



INSTALLATION AND OPERATION MANUAL

CN-NMS

INDUSTRIALLY HARDENED NETWORK MANAGEMENT MODULE

**This manual serves the following
ComNet Model Numbers:**

CN-NMS

The CN-NMS network management device is designed to provide remote monitoring and control of ComNet dual redundant video, data, intercom dry contact and Ethernet transmission products. The module provides management for up to four C2-NMS connected chassis. The CN-NMS itself can either reside within a C2-NMS or C3 chassis.

Fault conditions are reported by SNMP, E-mail and web GUI or by use of the five integrated alarm relays. In addition an audible buzzer alarm can be configured for rapid local fault indication.

About This Guide

This guide is intended for different users such as engineers, integrators, developers, IT managers, and technicians.

It assumes that users have some PC competence and are familiar with Microsoft Windows operating systems and web browsers such as Windows Internet Explorer and Mozilla Firefox, as well as have knowledge of the following:

- » Installation of electronic equipment
- » Electrical regulations and guidelines
- » Knowledge of Local Area Network technology

Related Documentation

The following documentation is also available:

- » CN-NMS Datasheet

Website

For information on ComNet's entire product line, please visit the ComNet website at <http://www.comnet.net>

Support

For any questions or technical assistance, please contact your sales person (sales@comnet.net) or the customer service support center (techsupport@comnet.net)

Safety

- » Only ComNet service personnel can service the equipment. Please contact ComNet Technical Support.
- » The equipment should be installed in locations with controlled access, or other means of security, and controlled by persons of authority.

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Overview

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1.0 System Overview

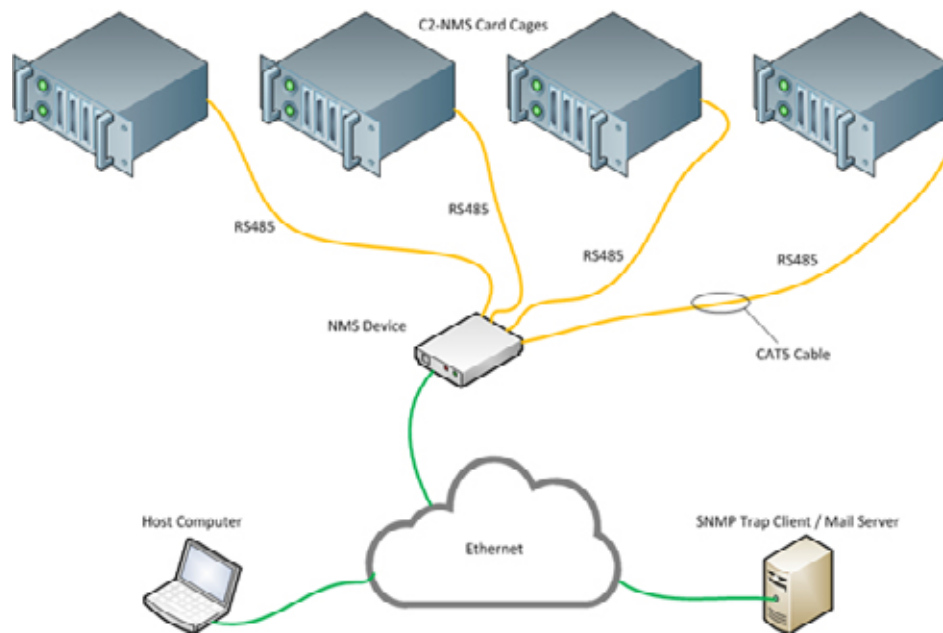


Fig 1 - Overall System Diagram

- » The CN-NMS has four RS-485 ports allowing connection of up to four NMS card cages. Each card cage can accommodate up to 6 individual modules.
- » The CN-NMS periodically polls each module installed in each connected card cage for status.
- » The CN-NMS has its own web server allowing the end user to view equipment status on up to 4 card cages through a browser.
- » All status information is available for the SNMP agent running on the CN-NMS.
- » Utilizing the C3 card cage up to three CN-NMS modules can be mounted within a 1RU rack space.

2.0 Web-based User Interface

2.1 Overview

The CN-NMS includes a built in web server that provides web pages for the configuration and to view the current status of up to 4 NMS card cages

The web pages can be accessed from any PC on the network.

2.2 Getting Started page

Ensure that your PC is connected to the network and has the ability to access the CN-NMS server device.

To access the CN-NMS's web page, type its IP address in to the browser address bar. The default IP address is **192.168.10.10**

Note - the web pages are secure using an SSL certificate (need to type in https:// in the browser address box). The certificate currently used is a self-signed/free certificate as opposed to one issued by a Certificate Authority (CA). Because the certificate is not CA generated, you will get a warning like this:

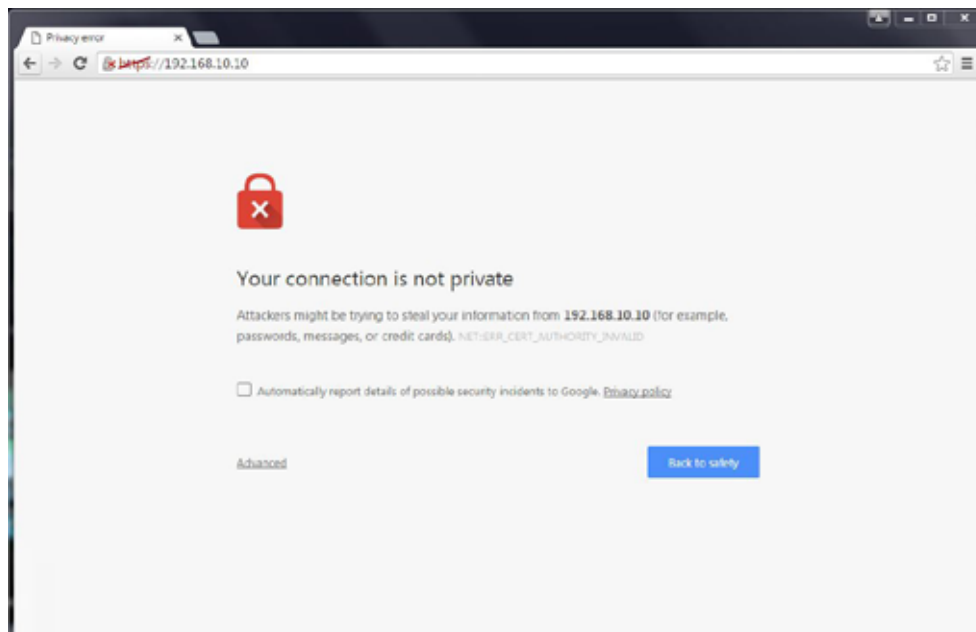


Fig 2 - Certificate warning (Chrome)

Approve the connection/ignore the warnings. Warning pages will differ in the looks depending on the browser. Note - you can set up your browser to allow this acceptance so you won't get this warning on future accesses to the CN-NMS.

Once connected, there will be a page asking for the password.

Default web login password is **admin**

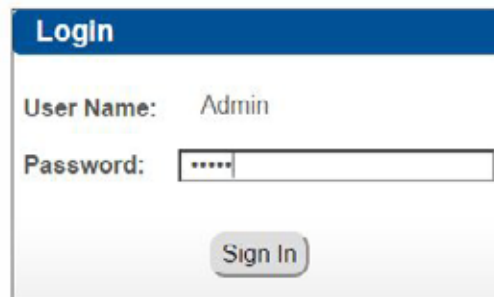
A screenshot of the login page. It has a blue header with the word "Login" in white. Below the header, there are two labels: "User Name:" followed by the text "Admin" and "Password:" followed by a password input field with five asterisks. At the bottom, there is a "Sign In" button.

Fig 3 - Web GUI: Login page

2.3 Change Password page

User can change the web access password. In the Welcome Admin drop down menu select Change Password. Enter in the current password followed by new password.

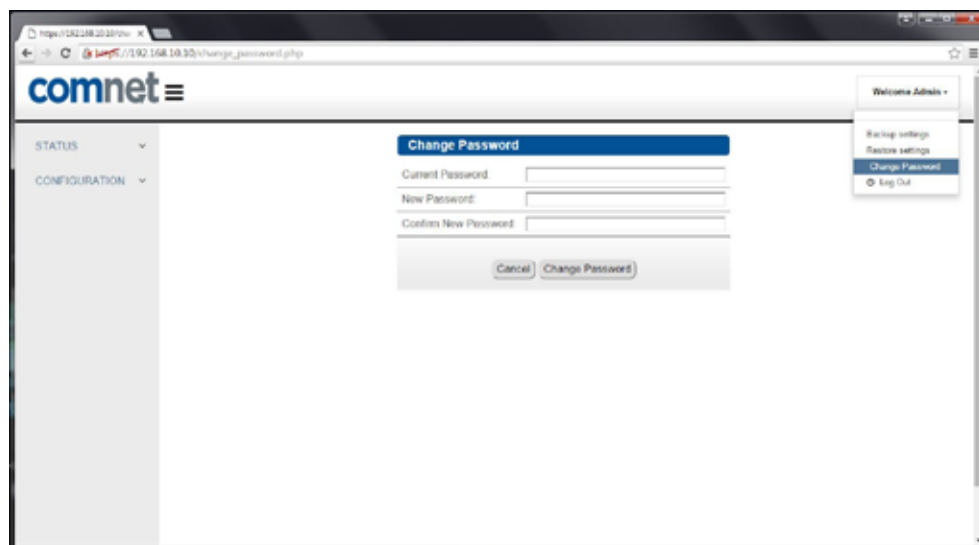
A screenshot of the "Change Password" page in the web GUI. The page has a "comnet" logo in the top left. On the left, there is a sidebar with "STATUS" and "CONFIGURATION" dropdowns. In the center, there is a "Change Password" form with three input fields: "Current Password:", "New Password:", and "Confirm New Password:". Below these fields are "Cancel" and "Change Password" buttons. On the right, there is a "Welcome Admin" dropdown menu that is open, showing options: "Backup settings", "Restore settings", "Change Password" (which is highlighted), and "Log Out".

Fig 4 - Web GUI: Change Password page

2.4 Local parameter status Page

This page displays readings performed on the local CN-NMS devices, which are the measurements of the 9VDC input rails for each of the 4 connected NMS card cages.

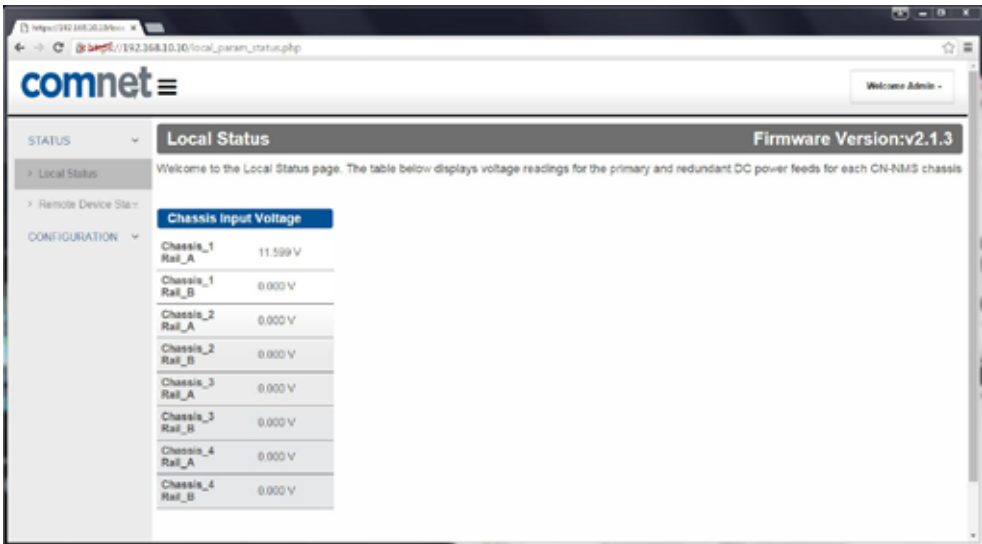


Fig 5 - Web GUI: Local Status Page

2.5 Remote Device Status Page

These pages render various readings from the remote devices. Remote devices are modules that are installed inside the NMS card cages.

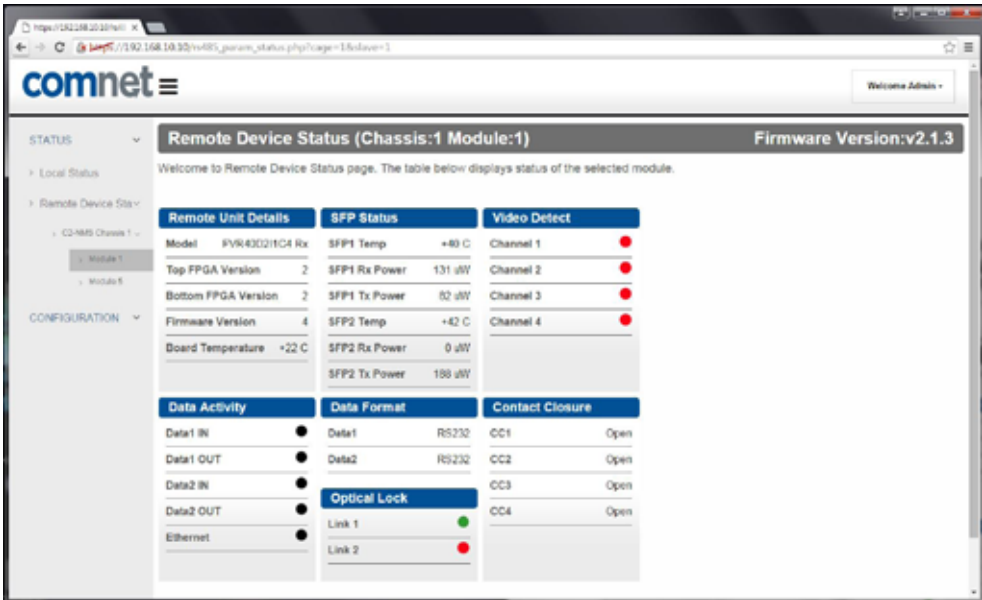


Fig 6 - Web GUI: Remote Devices Status Page

2.6 IP Services configuration page

CN-NMS board IP & SNMP trap server IP address configuration options are on this page. Note - default IP address is 192.168.10.10

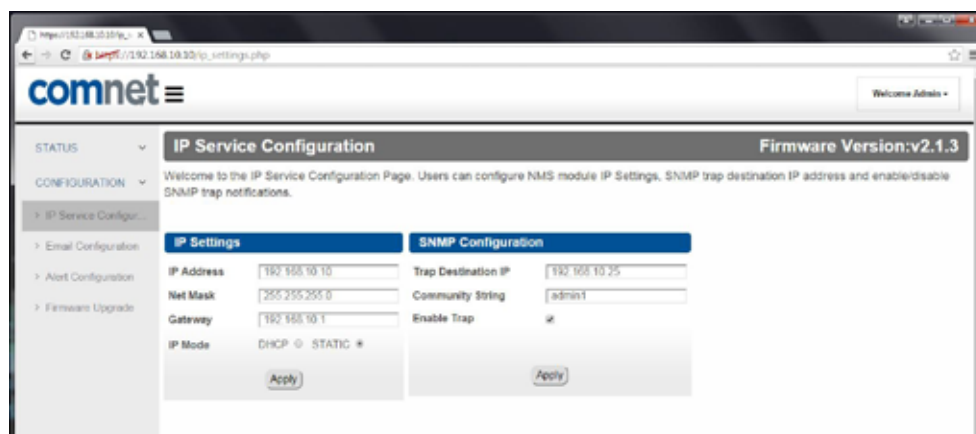


Fig 7 - Web GUI: IP Services configuration page

2.7 Email Configuration SMTP page

User can set sender and recipient email configurations on this page.

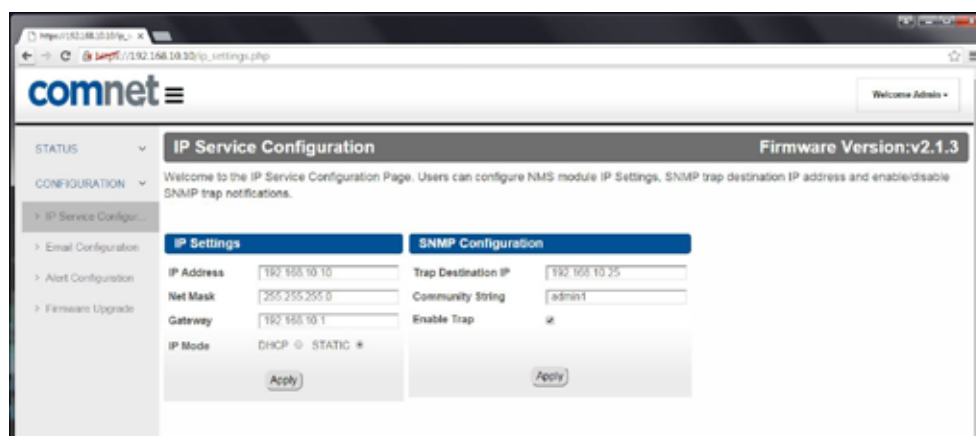


Fig 8 - Web GUI: Email Alert Configuration Page

2.8 Alert configuration page

Alert configurations can be set on this page.

Digital Alerts are determined by logic states where analog alerts will accept user set thresholds.

Note: *Both SNMP traps and email alerts will be generated based on settings on this page. Also the front panel Alarm contact closures and buzzer will be controlled by alerts configured on this page.*

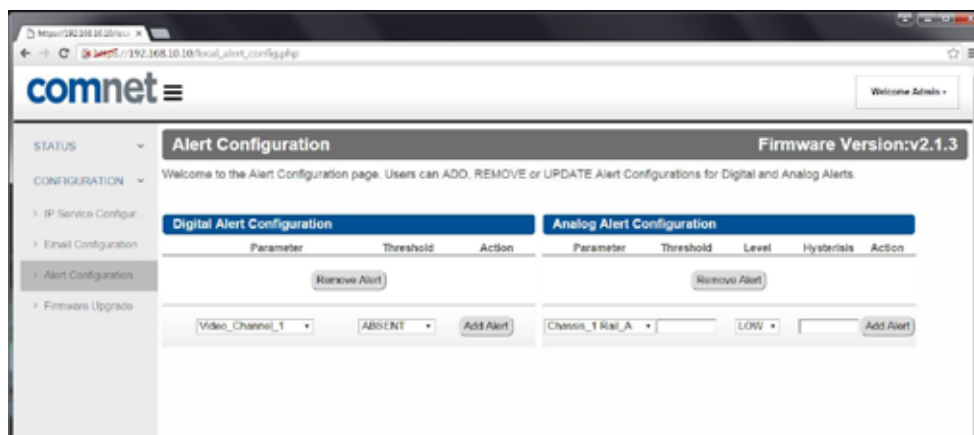


Fig 9 - Web GUI: Local Alert Configuration Page

2.8.1 Video Alert Contact Closure

The front panel I/O for this contact closure is labelled CC1+ and CC1-.

This contact will close when a video alert is enabled and a video alert has been detected. The contact closure will open when that alert has cleared.

Note: *Activation of the contact alert may take up to 15 or 20 seconds, which is the time for a scan of any one rack. Clearing of the alert may take up to 40 seconds, which is about the time required for a complete system scan.*

If the front panel buzzer switch is set to ON, the buzzer will activate under a Video alert condition.

2.8.2 Optical Rx Alert Contact Closure

The front panel I/O for this contact closure is labelled CC2+ and CC2-.

This contact will close when a user configured Optical Level alert is enabled and an optical level detected below the user set threshold. The contact closure will open when that alert has cleared.

Note: *Activation of the contact alert may take up to 15 or 20 seconds, which is the time for a scan of any one rack. Clearing of the alert may take up to 40 seconds, which is about the time required for a complete system scan.*

If the front panel buzzer switch is set to ON, the buzzer will activate under an Optical Level alert condition.

2.8.3 Temperature Alert Contact Closure

The front panel I/O for this contact closure is labelled CC3+ and CC3-.

This contact will close when a user configured Temperature Level alert is enabled and a temperature detected above or below the user set threshold. Temperature alerts can be board, SFP1 or SFP2 temperatures. The contact closure will open when that alert has cleared.

Note: *Activation of the contact alert may take up to 15 or 20 seconds, which is the time for a scan of any one rack. Clearing of the alert may take up to 40 seconds, which is about the time required for a complete system scan.*

If the front panel buzzer switch is set to ON, the buzzer will activate under a Temperature alert condition.

2.8.4 Input Voltage Level Alert Contact Closure

The front panel I/O for this contact closure is labelled CC4+ and CC4-.

This contact will close when a user configured card cage input voltage level alert is enabled and a voltage level detected above or below the user set threshold. The contact closure will open when that alert has cleared.

Note: *Activation of the contact alert may take up to 15 or 20 seconds, which is the time for a scan of any one rack. Clearing of the alert may take up to 40 seconds, which is about the time required for a complete system scan.*

If the front panel buzzer switch is set to ON, the buzzer will activate under an Input Voltage alert condition.

2.8.5 System Configuration Change Alert Contact Closure

The front panel I/O for this contact closure is labelled CC5+ and CC5-.

This contact will close when the CN-NMS module detects a change on the system configuration. The CN-NMS module stores all the modules reporting in after the first full system scan and will close this contact if a module is inserted, removed, or just fails to report/respond.

Note: *Activation of the contact alert may take up to 15 or 20 seconds which is the time for a scan of any one rack. This contact closure can only be reset to open by resetting the CN-NMS module either by pressing the front panel reset button or by power cycling the CN-NMS module.*

The buzzer will not activate under a system configuration change detect state.

2.9 Firmware upgrade page

CN-NMS firmware can be browsed for then uploaded from this page.

Note: Allow about 2 minutes for the upgrade process to complete before attempting to reconnect to the web pages.

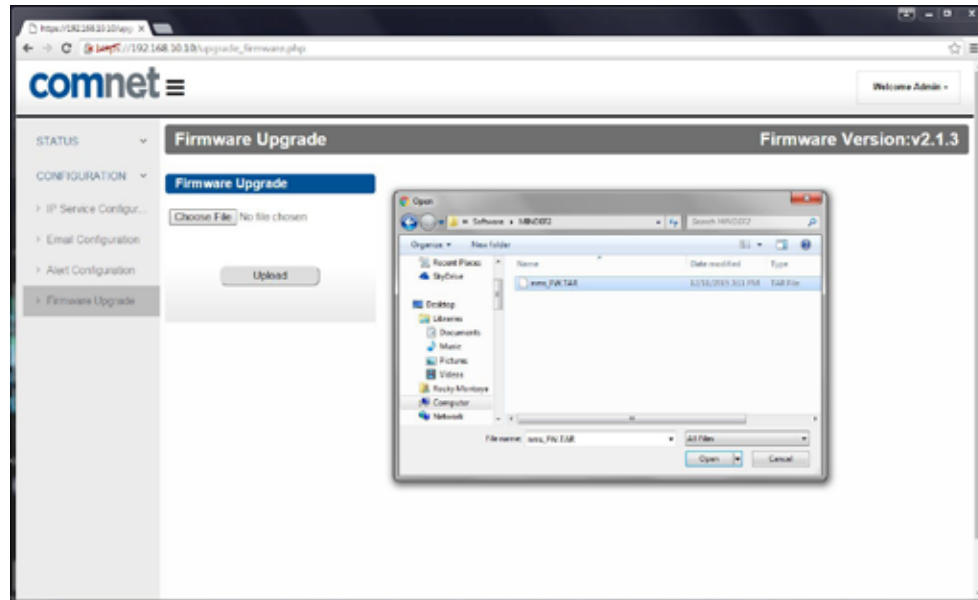


Fig 10 – Web GUI: Firmware Upgrade Page

2.10 Restoring NMS to Factory Default

The CN-NMS device can be restored to default setting by selecting Restore Settings in the Welcome Admin pull down menu.

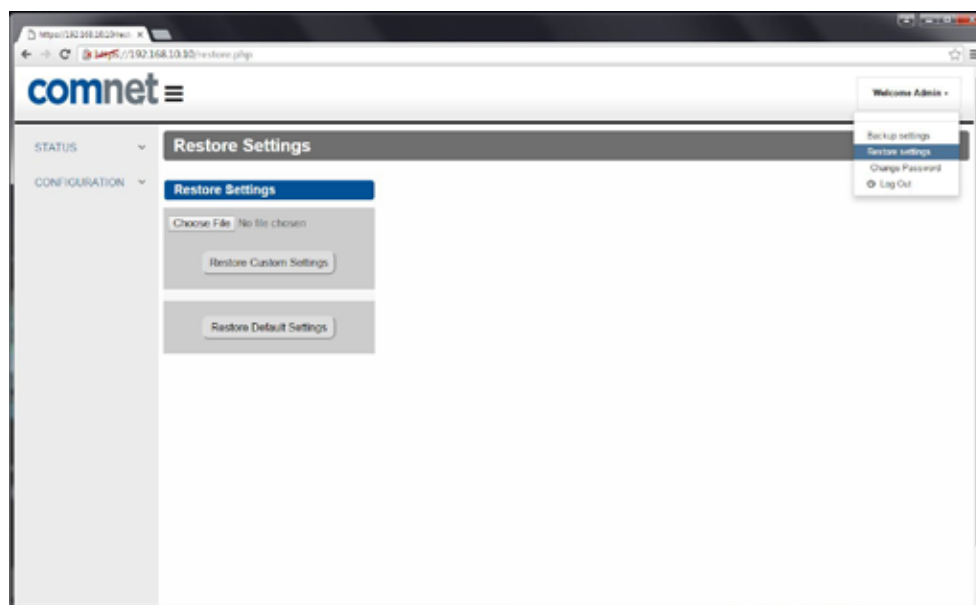


Fig 11 - Web GUI: Restore to Factory Default

2.10.1 Backup settings option

This option is provided in the drop down list, which appears by clicking on Welcome Admin tab. On clicking this option, a configuration file containing all the current settings will be downloaded in compressed form (with tar.gz extension).

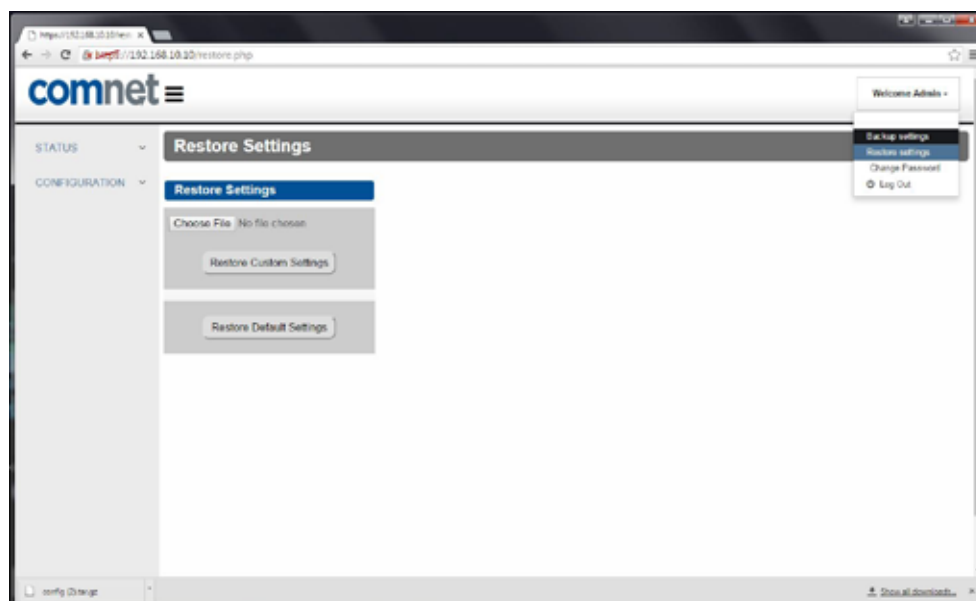


Fig 12 - Web GUI: Backup settings option

2.10.2 Restore settings option

The option used to restore the settings is provided in the drop down list, which will appear by clicking on the “welcome admin” tab. On clicking this option, a web page will be loaded (shown in below figure). User can choose any previously backed up file to restore the settings. The file chosen to restore the settings must be in tar.gz compressed form. After selecting a file to restore, click on the “restore” button. This will restore the configuration settings.

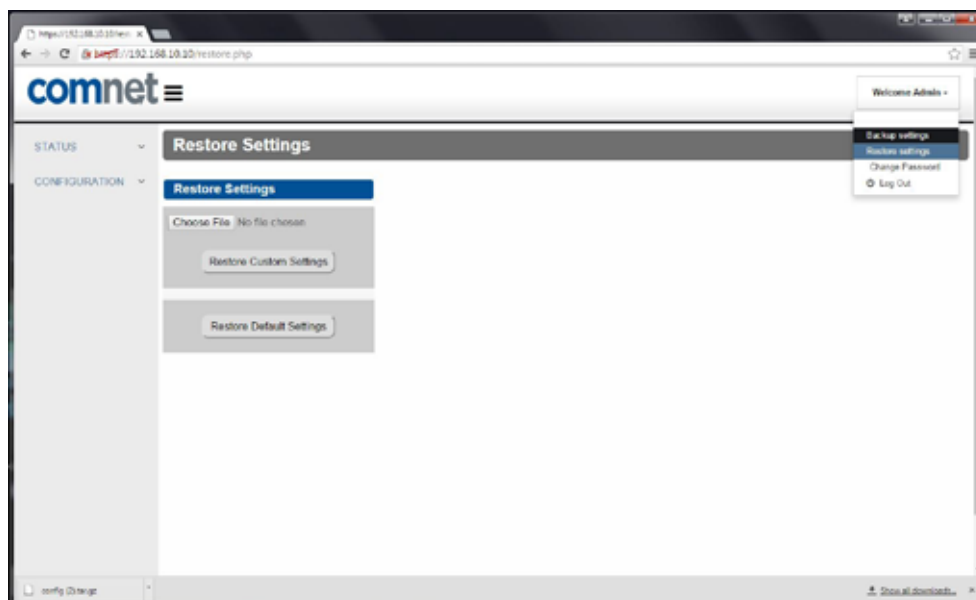


Fig 13 – Web GUI: Restore settings option

2.11 Operation of Managed Reset Button

2.11.1 Level 1

Press and hold the front panel reset button for more than 2 seconds and less than 5 seconds will result in a board reset

2.11.2 Level 2

Press and hold the front panel reset button for more than 5 seconds and less than 10 will result in a return to the default static IP address (192.168.10.10) and embedded web page default password (admin). The buzzer will chirp twice when the reset button can be released.

2.11.3 Level 3

Press and hold the reset button for more than 10 seconds will result in the unit returning to the previous firmware image.

2.12 SMTP (Email alerts)

The CN-NMS will continuously fetch data at periodic intervals and compare it with user set threshold limits. If the acquired data falls out of the threshold range, an email notification will be sent to the email set on the Email configuration page.

2.13 SNMP

Simple Network Management Protocol (SNMP) is a widely used protocol for monitoring the health of network equipment.

If the value of any parameter goes outside the threshold range (as set on the Alert Configuration Page), the SNMP daemon will send an SNMP trap notification. SNMP trap address is configurable through web (IP Service Configuration Page) and the CLI.

- » CN-NMS firmware has SNMP version 2c installed in it.
- » SNMP agent has a default community string "admin1" but can be changed on the IP Service Configuration page.

2.14 Command Line Interface

To use command line (CLI), connect the CN-NMS terminal connector to the serial port on the host computer.

Here are the CLI commands supported by the CN-NMS. For more information on supported commands, use the help command.

Below figure shows screen shot of the help command. There are three basic commands supported:

- » get: To read the value
- » set : To set the value
- » resetPw: To reset Web access password. This command will restore Web access password to default: admin

```
root@beaglebone:~# nms_cli help
-----CLI Version 0.0-----
// Commands Supported //
// -----

get  ---  Used to read parameter value.
Usage:
command format: nms_cli get <parameter name> [Card Cage] [Chasis] [Module]
Note: Card Cage,Chasis & Module are required only for remote parameters

Examples:

1)get system parmeters value e.g boardipinfo

nms_cli get BoardIpInfo

-This will read NMS IP configurations.

2)get value of remote parmeters

nms_cli get modelnum 2 1 3

-This will read model number of slave device connected at Card Cage 2, Chasis 1
& Module 3. Allowed range for Card Cage: 1-4,Chassis: 1-1, Module: 1-6

set  ---  Used to set parameter value.
Usage:
command format: nms_cli set <parameter name> <value>
Example:

1)set system parameter e.g. boardipinfo of server

nms_cli set boardipinfo dhcp=off,ip=192.168.40.5, mask=255.255.255.0,gw=192.168
.40.25

This will configure NMS IP settings.

Note: All the remote parameters are Read Only..

resetPw --- Used to reset web login password to "admin123"
Usage:

nms_cli resetpw
```

Fig 14 – CLI- Help

Below figure shows the list of parameters that can be accessed using the CLI get/set. Some parameters are read-only and some are read-write. To access information as to which parameters are read-only, which are read-write and a list of parameters user can access, use the help command.

```

////////////////////
//  List of Parameters  //
////////////////////

```

PARAMETER NAME	DESCRIPTION
boardIpInfo	IP information of NMS Board(DHCP={ON/OFF},IP,mask,gateway) (Read Write)
snmpServerIp	SNMP trap server IP address.(Max Len=32) (Read Write)
snmpCommStr	SNMP trap server Community String using which NMS will send TRAPS (Max length = 10) (Read Write)
emailAlertStatus	Status of Email Alert notification (enable/disable) (Read Write)
trapStatus	Status of SNMP Trap notification alert(enable/disable) (Read Write)
cage1RailA_v	Read Supply voltage of Card cage 1 Rail A (Read Only)
cage1RailB_v	Read Supply voltage of Card cage 1 Rail B (Read Only)
cage2RailA_v	Read Supply voltage of Card cage 2 Rail A (Read Only)
cage2RailB_v	Read Supply voltage of Card cage 2 Rail B (Read Only)
cage3RailA_v	Read Supply voltage of Card cage 3 Rail A (Read Only)
cage3RailB_v	Read Supply voltage of Card cage 3 Rail B (Read Only)
cage4RailA_v	Read Supply voltage of Card cage 4 Rail A (Read Only)
cage4RailB_v	Read Supply voltage of Card cage 4 Rail B (Read Only)
slavePresence	Get presence status of slave hardware(if it is connected in their respective slot or not) (Read Only)
remoteAllData	Get status of all remote parameters using single command (Read Only)
modelNum	Read Card ID of slave Hardware (Read Only)
topHwRev	Read top PCB revision of slave Hardware (Read Only)
bottomHwRev	Read bottom PCB revision of slave Hardware (Read Only)
topHdlRev	Read top FPGA revision of slave Hardware (Read Only)
bottomHdlRev	Read bottom FPGA revision of slave Hardware (Read Only)
fwRev	Read Firmware revision of slave Hardware (Read Only)
vidCh1Status	Get Video Channel 1 Status (Read Only)
vidCh2Status	Get Video Channel 2 Status (Read Only)
vidCh3Status	Get Video Channel 3 Status (Read Only)
vidCh4Status	Get Video Channel 4 Status (Read Only)
dataCh1InActivity	Get Data Channel 1 Input activity status (Read Only)
dataCh2InActivity	Get Data Channel 2 Input activity Status (Read Only)
dataCh1OutActivity	Get Data Channel 1 Output activity Status (Read Only)
dataCh2OutActivity	Get Data Channel 2 Output activity Status (Read Only)
dataCh1Format	Get Data Channel 1 Format (Read Only)
dataCh2Format	Get Data Channel 2 Format (Read Only)
cc1Status	Get Contact Closure 1 Status(Open/Close) (Read Only)
cc2Status	Get Contact Closure 2 Status(Open/Close) (Read Only)
cc3Status	Get Contact Closure 3 Status(Open/Close) (Read Only)
cc4Status	Get Contact Closure 4 Status(Open/Close) (Read Only)
ethLinkStatus	Get Ethernet link Status (Read Only)
temperature	Get temperature (Read Only)
linkLock1	Get link lock status of channel 1 (Read Only)
linkLock2	Get link lock status of channel 2 (Read Only)
healthData	Get Board Health Data (Read Only)

Fig 15 - CLI- List of supported parameters

3.0 Physical Description

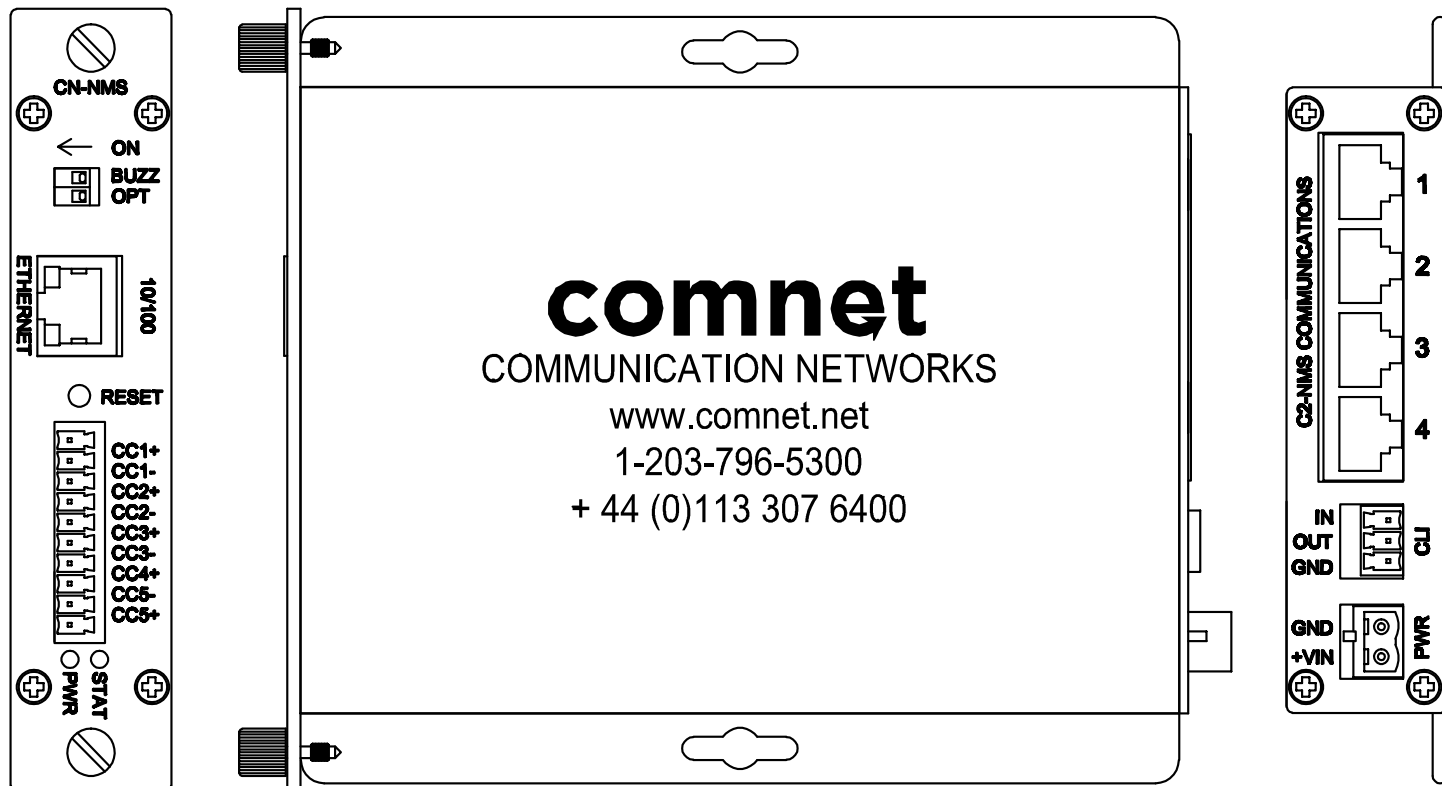


Fig 16 - Views of CN-NMS Panels

3.1 Back Panel Connections

Note: The RS-485 connections are pinned out so that a standard Ethernet cable will properly connect with the NMS card cage rear RJ-45 connector

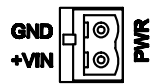


Fig 17 - Power Connections

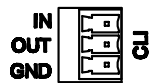


Fig 18 - CLI Port
RS-232 IN
RS-232 OUT
GND

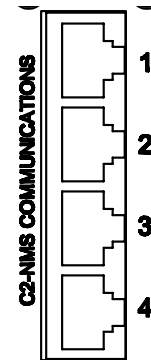


Fig 19 - Remote Cardcage Connections
RS-485 Located on Rear Panel

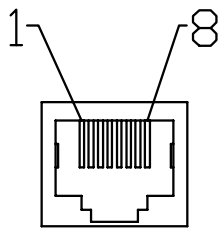


Fig 20 - View Inside RJ-45 Port

PIN #	Wire Color	Data Connections
1	Blue	12 V RailA Monitor
2	Orange	GND
3	Black	12 V RailB Monitor
4	Red	RS-485+
5	Green	RS-485-
6	Yellow	GND
7	Brown	NC
8	White	GND

3.2 Front Panel Connections and LEDs

Contact closures are dry contact.

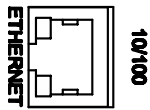


Fig 21 - Ethernet RJ-45 Port

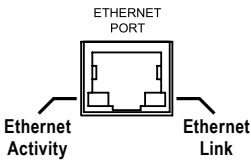


Fig 22 - Ethernet Link and Activity Indicator LEDs

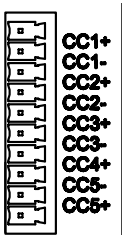


Fig 23 - CC1 Connections

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