutes will automatically direct you out from the SafetyNet Lite configuration back to the menu page.

5.4 SMS Configuration (Models ZSN4002NB, ZSN4002 & ZSN4002D only)

To enter this configuration interface click on the “*SMS Configuration*” button on the main menu of SafetyNet Lite.

This interface configures the sending of SMS messages through the network. The SMS server application at Computer Support Systems handles delivering the SMS message upon receiving the network traffic.

Use this interface to:

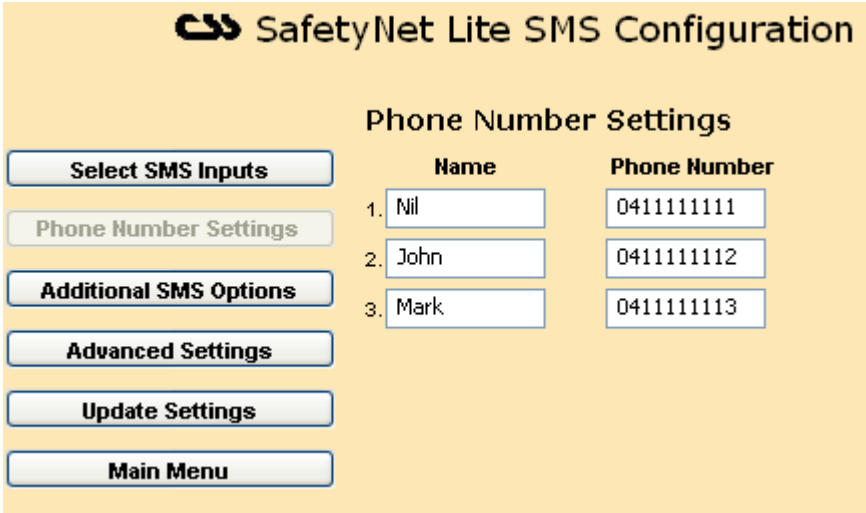
- Configure the SMS receiving phone numbers.
- Associate sensors to send SMS messages.
- Customise additional SMS messages

Input Name	Send SMS	Send to Number		
		1	2	3
Temperature	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Humidity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Digital Input 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Digital Input 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital Input 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Select all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Select SMS Inputs

This section selects which inputs are SMS message enabled. After selecting an alarm to send SMS messages, select up to three mobile phone numbers where the SMS is sent. Make sure that correct details of the phone numbers are entered under “*Phone Number Settings*”.

If you want to select all check boxes, select the appropriate ‘select all’ check box.



Phone Number Settings

Allows inserting or changing existing mobile telephone numbers.

It is able to receive the same SMS message at, up to three different mobile phones. Priority is given to phone number 1, then 2 and finally 3 when delivering the SMS messages.



Additional SMS Options

This section allows customising additional SMS messages sent for notifications.

The warnings and shutdown messages for temperature or humidity type alerts are sent to the same phones selected for as the alarms, under “*Select SMS Inputs*”

The other alarms that are customisable are IP monitoring, mains failure/low battery alarms and faulty analogue sensor alerts.

Advanced Settings

This section allows to enter/change-advanced settings related to SMS messaging. The SMS Server IP address or the SMS port number should not be changed unless Computer Support Systems so advises.

Client Name: Enter your company name using 8-characters. If the space is insufficient, use initials to identify your company.

Update Settings

Same as other configuration interfaces.

Main Menu

The main menu can be reached by clicking “*Main Menu*” button at any given time.

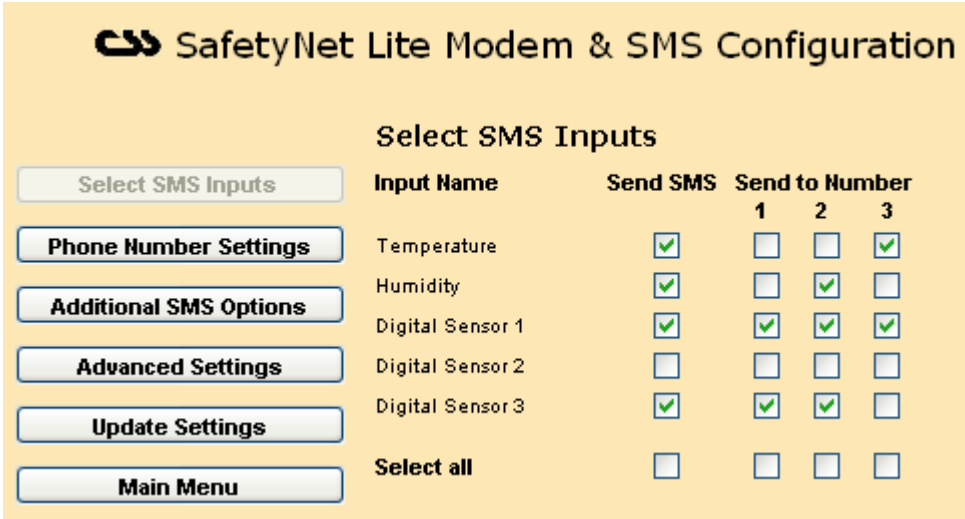
Staying inactive for over 5 minutes will automatically direct back to the menu page.

5.5 Modem/SMS Configuration (Models ZSN4002M & ZSN4002MD only)

To enter this configuration interface click on the “*Modem Configuration*” button on the main menu of SafetyNet Lite.

Use this interface to

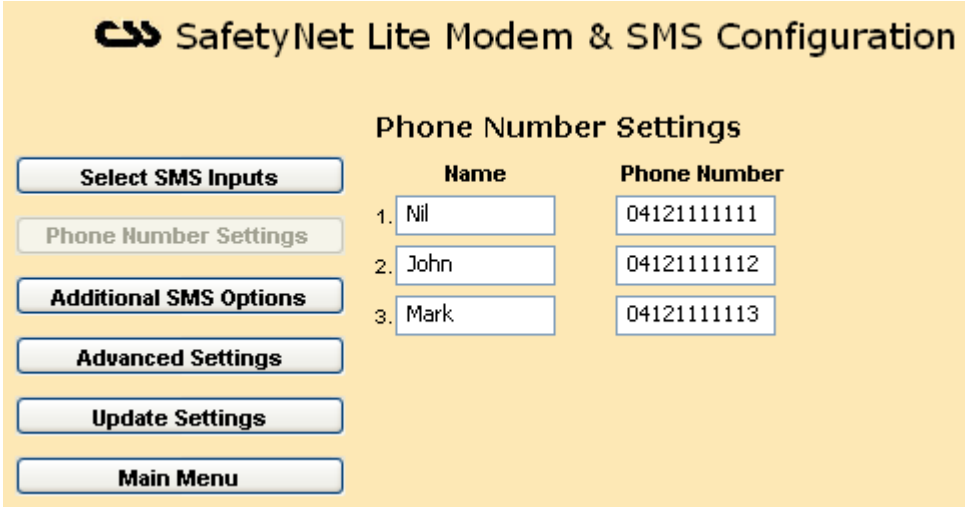
- Configure the SMS receiving phone numbers.
- Associate the sensor SMS alerts with the appropriate phone numbers.
- Configure the modem functions.
- Insert the dial up number and password
- Initiate a test alarm



Select SMS Inputs

This section selects which inputs are SMS message enabled. After selecting an alarm to send SMS messages, select up to three mobile phone numbers where the SMS is sent. Make sure that correct details of the phone numbers are entered under "Phone Number Settings".

If you want to select all check boxes, select the appropriate 'select all' check box.



Phone Number Settings

Allows inserting or changing existing mobile telephone numbers.

It is able to receive the same SMS message at, up to three different mobile phones. Priority is given to phone number 1, then 2 and finally 3 when delivering the SMS messages.

SafetyNet Lite Modem & SMS Configuration

Additional SMS Options

	Alarm Type	Send SMS	Send to Number		
			1	2	3
<input type="button" value="Select SMS Inputs"/>					
<input type="button" value="Phone Number Settings"/>					
<input type="button" value="Additional SMS Options"/>					
<input type="button" value="Advanced Settings"/>					
<input type="button" value="Update Settings"/>					
<input type="button" value="Main Menu"/>					
	TMP/HMD Warnings	<input checked="" type="checkbox"/>	Same as alarm		
	TMP/HMD Shutdowns	<input checked="" type="checkbox"/>	Same as alarm		
	IP Monitoring Alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Mains Failure/Low Battery Alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Faulty Analogue Sensor Alarm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Ethernet Disconnection Alarm	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Select all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional SMS Options

This section allows customising SMS messages sent for additional notifications.

The warnings and shutdown messages for temperature or humidity type alerts are sent to the same phones selected for as the alarms, under “*Select SMS Inputs*”

The other alarms that are customisable are IP monitoring, mains failure/low battery alarms, faulty analogue sensor alerts and Ethernet disconnection alert.

SafetyNet Lite Modem & SMS Configuration

Advanced Settings

<input type="button" value="Select SMS Inputs"/>	Enable SMS Messages (Enables MODEM)	<input checked="" type="checkbox"/>
<input type="button" value="Phone Number Settings"/>	Dial Tone Check (Checks every 1 hour)	<input type="checkbox"/>
<input type="button" value="Additional SMS Options"/>	Provider Telephone Number	123456 <input style="float: right;" type="button" value="Direct Line"/>
<input type="button" value="Advanced Settings"/>	Leading Digit	<input type="text" value="0"/>
<input type="button" value="Update Settings"/>	Access Password	<input type="text" value="123456"/>
<input type="button" value="Main Menu"/>	Maximum attempts to send message	5 <input type="button" value="v"/>
<input type="button" value="Test Alarm"/>		
Modem Initialisation Strings		
Value	<input type="text" value="AT+MS=V22B,0;+ES=3,,2;\N5"/>	<input type="button" value="Apply"/>

Advanced Settings

This section allows entering/changing-advanced settings related to modem, the telephone line connected and testing the SMS sending ability.

The modem needs to be enabled for its operation.

The dial tone check is performed every hour. If there is no dial tone, an error will be prompted and logged. To disable the dial tone check, disable the dial tone detection check box.

Configure the type of line connected to SafetyNet Lite. If an analogue PABX line is connected, enter the leading digit to get an outside line.

The maximum number of attempts is given so that a failing SMS is kept trying until it is delivered by the unit.

Test Alarm Button: After having all the parameters entered and updated, click the test alarm button to receive a test alarm on the phone numbers you have entered under “*Phone Number Settings*”. An entry on the alarm log will be included and a SNMP trap is sent when a test alarm is initiated.

The modem initialisation strings can be set if necessary to optimise the connection between the provider and SafetyNet Plus. This allows adjusting the modem link negotiation so that different speeds and different error correct modes and different compression methods can be applied. Please see section 8.4.1 for details of specific parameters.

Update Settings

Same as other configuration interfaces.

Main Menu

The main menu can be reached by clicking “*Main Menu*” button at any given time.

Staying inactive for over 5 minutes will automatically direct back to the menu page.

5.6 Feature Registration/ Licensing on SafetyNet Lite

To enter this configuration interface click on “*Licensing/Registration Keys*” button on the main menu of SafetyNet Lite.

Use this interface to enter registration keys to enable controlled features of SafetyNet Lite.

SafetyNet Lite has the following features:

1. SNMP
2. IP Monitoring
3. SMS Messaging for alerts/warnings & alarms (only on models ZSN4002NB, ZSN4002 and ZSN4002D)

These individual features are enabled only via a unique 9-character registration key supplied by Computer Support Systems. The supplied product CD contains a label with registration keys requested.

Features	Registration Key	Status
1. SNMP	<input type="text"/>	Registered
2. IP Monitoring	<input type="text"/>	Registered
3. SMS Messages	<input type="text"/>	Registered

Enter the correct registration key(s) and click on "Update". Click on "Main Menu" to exit. The main menu will show what features have been enabled or disabled.

6 Graphs on SafetyNet Lite

The graphs on SafetyNet Lite allow viewing the trend of temperature or humidity sensors up to the last month. View these graphs as an audit trail as well as a tool to analyse the trend of future data based on the previous records.

There is no special requirement or third party applications involved in viewing these graphs. The data is stored locally in SafetyNet Lite and can be cleared whenever it is necessary.

The left Y-axis of the graph provides the range for the temperature sensor, where as the right Y-axis provides the range for the humidity sensor. The sensor labels hold the post words "TMP" or "HMD" to indicate the sensor type. ie: temperature & humidity respectively.

The X-axis displays the most recent time analogue data was updated and the gives timeline of your previous data records.

The following graphs are provided:

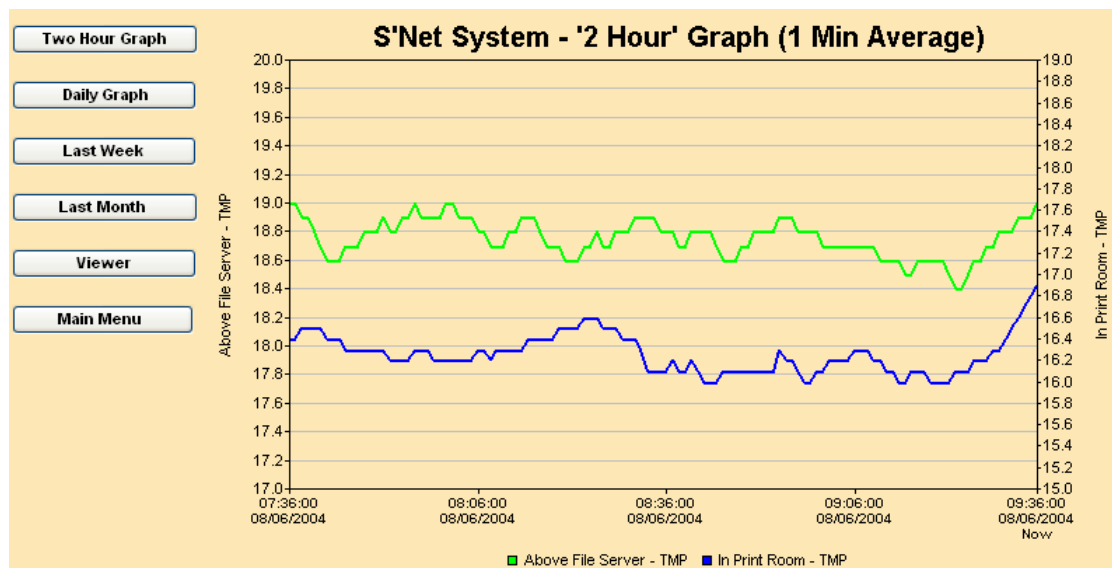
- 2 Hour Graph
- Daily Graph
- Weekly Graph
- Monthly Graph

6.1 2 Hour Graph (1 minute average)

Click on "Two Hour Graph" button to refresh data on this graph.

Analogue sensor data is recorded every 5 seconds; the average for every minute is calculated and then plotted for the last two hours. This graph is useful when immediate respond to analogue sensor related alarms are required. For example, if you receive a SMS message stating the temperature or humidity sensor limits were exceeded, you could simply use a browser and view the sensor values noted for the last two hours.

This graph will plot 120 points of data records. (Every minute for 2 hours)

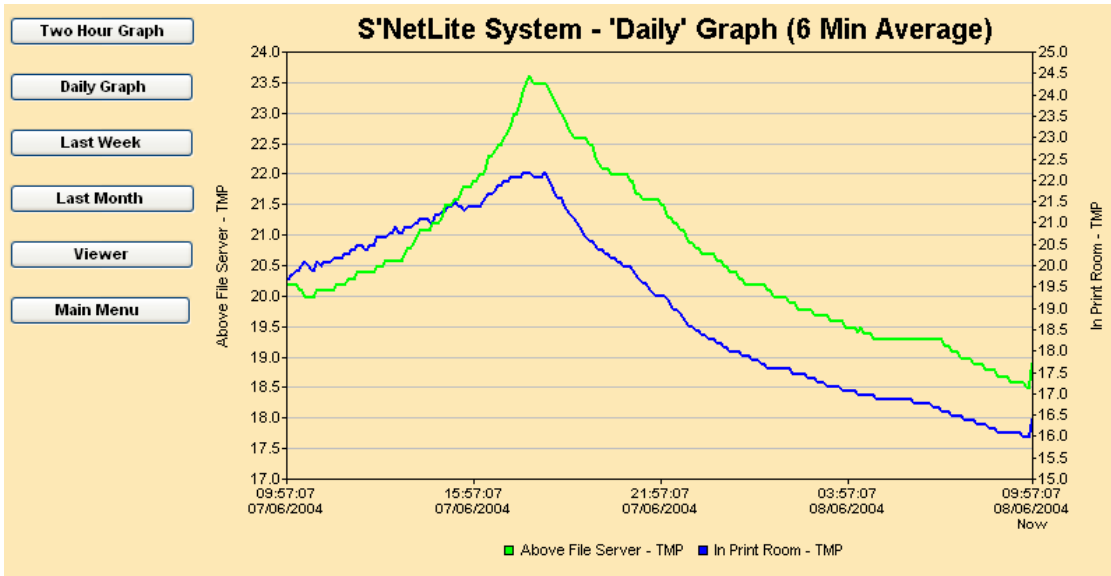


6.2 Daily Graph (6 minute average)

Click on "Daily Graph" button to refresh data on this graph.

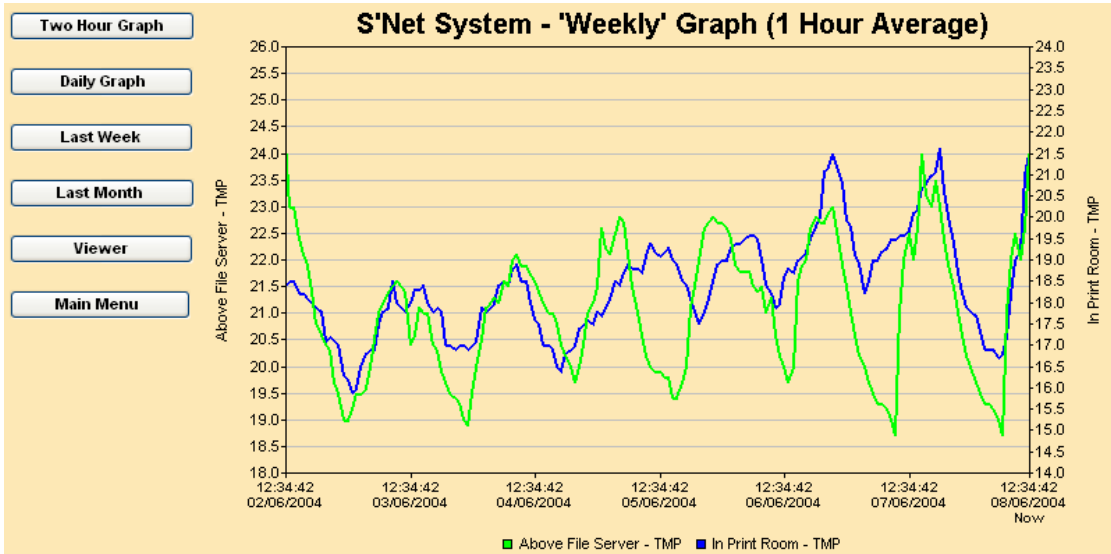
Analogue sensor data average of every 6 minutes is used and plotted for the last 24 hours. This graph is useful to get an overview of the daily temperature & humidity levels of the monitored environment.

This graph will plot 240 points of data records. (Every 6 minutes for 24 hours)



6.3 Weekly Graph (1 hour average)

Analogue sensor data average of every 1 hour is used to plot a graph for the last 7 days. This graph is useful to get an overview of the weekly temperature & humidity levels of the monitored environment.

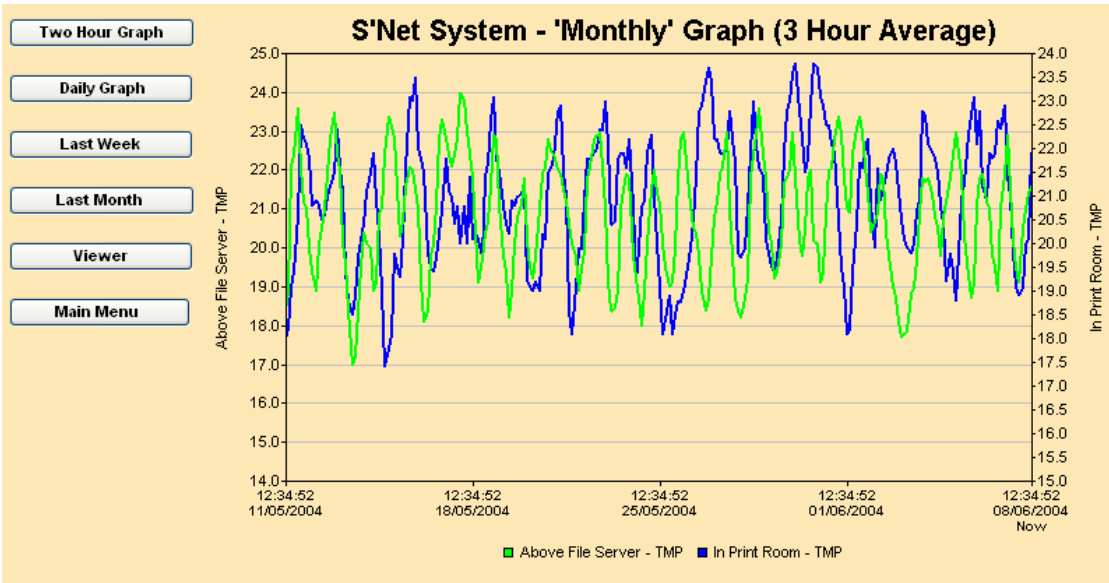


6.4 Monthly Graph (3 hour average)

Click on "Monthly Graph" button to refresh data on this graph.

Analogue sensor data average of every 3 hours is used to plot a graph for the last month. This graph is useful to get an overview of the monthly temperature & humidity levels of the monitored environment.

This graph will plot 248 points of data records. (Every 3-hours for 31 days)



7 Alarm and Event Logs on SafetyNet Lite

SafetyNet Lite stores internal log entries for each alarms and events that occurs. These are two separate logs with up to 20 entries of each. When the log reaches more than 20 entries, the oldest entry is removed and the latest added. Therefore, at any given time it is able to review the last 20 entries of alarms and events. To keep a record of the alarms and events, we recommend a print of the table or copy and paste the table to a file (eg: to Notepad) frequently.

To view the alarm or event log click on “*Alarm & Events*” button given on the Viewer interface.

Each log entry consists a time stamp and a description of the alarm or the event. For sensor related alarms it will include the sensor label in its description for better identification.

7.1 Alarm Log

Any sensor related alarm activation or clearance would be logged in the alarm log. If analogue sensors are installed, and they were faulty or disconnected it will also be logged in the alarm log.

Analogue sensor alarms will be logged indicating what threshold value it reached. IP monitoring alarm and the dial tone check error will be also logged in the alarm log.

CSS Alarm and Event Log for - Melb. Headoffice

Alarm Log Event Log

...	Date & Time	Alarm Description	SMS Status
1	18:47:30 01/08/2005	TMP, high warning: SafetyNet Lite TMP sensor	SMS info. sent to CSS
2	18:47:28 01/08/2005	HMD, high alarm: SafetyNet Lite HMD sensor	SMS info. sent to CSS
3	18:47:22 01/08/2005	Alarm cleared at Digital Input 02	
4	18:47:21 01/08/2005	Alarm detected at Digital Input 02	SMS info. sent to CSS
5	18:47:15 01/08/2005	Alarm cleared at Digital Input 03	
6	18:47:12 01/08/2005	Alarm detected at Digital Input 03	SMS info. sent to CSS
7	18:47:08 01/08/2005	HMD, high shutdown: SafetyNet Lite HMD sensor	SMS info. sent to CSS
8	18:47:08 01/08/2005	TMP, high alarm: SafetyNet Lite TMP sensor	SMS info. sent to CSS
9	18:46:38 01/08/2005	Alarm cleared at Digital Input 01	
10	18:46:30 01/08/2005	Alarm detected at Digital Input 01	
11	18:30:57 01/08/2005	TMP, level OK: SafetyNet Lite TMP sensor	
12	18:30:20 01/08/2005	Mains OK on S'NetLite System	
13	18:28:22 01/08/2005	TMP, high warning: SafetyNet Lite TMP sensor	
14	18:28:08 01/08/2005	Mains failure detected on S'NetLite System	
15	18:28:01 01/08/2005	TMP, high alarm: SafetyNet Lite TMP sensor	
16	18:27:15 01/08/2005	TMP, high warning: SafetyNet Lite TMP sensor	
17	18:26:09 01/08/2005	TMP, high alarm: SafetyNet Lite TMP sensor	
18	18:25:53 01/08/2005	TMP, high shutdown: SafetyNet Lite TMP sensor	
19	18:25:28 01/08/2005	TMP, high alarm: SafetyNet Lite TMP sensor	
20	18:25:02 01/08/2005	TMP, high shutdown: SafetyNet Lite TMP sensor	

Other items that are logged in the alarm log are mains failure and activation, as well as low battery warning and of its clearance.

Loss of Ethernet connection will be logged in the alarm log for models ZSN4002M and ZSN4002MD.

The alarm log contains a column for indicating the SMS status. This will indicate if the SMS information was successfully sent to the Computer Support Systems' SMS server or if the link failed due to any reason.

Possible SMS status strings for models ZSN4002NB, ZSN4002 and ZSN4002D are given in the table below. These models send the SMS message content using TCP/IP to a central server.

SMS Status	Description
SMS info. sent to CSS	SMS message information has successfully been sent to Computer Support Systems. SMS messages would be delivered as configured on the unit.
SMS link failed	SMS server is not active or routers did not allow TCP/IP packets to arrive at the correct destination. Check if the unit has rights to connect to SMS server IP on the SMS port number.
Could not resolve address	Unable to resolve the SMS server's hardware address. Typically because the Gateway is set incorrectly.
BLANK entry	SMS not to be sent (eg: clearing of an alarm) or SMS messages are not configured to be sent for this type of alarm.

Table 1.0

Possible SMS status strings for models ZSN4002M and ZSN4002MD are given in the table below. These models use the internal PSTN modem to dial out and send SMS messages. The reliability depends on the telephone link provided to the unit. This allows getting notified even when the network is down and if main power is down. (if battery backed)

SMS Status	Description
SMS message(s) successful	The telephone network SMS gateway received the SMS request successfully. SMS message will be delivered if the mobile phone is turned on.
Failed - No reply from provider	Unit attempted to dial. No reply from the provider for all re-try attempts
Failed - No dial tone detected	Unit attempted to dial. There was no dial tone detected for all re-try attempts
Failed - Line BUSY status reported	Unit attempted to dial. The line was busy for all re-try attempts
Failed - No 'ID=' reply	When dialing up, upon connection the network should reply with 'ID='. Unit did not receive such message from the provider.
Failed - 'ID=' request timeout	While waiting for 'ID=' a time out occurred.
Failed - Incorrect password	The password sent from the unit is incorrect.
Failed - Password ACK timeout	While waiting for the password acknowledgement a timeout occurred.
Failed - Attempted to send. ACK/NAK timeout	The message content was sent, however a timeout occurred while waiting for the ACK or a NAK
Failed - Provider did not acknowledge msg	Message delivery failed. Message not acknowledged. Please check of phone number is correctly inserted.
Failed - Main time out	Only 3 minutes is given to send any messages. Message

occurred - max 3 mins	could not be sent due the elapse of 3 minutes
Modem is disabled. Cannot send message	The modem needs to be enabled for a message to be sent. The message sending will not be attempted.
Message in queue. To be sent	The message is currently in the queue. Dialing may have begun or is currently active.
Failed - Abandoned due to reset of unit	While a dial process is active the unit was turned off. The message has not been sent and will not be attempted to. If the alarm is still active after a reboot, the alarm will re-trigger and then a new message will be sent.
BLANK entry	SMS not to be sent (eg: clearing of an alarm) or SMS messages are not configured for this type of alarm.

Table 1.1

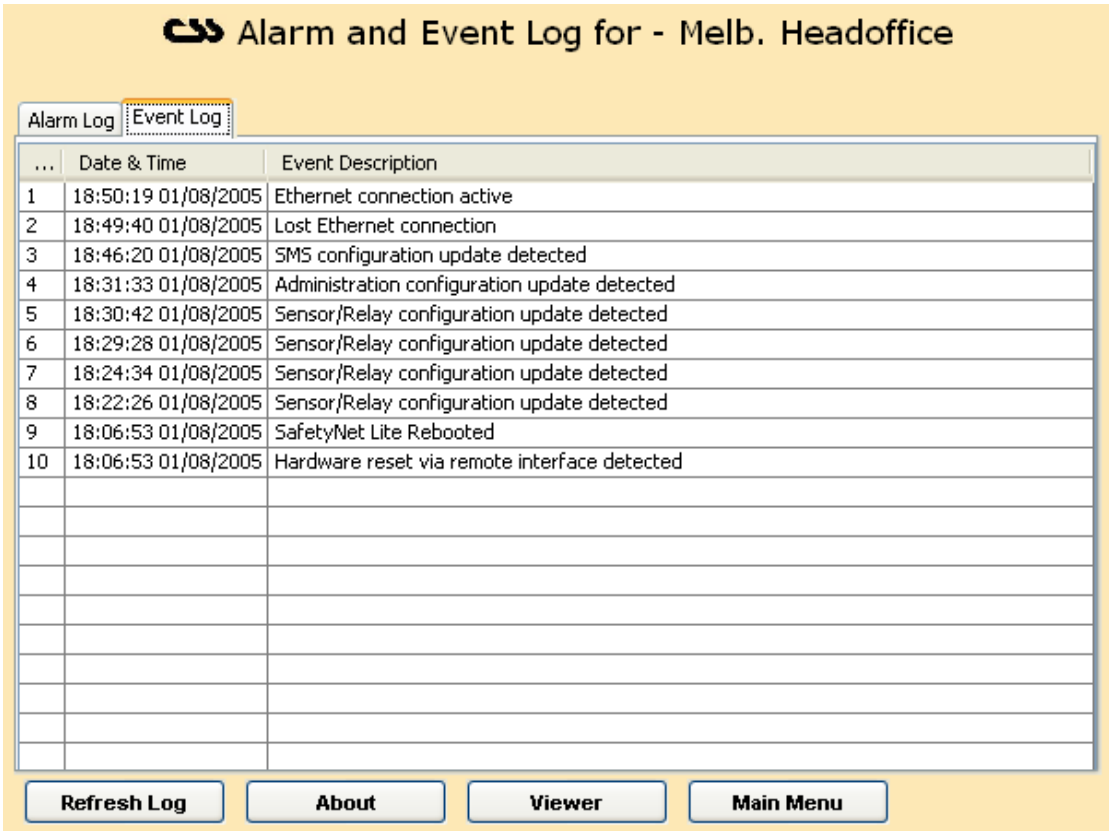
7.2 Event Log

The event log simply logs any internal event within SafetyNet Lite. To view the event log, click on the tab “*Event Log*” once the alarm log is displayed.

Current event entries consists of:

- SafetyNet Lite reboot
- Configuration updates
 - Real time clock on SafetyNet Lite updated.
 - Administration configuration
 - Sensor/Relay configuration
 - SMS/Modem configuration
 - SNMP configuration
 - License key registration updates
- Loading of factory defaults via the web interface.
- Hardware reset via the web interface
- Clearing of analogue sensor data for graphs via the web interface
- Clearing of alarm and event logs via the web interface
- SMS sending failure, TCP/IP link failure
- Watchdog timer reset – Software error
- Ethernet link down indication *
- Ethernet link up indication *
- Relays turned off or on via the web interface.
- Details of driving SafetyBoot by the IP monitoring alarm.

* Only on models ZSN4002NB, ZSN4002 and ZSN4002D

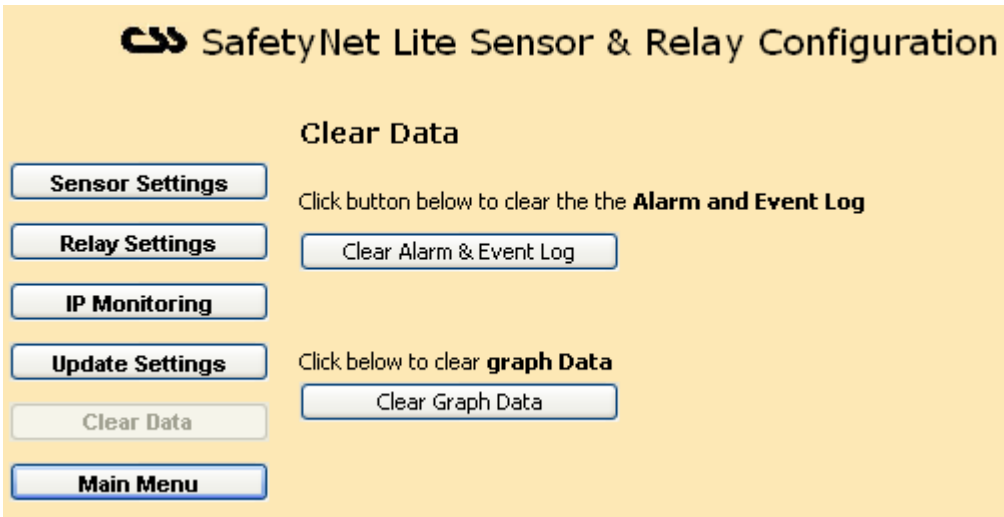


7.2.1 Clearing of Alarm and Event Logs

Logs can be cleared via two methods.

1. Choose to clear the log data only

Use the main menu and enter Senor/Relay Configuration. Then select the menu button, “Clear Data”. Now click “Clear Alarm & Event Log”. Upon success, confirmation is given



2. Load factory defaults. (Read section 5.1 on Administration Configuration on what loading factory defaults resets back to defaults)

Both these events will make an entry in the event log.

8 Operation of SafetyNet Lite

8.1 Basic Operation

SafetyNet Lite will constantly monitor 'enabled' sensors. It is able to notify any alarm condition via several notification methods those being; SNMP, SMS messages, visually on the web interface, blinking blue LED on the unit, trigger of the relay, an optional strobe and an optional buzzer.

Any alarm or event will be logged, as an entry in its alarm and event log viewable at any given time. These logs can be cleared upon request by the web interface.

SafetyNet Lite will work out the average analogue sensor data for data plotting. This data is stored locally and is shown when the required graph is requested. Data can be cleared upon request by the web interface.

SafetyNet Lite is optionally backed by an internal battery, which lasts for approximately 2.5 hours if main A/C power is not present. The internal battery is capable of running the sensors, the strobe and the buzzer at 12V DC. Users must not attempt to replace this battery at any stage. The SafetyNet Lite relay is driven at 12V DC.

Any sensor that is not "enabled" under the Sensor/Relay Configuration will not be monitored. To disable an existing sensor simply set it as not "enabled", which will then be disregarded as an active sensor.

It is possible to monitor a particular IP address using the registered feature of IP monitoring. An alarm is indicated if the IP address fails and the administrator could get notified using one of the notifying methods. Read the IP Monitoring section of the manual on chapter 10 for further details on IP monitoring.

8.2 Sensors

Only sensors supplied by Computer Support Systems may be used with SafetyNet Lite. The types of sensors that are allowed are: -

- 1 x ambient dual analogue sensor (temperature & humidity)
- 3 x digital sensors (contact, smoke or fluid sensors)

These are all standard RJ45 connection based sensors and connected to the rear panel of SafetyNet Lite.

8.2.1 Temperature and Humidity Sensors

These are specifically designed to use with SafetyNet Lite. Features of these sensors are

- Small physical size allows mounting in standard wall plate.
- High accuracy and long-term reliability.
- Can be run up to 100m from SafetyNet Lite using a standard CAT 5 cable.
- ± 0.5 @ 25 °C temperature accuracy, ± 3.5 %RH humidity accuracy.
- Low power consumption.
- Excellent noise immunity.
- Robust, sealed construction.
- Self-testing; SafetyNet Lite raises an alert of sensor is faulty.
- Immune to most airborne industrial contaminants.



8.2.1.1 Customised Calibrations on Temperature and Humidity Sensors

Any self heating of analogue sensors that may occur in still air can be cancelled out at commissioning using the calibration software option.

When an analogue sensor is mounted in a position where there is little or no airflow, the electronics within the sensor can create an envelope of warmer air around it which can affect the recorded values for temperature and humidity. SafetyNet Lite has a calibration function per sensor type which can, when set with the use of an accurate Hygrometer; allow this self heating trait to be calibrated out of the recorded values for a sensor.

Use the analogue sensor settings, by accessing the 'Sensor/Relay Configuration' and then clicking on the 'more' button for relevant sensor.

SafetyNet Lite Sensor & Relay Configuration

Settings of Temperature Sensor

Sensor Name: IBM Server Room (32 chars. max)

Sensor Type: Temperature

Sensor Calibration: 0.0

Range Settings: 0.0

Low Range	Relay	High Range	Relay
Shutdown: 10	<input type="checkbox"/>	Shutdown: 35 °C	<input type="checkbox"/>
Alarm: 12	<input type="checkbox"/>	Alarm: 29 °C	<input type="checkbox"/>
Warning: 14	<input type="checkbox"/>	Warning: 27 °C	<input type="checkbox"/>

Done

Set calibration value if needed based on your Hygrometer measurements.

8.2.2 Fluid Detectors

These sensors are intended to be used anywhere where water or moisture can intervene normal operation of the environment. Features of fluid sensors are:

- Exclusive mat design for detecting surface water on floors, cabinet bases, etc
- Self-resets once fluid is removed.
- Excellent electrical noise immunity and long term reliability.
- Beep sound when fluid is detected from the sensor itself.
- An option of having a hard metal cover installed for industrial safety.



8.2.3 Smoke Detectors

These sensors will constantly monitor any smoke presence on the premises. LED indication is activated when smoke is present. A manual acknowledgement of the sensor is required if triggered. This is performed by simply turning the sensor anti-clock wise, and un-latching the situation.



The smoke sensor works on a "Normally Closed" (closed circuit) methodology. Hence, if disconnected from SafetyNet Lite, an alarm is raised.

8.2.4 Digital Sensors

Digital sensors are contact closure sensors, and are capable of detecting open circuits or closed circuits. At the time of configuring digital sensors it is able to specify the sensor be “Normally Open” or “Normally Closed”.



Each sensor carries a trigger delay up to 120 seconds. This is also set at the time of installing the sensor on the Sensor/Relay Configuration Interface. For example, if you set the trigger delay to be 30 seconds, an alarm is raised only if the digital sensor is active for 30 seconds or more. This feature eliminates any spikes that could occur in the monitored environment.

8.3 Alarms and Alerts

The types of alarms and alerts could be any of the following:

- Alarm trigger (digital, smoke or fluid sensors).
- Exceeding a lower or higher set threshold of a temperature or humidity sensor.
- IP monitoring alarm.
- Dial tone detection failure or modem detection error. *
- Faulty sensor (analogue sensor only).
- Mains failure notification.
- Low internal battery notification. (if battery backed option is selected)
- Ethernet connection loss. *

* Applicable to models ZSN4002M & ZSN4002MD only

Alarms are triggered only if they are installed via the Sensor/Relay Configuration web interface. SafetyNet Lite will not monitor un-installed sensors. The viewer web interface will indicate an uninstalled sensor as “spare”.

Temperature, humidity, smoke & fluid sensors have a trigger delay of 15 seconds embedded within the software. This will prevent any alarm spikes being treated as an alarm. If the alarms were active for more than 15 seconds they would be triggered. This value for the analogue sensor is not user-configurable, and for smoke and fluid type is set by default, however it is configurable.

The digital sensor trigger delay is variable up to 120 seconds and can be set via software using the web interface.

The remote viewer always shows *almost* real time data, therefore if an alarm threshold is exceeded, it will be shown immediately on the remote viewer. However the actual trigger of alarm occurs only if the trigger delay elapses.

In an instance where the unit is running with its internal battery only, and when the battery is close to exhaustion, (typically after 2.5 hours) the analogue sensor may appear to be faulty and may raise an alarm. The unit will still perform its other duties until the battery completely shuts off the device.

8.4 All About the Inbuilt Modem

This applies to models ZSN4002M & ZSN4002MD only.

The inbuilt modem is capable of notifying a mobile phone when an alarm condition occurs, even when the network is down. This makes SafetyNet Lite a reliable device even when power is completely down as the internal batteries will continue the operation of the unit for a further 2.5 hours and continue in notifying.

To activate the modem, it has to be enabled. The *Modem Configuration* web interface will allow to configure the modem and to test its functionality.

The modem is able to check for the dial tone every hour to ensure that there is a reliable telephone connection. On a dial tone failure after three consecutive checks the unit will log an entry in the alarm log indicating the failure. Despite having this alarm active if a new SMS is to be sent, the unit will still attempt to send the message.

The connected telephone line type has to be notified to SafetyNet Lite. The types that are allowed are a direct line or an analogue PABX line with a leading digit in front. These parameters can be entered on the *Modem Configuration* interface.

By clicking the "Test Alarm" button on the *Modem Configuration* interface, it is able to test the delivery of the SMS messages to all the numbers entered in the interface. Ensure that the latest configuration is **updated** on the interface with the latest phone numbers before proceeding with this option.

8.4.1 Modem Initialisation Strings

The modem initialization strings are expected to be set as default, unless connection issues persist between the provider and SafetyNet Lite.

The current default setting value is:
 AT+MS=V22B,0;+ES=3,,2;\N5

It is recommended that the user is familiar with Hayes AT commands (both basic and extended).

The basic set of modem init strings can be set as per guide below.

Generic Modem Commands

Command: \N

Description:

Default:

Defined Values:

Operating Mode – Error Correction

Controls the preferred error-correcting mode to be negotiated in a subsequent data connection.

5

- \N0 Selects normal speed buffered mode (Disables error-correction mode). (Forces &Q6.)
- \N1 Serial interface selected: Selects direct mode and is equivalent to &M0, Q0 mode of operation. (Forces &Q0.) Parallel interface selected: Same as \N0.
- \N2 Selects reliable (error-correction) mode. The modem will first attempt a LAPM connection and then an MNP connection. Failure to make a reliable connection results in the modem hanging up. (Forces &Q5, S36=4, and S48=7.)
- \N3 Selects auto-reliable mode. This operates the same as \N2 except failure to make a reliable connection results in the modem falling back to the speed buffered normal mode. (Forces &Q5, S36=7, and S48=7.)
- \N4 Selects LAPM error-correction mode. Failure to make an LAPM error-correction connection results in the modem hanging up. (Forces &Q5 and S48=0.) Note: The -K1 command can override the \N4 command.
- \N5 Selects MNP error-correction mode. Failure to make an MNP errorcorrection connection results in the modem hanging up. (Forces &Q5, S36=4, and S48=128.)

Modulation Control Commands

Command: +MS

Description:

Syntax:

Modulation Selection

This extended-format compound parameter controls the manner of operation of the modulation capabilities in the modem. It accepts six subparameters.

```
+MS=[<carrier>
[,<automode>
[,<min_tx_rate>
[,<max_tx_rate>
[,<min_rx_rate>,<max_rx_rate>]]]]]
```

Where possible <carrier>, <min_tx_rate>, <max_tx_rate>, <min_rx_rate>, and <max_rx_rate> values are listed in table below

Modulation	<carrier>	Possible (<min_rx_rate>, <min_rx_rate>, (<min_tx_rate>), and <max_tx_rate>) Rates (bps)
Bell 103	B103	300
Bell 212	B212	1200 Rx/75 Tx or 75 Rx/1200 Tx
V.21	V21	300
V.22	V22	1200
V.22 bis	V22B	2400 or 1200
V.23	V23C	1200
V.32	V32	9600 or 4800
V.32 bis	V32B	14400, 12000, 9600, 7200, or 4800
V.34	V34	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, or 2400
56K	K56	56000, 54000, 52000, 50000, 48000, 46000, 44000, 42000, 40000, 38000, 36000, 34000, 32000
V.90	V90	56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 45333, 44000, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000

V.92 downstream	V92	56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 45333, 44000, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000
V.92 upstream	V92	48000, 46667, 45333, 44000, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000, 26667, 25333, 24000

- Defined Values: <carrier> A string that specifies the preferred modem carrier to use in originating or answering a connection. <carrier> values are strings of up to eight characters, consisting only of numeric digits and upper case letters. <carrier> values for ITU standard modulations take the form: <letter><1-4 digits><other letters as needed>. Defined values are listed in Table above.
- <automode> A numeric value which enables or disables automatic modulation negotiation (ITU-T V.32bis Annex A or V.8).
0 = Automode disabled.
1 = Automode enabled. (Default.)
- <min_rx_rate> and <max_rx_rate>
Numeric values which specify the lowest (<min_rx_rate>) and highest (<max_rx_rate>) rate at which the modem may establish a receive connection. May be used to condition distinct limits for the receive direction as distinct from the transmit direction. Values for this subparameter are decimal encoded, in units of bit/s. The possible values for each modulation are listed in Table above. Actual values will be limited to possible values corresponding to the entered <carrier> and fallback <carrier> as determined during operation. (Default = lowest (<min_rx_rate>) and highest (<max_rx_rate>) rate supported by the selected carrier.)
- <min_tx_rate> and <max_tx_rate>
Numeric values which specify the lowest (<min_tx_rate>) and highest (<max_tx_rate>) rate at which the modem may establish a transmit connection. Non-zero values for this subparameter are decimal encoded, in units of bit/s. The possible values for each modulation are listed in Table above. Actual values will be limited to possible values corresponding to the entered <carrier> and fall-back <carrier> as determined during operation. (Default = lowest (<min_tx_rate>) and highest (<max_tx_rate>) rate supported by the selected carrier.)

Error Control Commands

Command: +ES

Description:

Default:

Defined Values:

Modulation Selection

This extended-format command specifies the initial requested mode of operation when the modem is operating as the originator. Optionally specifies the acceptable fallback mode of operation when the modem is operating as the originator, and optionally specifies the acceptable fallback mode of operation when the modem is operating as the answerer. Accepts three numeric subparameters. Varies by request

<orig_rqst>

Decimal number specifies the initial requested mode of operation when the modem is operating as the originator. The options are:

- +ES0 Initiate call with Direct Mode.
- +ES1 Initiate call with Normal Mode (also referred to as Buffered Mode) only.
- +ES2 Initiate V.42 without Detection Phase. If V.8 is in use, disable V.42 Detection Phase.
- +ES3 Initiate V.42 with Detection Phase. (Default.)
- +ES4 Initiate MNP.

- +ES6 Initiate V.80 Synchronous Access Mode when connection is completed, and Data State is entered. (See +ESA and +ITF commands.)
- +ES7 Initiate Frame Tunneling Mode when connection is complete, and Data Mode is entered.

<orig_fbk>

Decimal number specifies the acceptable fallback mode of operation when the modem is operating as the originator.

- +ES0 LAPM, MNP, or Normal Mode error control optional. (Default)
- +ES1 LAPM, MNP, or Direct Mode error control optional.
- +ES2 LAPM or MNP error control required; disconnect if error control is not established.
- +ES3 LAPM error control required; disconnect if error control is not established.
- +ES4 MNP error control required; disconnect if error control is not established.

<ans_fbk>

Decimal number specifies the acceptable fallback mode of operation when the modem is operating as the answerer or specifies V.80 Synchronous Access Mode.

- +ES0 Direct Mode.
- +ES1 Error control disabled, use Normal Mode.
- +ES2 LAPM, MNP, or Normal Mode error control optional. (Default)
- +ES3 LAPM, MNP, or Direct Mode error control optional.
- +ES4 LAPM or MNP error control required; disconnect if error control is not established.
- +ES5 LAPM error control required; disconnect if error control is not established.
- +ES6 MNP error control required; disconnect if error control is not established.
- +ES8 Initiate V.80 Synchronous Access Mode when connection is completed and Data State is entered (see +ESA and +ITF).
- +ES9 Initiate Frame Tunneling Mode when connection is complete, and Data Mode is entered.

Examples:

- +ES=6 Enable V.80 Synchronous Access Mode originator.
- +ES=6 Enable V.80 Synchronous Access Mode originator.
- +ES=,8 Enable V.80 Synchronous Access Mode answerer.
- +ES=6,,8 Enable V.80 Synchronous Access Mode.
- +ES=3 Enable V.42 with Detection Phase originator. Disable V.80 Synchronous Access Mode originator.
- +ES=,2 Allow LAPM, MNP, or Normal Mode connection answerer. Disable V.80 Synchronous Access Mode answerer.
- +ES=3,,2 Enable V.42 with Detection Phase originator, allow LAPM, MNP, or Normal Mode connection answer. Disable Synchronous Access Mode originator and answerer.

To apply the appropriate modem initialisation sting (commands separated by ;) enter value in the value field and click on the 'Apply' button.

8.5 Network Interface and Traffic from SafetyNet Lite

SafetyNet Lite network interface connects the unit to the local network. The connection is a RJ45 Ethernet 10Base-T connector. Network compatibility is Ethernet version 2.0/IEEE 802.3.

The type of traffic is mainly TCP/IP and UDP. UDP packets are sent back and forth when the user interfaces are active. There are no packets sent on to the network when

the user interface is not loaded. The IP monitoring feature sends ICMP packets based on the frequency specified. SNMP operates on UDP on ports 161 and 162.

If the device is DHCP enabled, at boot up the unit configures its network interface after obtaining the network parameters from the DHCP server using UDP.

SafetyNet Lite has a TCP/IP, HTTP web server that hosts the user interface on port 80.

The models without the modem use TCP/IP in sending the SMS information to a central server hosted by Computer Support Systems.

SafetyNetFinder.exe is a tool provided by CSS to locate SafetyNet Family products on the local network. When running this tool please ensure the firewall is not preventing the communication. SafetyNetFinder.exe uses UDP for communications and allocates the next available port.

9 SMS Messages from SafetyNet Lite

9.1 Introduction to SMS Messages from SafetyNet Lite

SafetyNet Lite is capable of sending SMS messages via two methods depending on the model.

1. Using the network connection and by connecting with a SMS server application hosted on the Internet by Computer Support Systems.
2. Using the internal PSTN modem dialer and sending the SMS independent of the network. (Reliable when the network is down)



9.2 SMS Messages using the Network Interface

This applies to models ZSN4002NB, ZSN4002 and ZSN4002D.

SafetyNet Lite converts any warning, alarms or shutdown messages into TCP/IP packets and transmits them over the Internet to a predetermined IP address. The server at this IP address handles sending the SMS to predetermined numbers set by SafetyNet Lite.

9.2.1 Requirements for SMS Messages via the Network

The requirements to successfully send SMS messages via the network are

- Access to the external machine with IP address 210.23.143.19 on port 42755 from SafetyNet Lite to establish a TCP/IP link. (Active Internet connection / a configured firewall)
- SMS features turned on by using the appropriate registration key for SMS software.
- Correct configuration on the SMS configuration web interface. (Sensors associated with SMS messages and correct phone numbers entered)

9.2.2 Limitations

- The SMS message is sent only up to the three mobile phone numbers entered on the SMS configuration web interface.
- Clearing of an alarm is not notified via SMS messages.
- The time stamp noted on the SMS message is extracted from SafetyNet Lite.
- SMS messages rely on the PSTN (Public Switched Telephone Network) and the Internet on distribution.
- SMS messages are delivered only when the mobile phone is switched on.

9.3 SMS Messages using the internal PSTN Modem

This applies to models ZSN4002M and ZSN4002MD.

SafetyNet Lite has an inbuilt modem that is able to dial out when an alarm condition is triggered. The operation of the modem and associating the alarms to mobile phone numbers are performed on the Modem Configuration web interface.

SafetyNet Lite converts any warning, alarms or shutdown messages, dials the telephone provider on the given number and sends the SMS messages via the PSTN (Public Switched Telephone Network).

9.3.1 Requirements for SMS Messages using the Modem

The requirements to successfully send SMS messages via the inbuilt modem are

- An active telephone line provided to the unit.
- Correct configuration on the Modem Configuration web interface. (Sensors associated with SMS messages and correct phone numbers entered)
- Subscribe to a telephone network provider for paging services. (Described in detail on 9.3.2)

9.3.2 Subscribing to a Paging Service to Receive SMS Messages

There are several network providers that allow sending SMS messages via a dial up process. SafetyNet Lite uses this service to send SMS messages on alarm activation.

To successfully send SMS messages via the modem the requirements are to have the dialup number and a password configured along with a telephone line connected to the back of the unit. Information to subscribe can be obtained by the telephone network provider. SafetyNet Lite has been tested with the following telephone network providers.

9.3.2.1 Telstra

Telstra provides a product named as “SMS Access Manager”. Subscribing to this service will provide the necessary password and the dialup number.

More information about “**Telstra mobile SMS Access Manager**” can be found at <http://www.telstra.com.au/mobile/business/products/sms.htm#manager>

The cost involved per SMS message is given on this website.

The application forms to subscribe to **Telstra mobile SMS Access Manager** can be retrieved from the link below

For companies, associated incorporations and other body corporate institutions <http://www.telstra.com.au/mobile/business/products/pdf/smsbody.pdf>

For partnership, sole traders, individuals and other non-body corporate institutions <http://www.telstra.com.au/mobile/business/products/pdf/smsnonb.pdf>

For more information contact Telstra on 1800 200 010.

Please note: Chapter 9.3.2.1 information has been retrieved by Telstra’s website at <http://www.telstra.com.au/mobile/business/products/sms.htm#manager> as at 02/08/2005. Information may change due to modifications by Telstra at any given time. Always refer to the current website for the latest information.

9.3.2.2 Orange (Hutchison Telecommunications (Aust) Limited)

To enquire about accessing the SMS gateways of Orange, contact Orange on 1300 133 585 and speak to a customer care team member.

Orange will assist to set up and subscribe for the service by giving further details on the product. Upon receiving the dialup number and the password SafetyNet Lite will use Orange’s service to deliver SMS messages.

Use Mr Steve Hristofski as a reference at the time of communicating with Orange.

9.3.3 Limitations

- The SMS message is sent only up to the three mobile phone numbers entered on the Modem configuration web interface.
- Clearing of an alarm is not notified via SMS messages.
- The time stamp noted on the SMS message is extracted from SafetyNet Lite.
- SMS messages rely on the PSTN (Public Switched Telephone Network) on distribution.
- SMS messages are delivered only when the mobile phone is switched on.

9.4 Sample Messages

Some of the sample SMS messages would look like: (Unit name: MY SAFETYNET)

Sensor Alarms

SafetyNet message from MY SAFETYNET. Msg content: Low temperature warning detected at: Above Air Conditioner One 18:04:56 21/09/2004

SafetyNet message from MY SAFETYNET. Msg content: High temperature alarm detected at: Above Air Conditioner Two 14:03:45 20/09/2004

SafetyNet message from MY SAFETYNET. Msg content: Alarm detected at: General UPS alarm 19:17:45 02/10/2004

General alerts

SafetyNet message from MY SAFETYNET. Msg content: Hardware error detected: Temperature sensor faulty or disconnected 13:44:37 02/04/2004

SafetyNet message from MY SAFETYNET. Msg content: Mains failure detected 12:41:15 12/12/2004

SafetyNet message from MY SAFETYNET. Msg content: Low battery detected 23:18:01 03/11/2004

SafetyNet message from MY SAFETYNET. Msg content: Lost Ethernet connection 10:33:06 27/05/2004

10 IP Monitoring on SafetyNet Lite

10.1 Introduction to IP Monitoring on SafetyNet Lite

SafetyNet Lite is capable of pinging any ICMP enabled network device. Upon ICMP receipts, SafetyNet Lite can monitor the presence and activity of the remote network device. This feature is a registered option on SafetyNet Lite.

The IP address to monitor, frequency of monitoring and the action to be taken is configured at Sensor/Relay Configuration under the sub menu *IP Monitoring*.

The screenshot shows the 'SafetyNet Lite Sensor & Relay Configuration' window. On the left is a navigation menu with buttons for 'Sensor Settings', 'Relay Settings', 'IP Monitoring' (which is highlighted), 'Update Settings', 'Clear Data', and 'Main Menu'. The main area is titled 'IP Address Monitoring' and contains a checked checkbox for 'Enable IP address monitoring'. Below this are two sections: 'Settings' and 'Options'. The 'Settings' section has a text input for 'IP address to ping' containing '210.23.143.19' and a numeric input for 'Ping frequency' set to '30' with '(1-120 minutes)' next to it. The 'Options' section has three radio buttons: 'None (Alarm only)' (which is selected), 'Drive Relay', and 'Cycle Power - SafetyBoot'.

If the monitored IP address goes down, or a router in between goes down, causing a non-reply to the ICMP request (Ping request). SafetyNet Lite issues two consecutive ping commands a minute apart for clarification to detect if the device has failed. After three consecutive reply failures an alarm is triggered and the action to be taken will be executed. The following options of action are available:

1. Alarm only.
2. Alarm and drive relay. (The relay cannot be manually controlled to have this option)

This is a close-up of the 'Options' section from the screenshot above. It shows three radio button options: 'None (Alarm only)', 'Drive Relay' (which is selected), and 'Cycle Power - SafetyBoot'.

3. Alarm and drive SafetyBoot - SafetyBoot is a product by Computer Support Systems that operates as a remote online 240V A/C power switch. By entering the parameters of SafetyBoot on SafetyNet Lite and the period to cycle power, SafetyNet can issue commands to trigger a power cycle thus causing 240V to be turned off and then on for the duration specified. Effectively this will reboot any remote device that could be in a *stalled* situation.

For SafetyBoot to successfully cycle power, it has to be in a turned ON situation. Any error condition will be logged on SafetyNet Lite event log on this action.

CS SafetyNet Lite Sensor & Relay Configuration

Sensor Settings

Relay Settings

IP Monitoring

Update Settings

Clear Data

Main Menu

IP Address Monitoring

Enable IP address monitoring

[Settings](#)

IP address to ping

Ping frequency (1-120 minutes)

[Options](#)

None (Alarm only)

Drive Relay

Cycle Power - SafetyBoot

[SafetyBoot Parameters](#)

IP address

Cycle time (Sec's)

[SafetyBoot Webpage](#)

11 SNMP on SafetyNet Lite

11.1 Introduction to SNMP Features on SafetyNet Lite

SafetyNet Lite is an SNMP (Simple Management Network Protocol) agent. It is able to retrieve the current status of any sensor including the current temperature or humidity values via SNMP polling techniques.

On alarm or on clearance of an alarm, SafetyNet Lite sends SNMP trap messages to up to four dedicated network managers. On boot up and on any configuration update, SafetyNet Lite will send a trap indicating the update to these network managers.

We assume that you are familiar with SNMP to use SNMP features and to feel comfortable with the rest of this chapter.

11.2 SNMP Implementation

Computer Support Systems enterprise ID is 14748.

SafetyNet Lite supports the SNMP System group in the MIB-II Objects SysDescr, sysObjectID, sysUpTime, sysContact & sysName.

The private MIB (Management Information Base) implements the following objects.

Object	Description
temperatureReading	Current SafetyNet Lite Temperature Reading (use multiplier 0.1 for actual reading)
humidityReading	Current SafetyNet Lite Humidity Reading (use multiplier 0.1 for actual reading)
digiSensor01Reading	SafetyNet Lite Digital Sensor 01 Status (0 = OFF, 1 = ON)
digiSensor02Reading	SafetyNet Lite Digital Sensor 02 Status (0 = OFF, 1 = ON)
digiSensor03Reading	SafetyNet Lite Digital Sensor 03 Status (0 = OFF, 1 = ON)
SafetyNetLiteTemperature	An integer that describes which region the temperature sensor is currently at. "Temperature alarm 0 = level OK 1 = level at high warning limit 2 = level at high alarm limit 3 = level at high shutdown limit 4 = level at low warning limit 5 = level at low alarm limit 6 = level at low shutdown limit"
safetyNetLiteHumidity	An integer that describes which region the humidity sensor is currently at. "Humidity alarm 0 = level OK 1 = level at high warning limit 2 = level at high alarm limit 3 = level at high shutdown limit 4 = level at low warning limit 5 = level at low alarm limit 6 = level at low shutdown limit'

safetyNetLiteAlarmSensor	An integer that describes which alarm is active. Alarm for Sensor 1 = Temperature 2 = Humidity 3 = Digital 01 4 = Digital 02 5 = Digital 03
safetyNetLiteSensorCleared	An integer that describes which alarm is cleared. Alarm cleared for Sensor 3 = Digital 01 4 = Digital 02 5 = Digital 03
safetyNetLiteSWNotification	An integer that describes a software notification. Software Notification 0 = Software watchdog timer reset 1 = Device reset manually via software 2 = Memory self-check failed, contact CSS 3 = Administration configuration (device settings or password) change detected 4 = Sensor/Relay configuration update detected 5 = Time update detected 6 = SMS configuration detected 7 = SNMP configuration detected 8 = Graph data cleared via web interface detected 9 = Alarm and event log cleared via web interface 10 = Firmware Update detected
safetyNetLiteHWNotification	An integer that describes a hardware notification. Hardware Error 0 = Mains failure detected 1 = Mains failure cleared and active 2 = Internal low battery detected 3 = Internal low battery alarm cleared 4 = Temperature sensor faulty or disconnected 5 = Humidity sensor faulty or disconnected 6 = Temperature sensor back in order 7 = Humidity sensor back in order 8 = Other hardware error
safetyNetLiteMsgString	A trap will contain this object. It will give more detailed information on alarms/alerts/notifications.

Table 1.1

Refer to the file CSS.MIB under the SafetyNet Lite product CD-ROM under the folder MIB for further details on the Management Information Base.

11.3 Requirements

- Registration keys for SNMP Traps and/or SNMP Graphing software.
- A Network Manger System installed on your network or a SNMP sniffer program installed on your PC to detect SNMP traps.
- A correct SNMP configuration web interface setting.

11.4 How to Receive Traps

If the read community is set according to your local network SNMP read community, on alarm, SafetyNet Lite will send a trap out to each network manager IP address defined on its SNMP web interface.

SafetyNet Lite sends a “cold start” trap at a boot up. Upon a configuration update it also sends an update notification as a trap.

11.5 Setting the MIB

Use the CSS.MIB file given on the CD-ROM for SafetyNet Lite to set your MIB structure settings. The SNMP software you use will allow you to configure/add paths to where your MIB file is. Read your software help files to find out how to apply MIB paths.

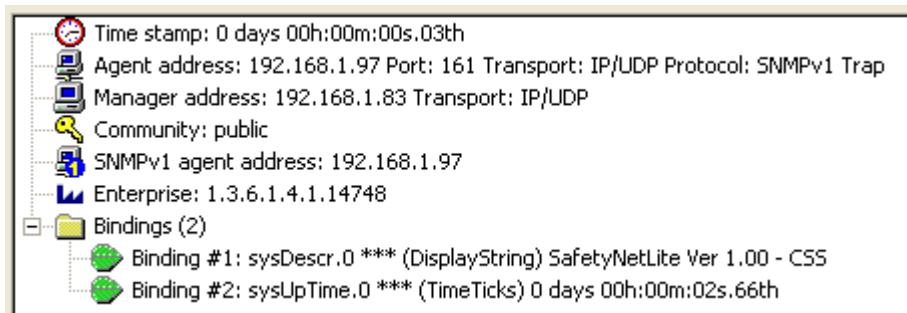
Once you have your MIB path effectively applied the trap bindings will indicate the details of the trap message.

11.6 Interpreting SafetyNet Lite Traps

Every SNMP trap is accompanied by a string, which describes the notification in plain simple English. In most cases there is another object that holds an integer value(s) that gives indication to which sensor is involved or what type of an alarm it is. Based on this integer value you are able to set your network manager to perform any other third party action as desired. It is also possible to get your network manger to poll the current sensor status periodically, and to check if there are any alarms active.

A few samples of the SNMP traps detected on a SNMP sniffer programs is depicted below.

Coldstart trap

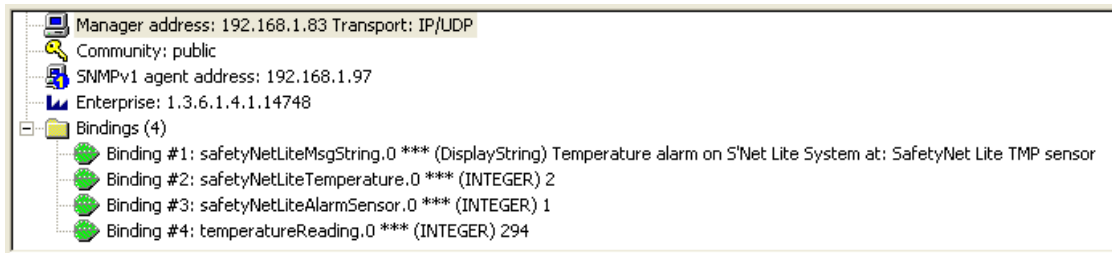


The bindings in the above image give indication of:

1. System description: Gives the software version and manufacturer name
2. System up time: How long the device has been up for

The above bindings are objects on the MIB-II implementation.

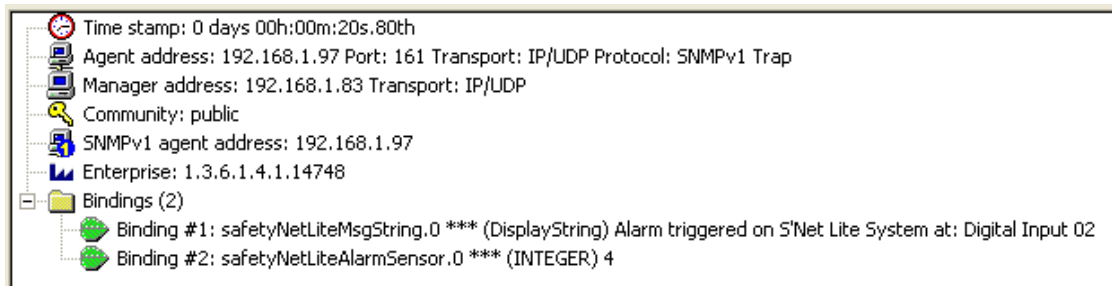
Temperature alarm trap



The bindings in the above image give indication of:

1. Message string
2. Which region the analogue sensor value falls to (2 = Temperature at high alarm level, see table 1.1 under section 10.2 for details)
3. What sensor it arrived from; in the above case, temperature sensor = 1.
4. The reading of the sensor value; 29.4 degrees. (This binding is sent only if SNMP graphing license has been purchased)

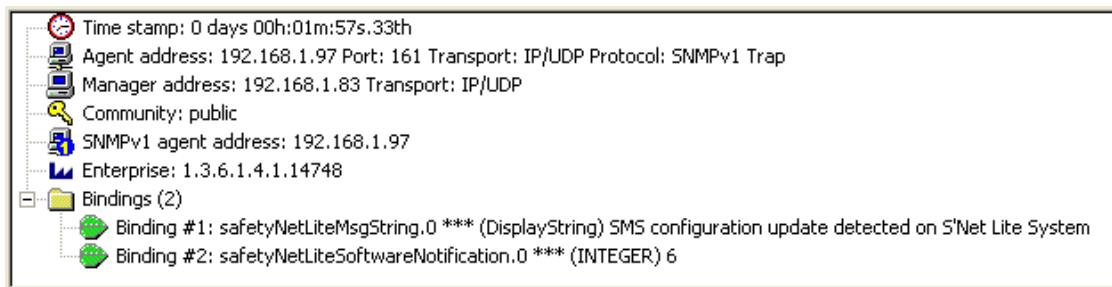
A digital sensor alarm trap



The bindings in the above image give indication of:

1. Message string
2. It is arriving from sensor number 4

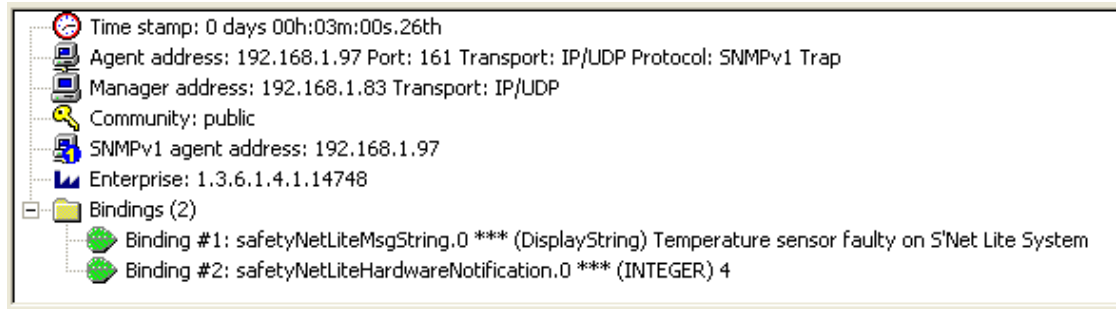
A configuration update notification



The bindings in the above image give indication of:

1. Message string
2. Software notification number 6, which is interpreted as SMS configuration change detection on SafetyNet Lite

Temperature sensor faulty notification trap



The bindings in the above image give indication of:

1. Message string
2. Hardware error number 4, which is interpreted as temperature sensor is disconnected or faulty. (table 1.1)

11.7 SNMP Graphing

It is possible for the Network Manager Software (NMS) to poll the current temperature or humidity periodically and store for graphing purposes. SafetyNet Lite updates the SNMP objects temperatureReading & humidityReading every second with its temperature and humidity reading. If these sensors are uninstalled, it will show zero value. You can also poll the digital sensors where an indication of 1 is interpreted as an active alarm and 0 as an inactive alarm.

The values retrieved are integers hence a temperature or humidity value is shown as a multiplication of 10. Most SNMP graphing tools provide a method to view the graph by using a customised multiplier. In this case, use the multiplier 0.1 to retrieve the exact value. For example, temperature value 25.6°C is retrieved as 256 & humidity value 60.4% is retrieved as 604.

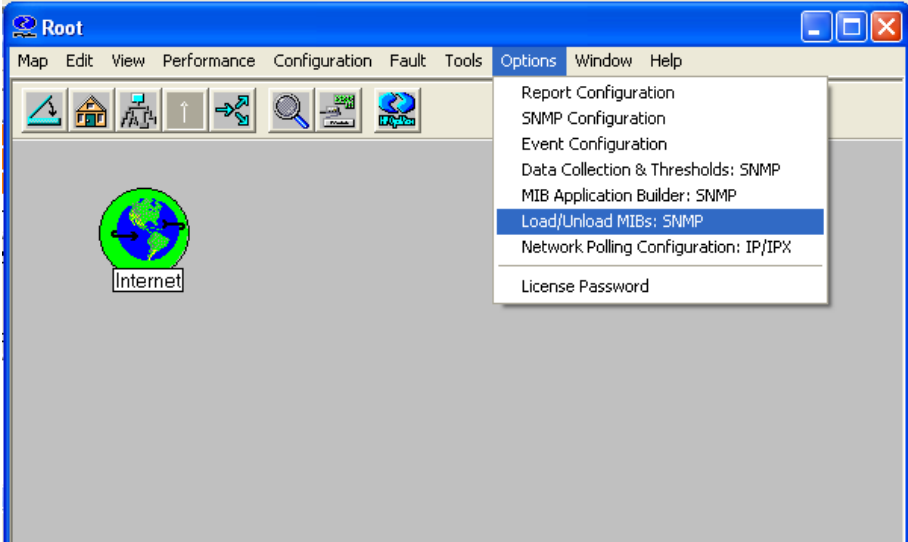
11.7.1 Requirements

- A Network Management System similar to HP OpenView that allows storing SNMP data.
- SNMP graphing licensing enabled.

11.7.2 Configuration

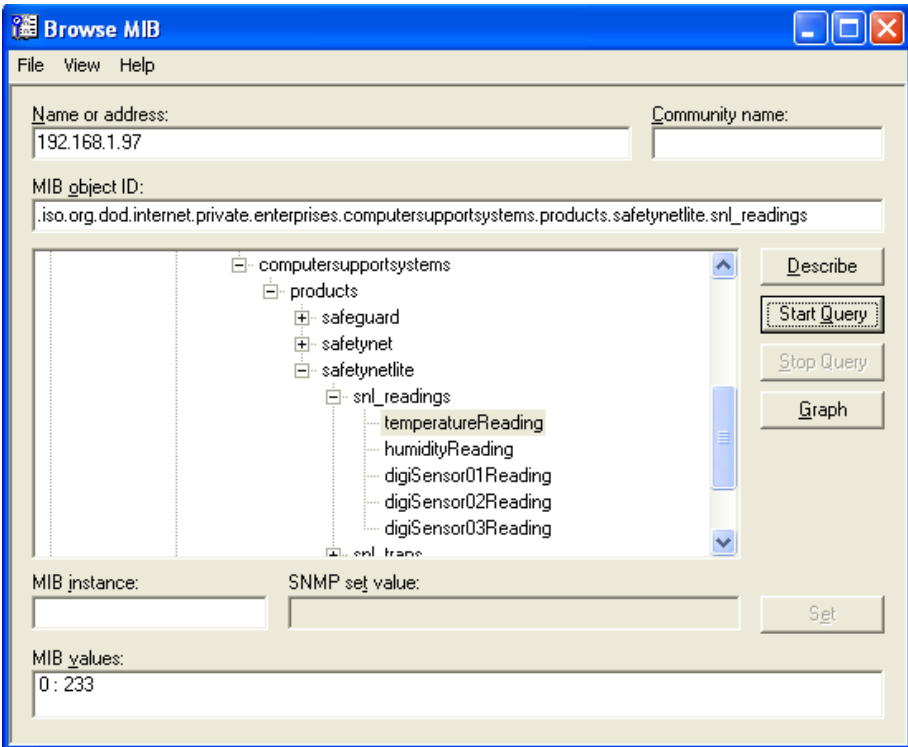
Check the help files for the NMS to determine how to store data and view graphs. Below are a few examples where graphing has been configured on HP OpenView Network Node Manager 6.31.

Load the MIB file provided by Computer Support Systems:

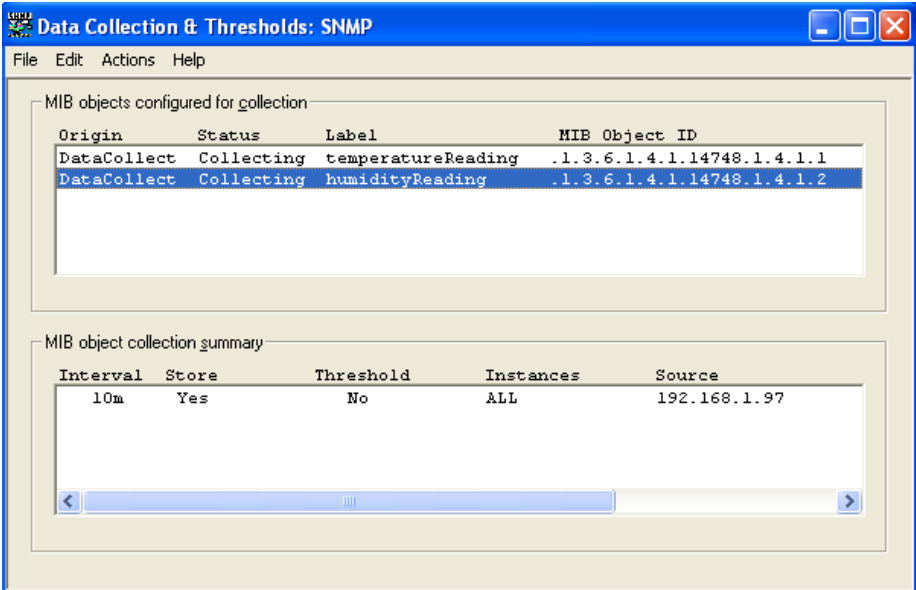


Do an “snmpwalk” on the IP address to see if you are able to talk to the device. If unsuccessful, check if you have entered the correct Network Manager IP address on SafetyNet Lite.

Use the menu Tools->SNMP MIB Browser to browse the CSS.MIB file. Click on the temperatureReading or humidityReading, and click “Start Query”. This will produce the current sensor value with a multiplication factor of 10. (Note: these sensors have to be installed, if not you will be replied with zero.)

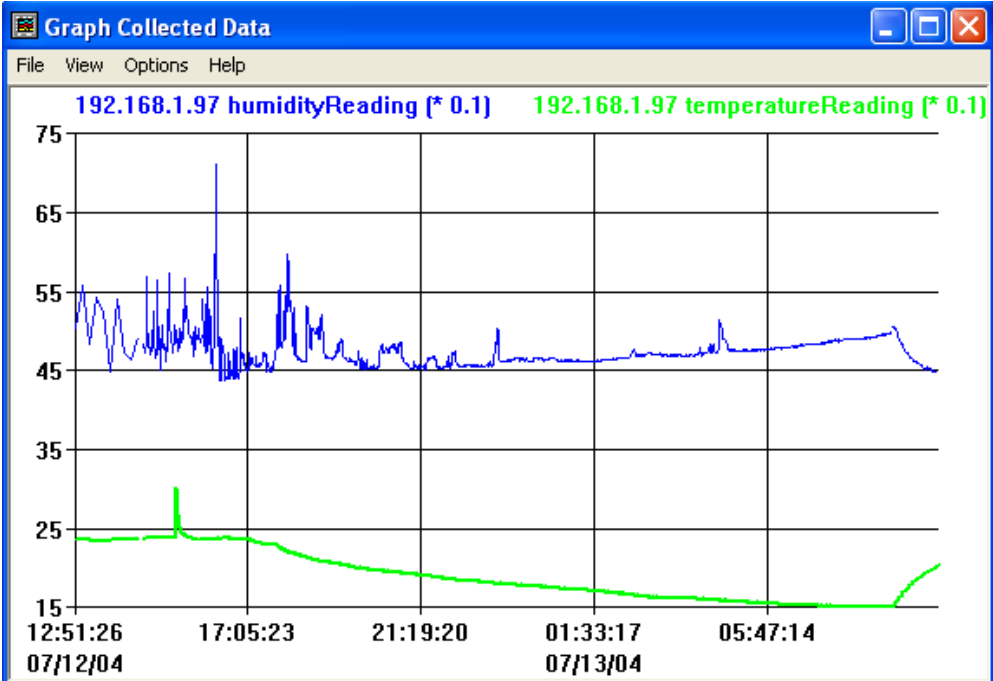


Use the Options->Data Collection & Thresholds: SNMP section to configure your polling frequency in order to store data.



If you are able to poll data using the "MIB Browser", and if you have set the correct settings on data collection and thresholds, you would be able to view graphs of any of the analogue sensors.

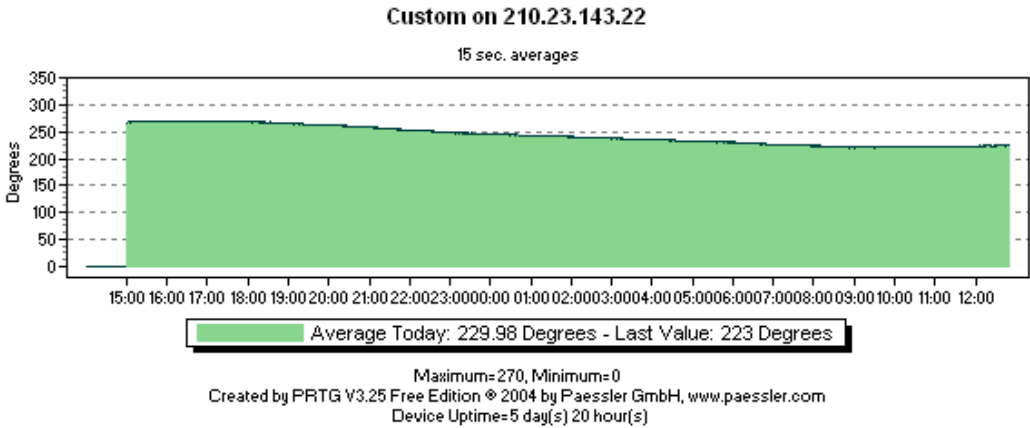
11.7.3 Samples



A sample humidity and temperature sensor reading graph plotted using HP Open View.

Below is sample screen shot of a temperature sensor graph polled via SNMP using a tool named as Paessler Router Traffic Grapher. (<http://www.paessler.com>)

Monitoring Results



Sensor	Today's Data
Custom on 210.23.143.22	Degrees (Average) 230

12 Hardware Specification

Device Model: SafetyNet Lite Version 1.01

Physical Dimensions

- Dimensions: 480 mm L X 42 mm H (1 RU) X 122 mm W
- Weight: 2.35kg (no battery option may decrease weight – contact CSS for precise weight with given option)

Network Interface

- RJ45 Ethernet 10Base-T, Realtek Semiconductors
- LED indication: 10Base-T TX Activity, Full/half duplex.
- Network Compatibility: Ethernet: Version 2.0/IEEE 802.3

Inbuilt Modem (Optional - Socket)

- Data format: V.32bis/14.4K data rates
- Error correction: V.42 (LAP-M or MNP 2-4)
- Data compression: V.42bis, MNP 5
- Power consumption: Typical 117mA (.58W @ 5V DC); Maximum 118mA (0.61W @ 5.25V DC)
- Operational temperature: 0 to +70°C
- Humidity range: 20 - 90%, non condensing

Inbuilt Modem (Optional - RJ45)

- Data format: V.92bis/28.8K data rates
- Error correction: V.42 (LAP-M or MNP 2-4)
- Data compression: V.42bis, MNP 5
- Power consumption: Typical 117mA (.58W @ 5V DC); Maximum 118mA (0.61W @ 5.25V DC)
- Operational temperature: 0 to +70°C
- Humidity range: 20 - 90%, non condensing

Operating Conditions

- Temperature range: -40°C to +70°C
- Humidity range: 5-95%, non condensing

Power Requirements

- Operating voltage: 12V
- Input power: 240V A/C 50-60Hz
- Current usage: 300 -1000 mA
- Internally battery backed up to 2.5 to 3 hours of operation

Analogue Sensor

- Humidity Accuracy ± 3.5 % RH,
- Temperature Accuracy ± 0.5 @ 25°C
- Range -20°C to 100°C and 0 to 100%
- Power consumption 28 μ A

13 Troubleshooting

This section of this manual will give tips to troubleshoot SafetyNet Lite without having to contact technical support staff from Computer Support Systems.

When troubleshooting the following problems, make sure that the SafetyNet Lite is powered on. Confirm that you are using a good network connection.

Note: *Some unexplained errors might be caused by duplicate IP addresses on the network. Make sure that your unit's IP address is unique.*

Problem/Message	Reason	Solution
When you load the IP address on your browser, get an error message.	Your computer is not able to connect to port 30705 (77F1h) on the unit or your PC could not allocate a port to connect to SafetyNet Lite.	Make sure that port 30705 (77F1h) is not blocked with any router that you are using on the network. Close your browser, wait for a few minutes and try again.
Your password is not accepted any more or you have forgotten the correct password	Caps lock may be on.	The SafetyNet Lite passwords are case sensitive. Make sure you are entering the correct password. Keep a note of your current password in a secure place. Change your password periodically. 3 consecutive entries will give you instruction on resetting the password.
There is no response when you type the IP address on the browser address bar.	The SafetyNet Lite may not have rebooted properly. The device may not be powered on. The device may have its main connection fail and its internal battery life may have run out.	Ping the IP address for a response to detect if the device is active Make sure the product is active. The red led indicator shows the power status. The Ethernet link activity cable shows that the unit is up and running on the network.
You are unable to find what the IP address of the unit is, or you have forgotten the IP address of the unit.	A new DHCP lease may have been issued.	Use the SafetyNet Lite Finder Application provided by Computer Support Systems to locate your unit on the local network. If the product is not shown it may be behind a router. Make sure that you are on the same local network and that the unit is turned on.
When you type the IP address on the browser the menu is not loaded.	You may not have the Java™ Runtime Environment 1.4.2 or higher installed on your PC.	Install the Java™ Runtime Environment on your PC. This environment is a requirement of this product.
When loading the menu, you are receiving a prompt box saying "Time out in retrieving Menu information. Make sure device is active or network congestion is not present."	The congestion on your network is too high. UDP response was not received for over a period of 1.5 seconds. This is a great amount of time for packet data to come through the network.	Close browser and retry. Check what is causing congestion on your network. Also make sure that the device is powered on. It may have got turned off in the interim process of replying to your response.

Problem/Message	Reason	Solution
When the Viewer is active you are prompted with the message "Could not communicate with SafetyNet Lite. Timeout occurred. Possibly a Network delay or an inactive SafetyNet Lite device."	The congestion on the network is too high. UDP response was not received for over a period of 1 second over 5 seconds. This is a great amount of time for packet data to come through the network. Or the product is not active anymore.	Click OK. If you keep getting this message every 5 seconds thereon, the product is no longer active. Check power to the unit. Close browser and re-try again. Make sure you network settings are entered correctly, especially the subnet mask and gateway.
No SNMP traps are sent out	SNMP license may not have been entered. Network Manager IP addresses may have not been set. SNMP community access level may not acceptable on your SNMP community.	Make sure the main menu displays that SNMP traps are enabled. Contact your network administrator to check the SNMP communities on your network. Contact your network administrator to check your SNMP settings on the network
SNMP graphing produces 0 values only.	SNMP graphing license may not have entered.	Make sure the main menu displays that SNMP graphs are enabled. Make sure the sensors are active and not faulty.
SNMP polling shows values more that 100 for temperature or humidity sensors.	Temperature values and humidity values are represented by Integers.	Use a multiplier of 0.1 to get the correct analogue sensor value. E.g.: 257 is $257 \cdot 0.1 = 25.7$ degrees
SNMP traps are sent, detected but SNMP bindings are not shown.	CSS.MIB may not have been configured on your SNMP sniffer/detector	Configure the MIB file on your Network Management System. Read on help files of your software & follow steps on how to insert MIB files.
No SMS Messages are sent (On models ZSN4002NB, ZSN4002 & ZSN4002D)	SMS configuration page settings may not be correct. Correct target IP address or/and ports are not used as advice by the CSS technical staff. Sensors may not be associated with sending SMS messages SafetyNet Lite is not able to make a direct TCP/IP connection to the target IP address on the destination port. Refer to your network administrator on setting these parameters	Check the SMS Configuration page settings. Check if the correct target IP address and ports are used as advice by the CSS technical staff. Check if sensors enabled to send SMS messages. Make sure that your unit is able to make a direct TCP/IP connection to the target IP address on the destination port. Refer to your network administrator on setting these parameters The target IP is 210.23.143.19 on port 42755.
No SMS Messages are sent (On models ZSN4002M & ZSN4002MD)	Modem configuration page settings may not be correct. Ensure the Provider number and access passwords are correct The modem may not have the dial tone	Check the Modem Configuration page settings. Initiate a test alarm on the Modem configuration and check if you receive the message. Make are the telephone line connected has the dial tone and

		the line type to be configured clearly as to a direct line or an analogue PABX line.
A temperature or humidity sensor did not send SMS messages for warnings or shutdown limit alarms.	Sending SMS messages for warnings and shutdowns are optional and has to be specified under SMS configuration.	Make sure that you have ticked to send warnings and shutdown SMS's under additional settings under SMS configuration.
A mains failure or a faulty sensor SMS is not sent.	"Send general alarms" under SMS configuration may not have been ticked.	Make sure that you have ticked "send SMS for general errors" under additional settings under SMS configuration.

13.1 Technical Support

If unable to troubleshoot SafetyNet Lite using the above table, or if the FAQ section does not provide a solution, or if you cannot fix your error, you may contact CSS technical support at

Email: support@csspl.com.au

Telephone: +613-9419 3955

Fax: +613-9419 3509

Please have the following details when you contact CSS technical staff:

- Model of product with software version.
- Serial number (Label on back panel or from the main menu display)
- Date of purchase
- Clear definition of problem
- Steps taken so far to fix problem

14 Glossary

SNMP – Simple Network Management Protocol

Simple Network Management Protocol is used for inter-network management. More information can be obtained from <http://www.snmpwalk.org/> (link active as at 22/06/2004)

MIB – Management Information Base

An important component of SNMP. Contains information for Network Managers interpretation.

WINS - Windows Internet Name Service

Windows Internet Name Service (WINS) provides a distributed database for registering and querying dynamic NetBIOS names to IP address mapping in a routed network environment for name resolution.

SafetyNet Lite Registration License Keys

Unique keys that enables certain features on SafetyNet Lite. Provided at the time of purchasing a SafetyNet Lite unit. Additional keys can be obtained from Computer Support Systems by contacting at sales@csspl.com.au

SafetyNet Lite Password Unlock Key

A specific key that allows entering a new password at the time of forgetting the SafetyNet Lite password. This key is only valid for a day. In order to obtain this key it is required to request this key officially from Computer Support Systems on a company letterhead, authorised by an authorised personnel.

DHCP - Dynamic Host Configuration Protocol

The *Dynamic Host Configuration Protocol* (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can be used to automatically assign IP addresses, to deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and to provide other configuration information such as the addresses for printer, time and news servers.

UDP - User Datagram Protocol

The User Datagram Protocol belonging to the TCP/IP family offers only a minimal transport service -- non-guaranteed datagram delivery -- and gives applications direct access to the datagram service of the IP layer. UDP is used by applications that do not require the level of service of TCP or that wish to use communications services (e.g., multicast or broadcast delivery) not available from TCP.

15 Frequently Asked Questions (FAQ's)

FAQ 1. My product is connected to the network and turned on. Now what do I do?

Answer: Use the application "SafeyNetFinder.exe" provided by Computer Support Systems in the CD-ROM of SafetyNet Lite to detect the IP address of the unit. Alternatively, get your network administrator to look up the DHCP leases on your server and try to locate the device by using the MAC address of the unit. The MAC address can be found on the back of the unit on a label attached to it.

FAQ 2. My Java™ applets do not load up or my interface does not show up any buttons to click. What am I doing wrong?

Answer: Your system may not have the Java™ Runtime Environment (JRE) version 1.4.2 or higher installed. Check the requirements on the Getting Started Manual and install the JRE. Use your control panel to check what version you have currently installed.

FAQ 3. Can I daisy chain two SafetyNet Lite units to increase my number of sensors?

Answer: No.

FAQ 4. Can I install more than one dual analogue sensor?

Answer: No, SafetyNet Lite supports only one dual analogue sensor that detects both temperature and humidity.

FAQ 5. What trigger delays are associated with sensors?

Answer: The dual analogue sensor has a 10 second trigger delay, where as the digital sensors provide a trigger delay that could be customised up to 120 seconds. The smoke and fluid sensors are recommended to have a 10 second trigger delay and is automatically inserted by default when setting up sensors.

FAQ 6. How long can I run my sensor cables from SafetyNet Lite?

Answer: We recommend up to 60m of distance from the sensor to SafetyNet Lite.

FAQ 7. Occasionally when the Viewer is active I am prompted with the message "Could not communicate with SafetyNet Lite. Timeout occurred. Possibly a Network delay or an inactive SafetyNet Lite device." Why is this happening?

Answer: The viewer did not receive an answer from SafetyNet Lite for more than 7.5 seconds. Click OK and try again. If you keep getting this message your network has a high volume of congestion or SafetyNet Lite is no longer active. Also make sure that you have UDP port 30705 enabled and your network settings are accurate.

FAQ 8. Graph data is corrupted. What can I do? Changed my sensor type from temperature to humidity or vice-versa, and now I am having conflicting data on my graph. What can I do?

Answer: You can clear all related graph data by going in Sensor/Relay Configuration and then clicking “Clear Graph Data” button. Note: This will clear both sensor related data.

FAQ 9. I have received a SNMP trap but I did not receive a SMS for a further 2 hours. I have enabled SMS registration and configured this particular sensor to send a SMS. What happened to the SMS?

Answer: Computer Support Systems cannot guarantee the time, delivery or reliability of SMS delivery as SMS relies on the Public Switched Telephone Network (PSTN) and the receiving mobile being switched on and attended.

FAQ 10. My network is not DHCP enabled. Because the device is set by factory default to have DHCP when shipped, what IP address does SafetyNet Lite load up with?

Answer: If your network is not-DHCP enabled, after a timeout of 15 seconds the device will fall to IP address 192.168.1.100 (DHCP fall back IP address) with a subnet mask of 255.255.255.0.

The best way to allocate a preferred static IP address is to connect the device direct to a PC using a crossover cable. Set the PC IP address to 192.168.1.xxx (excluding 192.168.1.100) with a subnet mask of 255.255.255.0 and try to ping SafetyNet Lite on the fallback DHCP IP address. Once you are able to communicate with the device, then you may set the preferred static IP address and connect SafetyNet Lite on your network.

FAQ 11. I have set a static IP address on my product, but now I want to set it back so that DHCP is enabled. How can I set SafetyNet Lite with DHCP enabled?

Answer: Set the IP address in the Administration Configuration page to be 0.0.0.0 where DHCP will be activated. To find the DHCP enabled IP address, look up on your server DHCP leases or use the tool SafetyNetFinder.exe application provided by CSS included the SafetyNet Lite CD under the tools directory.

FAQ 12. How can I load factory defaults on SafetyNet Lite?

Answer: Go to administration configuration settings and click on “*Factory Defaults*” menu. Then click on “*Load Factory Defaults*” button to clear current settings and load defaults on SafetyNet Lite.

FAQ 13. How can I clear the alarm & events log or the graph data on SafetyNet Lite?

Answer: Go to Sensor/Relay Configuration from the main menu and then select “*Clear Data*”. You can then clear the graph data or the alarm log as desired.

FAQ 14. I have forgotten my password on my SafetyNet Lite system. How can I access the product now?

Answer: SafetyNet Lite provides a secure method to re-enter a new password if you have forgotten the existing password. If attempted to login to SafetyNet Lite more than three times with an incorrect password it will redirect to a webpage where specific instructions are given on how to obtain a password unlock key to access the unit product.