DPS Telecom

"Your Partners in Network Alarm Monitoring"

Utility Shutdown System

USER MANUAL

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May 29, 2015 **D-UM-216US-12001** **Firmware Version 1.0**

Revision History

May 29, 2015	Updated Screenshots
April 14, 2015	Added USS Algorithm Info
October 21, 2014	Initial Release

Notice

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Contents

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1 Utility Shutdown System Overview

Weather-resistant, easy-to-install, right-size capacity - the USS effectively monitors towers and remote sites.

The Utility Shutdown System (USS) uses a cellular data connection to report to your master station using DNP3/ TCP. It reports the current state of all discrete alarm inputs, analog inputs (including the Nexus meter), and control relay outputs.

If your master station determines that a relay should be latched and sends a command, the NetGuardian 216 RTU within the USS will respond accordingly. Relay 1 is a warning, while Relay 2 interrupts power.

- **DNP3 Over Serial, Cellular, or LAN**
- **Battery Backup**
- **10 Discrete User Alarm Inputs**
- **2 User Control Relay Outputs**
- **Accessible Web Interface (via LAN)**

2 Specifications

User Discrete Alarm Inputs:	10
Temperature Sensors:	1 Integrated Analog Sensor
Temperature Thresholds:	4 (High and Low , Major/Minor)
Battery Monitoring:	2 Integrated Analog Sensors
Battery Thresholds:	4 (High and Low , Major/Minor)
User Control Relays:	1
Protocols	
Over LAN:	SNMPv1, SNMPv2c, TELNET, HTTP, Email, DNP3
Over Cellular:	DNP3, Telnet
Dimensions:	20.00" H x 20.00" W x 8.00" D
	(50.8 cm x 50.8 cm x 20.32 cm)
Weight:	60 lbs.
Mounting:	Wall mount
Power Input:	110V A/C & 24V Battery Backup
Current Draw:	0.25 Amp @ 110V A/C
	2.11 Amp @ 110V A/C
Fuses:	10 Amp Fuse
	32V 25 Amp FlatType Fuse Inserts
	+24V 3/4 Amp GMT Fuse (NetGuardian 216 G3)
Battery Shelf Life:	9 months*
Interfaces:	1 RJ45 10BaseT half-duplex Ethernet port
	1 DB9 front-panel craft port
	1 - 1/8 Stereo connector for external temperature probe
	1 Push button switch
	Cellular CDMA Modem
	RS232/RS485 Serial port (Build option instead of Cellular)
Visual Interface:	6 Front Panel LEDs
	2 Back Panel LED
Audible Notification:	Alarm speaker with volume control
Industrial Temperature:	-22°–+158° F (-30°–+70° C) when heater is running, which is contingent on main power
Operating Humidity:	0%–95% non-condensing
MTBF:	60 years
Windows Compatibility:	XP, Vista, 7 32/64 bit
RoHS:	5/6

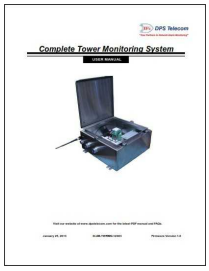
*The battery needs to be charged within 9 months from manufactured date.

3 Shipping List

Please make sure all of the following items are included with your Utility Shutdown System. If parts are missing, or if you ever need to order new parts, please refer to the part numbers listed and call DPS Telecom at **1-800-622-3314**.

Base Unit
D-PK-216US-12001

NetGuardian 216 G3
D-PK-NG216-12122.00001



Utility Shutdown System User Manual
D-UM-216US-12001

USS Resource CD


x2

3/4-Amp GMT Fuse
2-741-00500-00

6 ft. DB9M-DB9F Download Cable
D-PR-045-10A-04

14 ft. Ethernet Cable
D-PR-923-10B-14

3.1 Spare and Optional Parts

UPS 34aH Battery
3-904-00003-00

Antenna Surge Protector
2-908-00090-00

Fuse Block, 30A
2-790-60030-00

PLC Relay
3-902-00024-01

12VAC Surge Protector
3-960-00069-00

3 ft. Antenna Cable
D-PR-125-10A-03

External Temp Sensor
D-PR-998-10A-07

900MHz Antenna
2-901-00900-00

Fuse, Midget 30A 125V
2-740-03000-00

4 Installation

4.1 Tools Needed

To install the NetGuardian, you'll need the following tools:

Phillips No. 2 Screwdriver

Small Standard No. 2 Screwdriver

PC with terminal emulator, such as HyperTerminal

4.2 Battery Installation

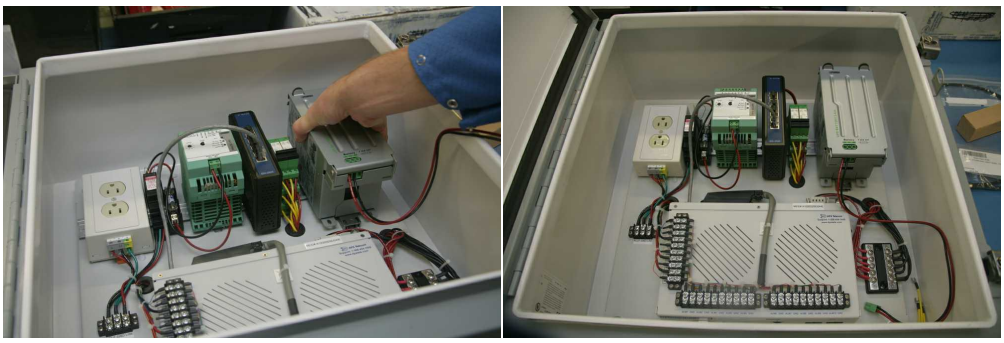
Upon receiving your unit, you will find the battery packaged separately. Use the following instruction to install the battery.

⚠ Warning:
Only qualified specialist personnel may install and start up the device. Always ensure protection against electric shock. Always keep flames, embers, and sparks away from the battery and observe thermal and mechanical limits.

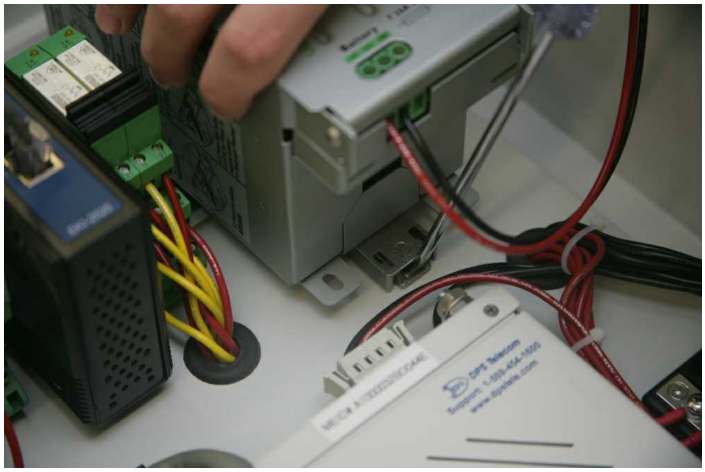
To install the battery:

1. Open the Utility Shutdown System.

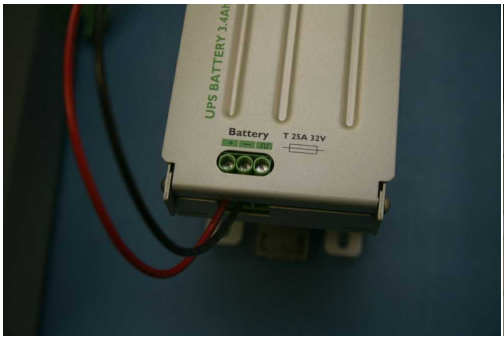
2. Take the battery and place it on top of the rail. Hook it in at a slight angle while applying light pressure. You should hear it click into place.

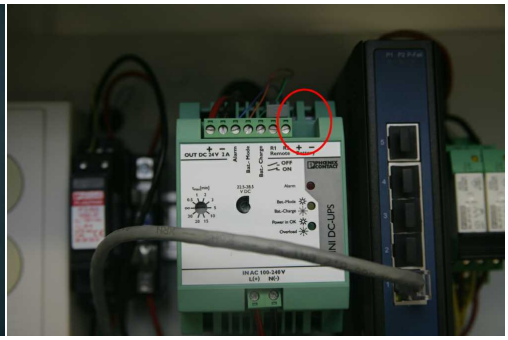


3. To remove the battery simply place a screwdriver into the tab. Gently pull the tab back while lifting the battery.



4. Locate the input inside of the casing (circled in the second image below). Attach the power wires from the battery to the input.



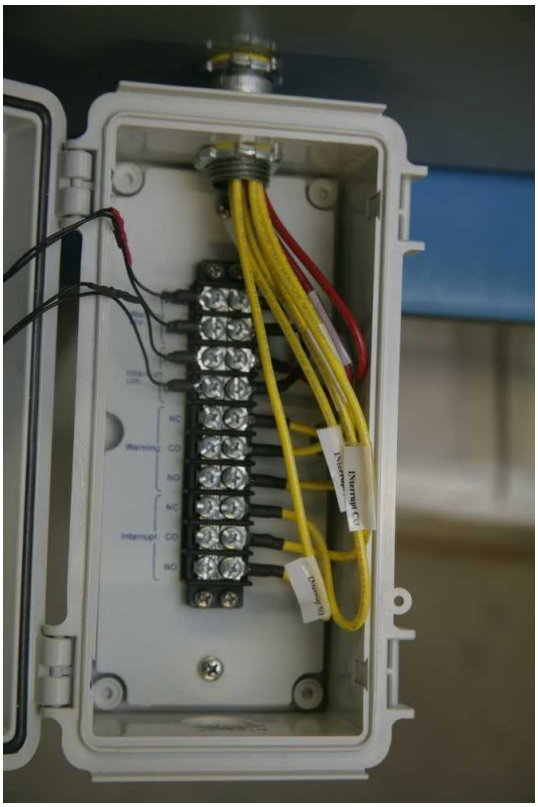


4.3 How to Connect the Interface Box

⚠ Warning:
Connect the pigtail to the interface box before connecting power.

1. The interface box must be attached with a short conduit. The bundle of wires ('pigtail") must be threaded through the conduit from the main box to the interface box.

2. Match the wire label to the silk screen, terminating each wire on the right terminal. The top 4 terminals are the 2 LEDs (warning and interrupt). The lower 6 are the 2 relays (warning and interrupt).


Warning
Interrupt

4.4 How to Connect Power

The Utility Shutdown System uses A/C to power the NetGuardian 216-63 device and to charge its backup battery. Use the following instructions to connect A/C power to your unit.

To connect the power:

1. Locate the A/C input inside of the casing. This will be located at the middle-left hand side.

2. Attach the three power wires. The left is for 'N' (Neutral), middle is 'GND' (Ground), and right is 'L' (Line).

Insert the three power wires into the A/C power input, located on the middle left-hand side of the unit

4.5 How to Connect Antenna

The Utility Shutdown System uses an antenna to send DNP3 over wireless with its CDMA modem. Use the following instructions to connect the antenna.

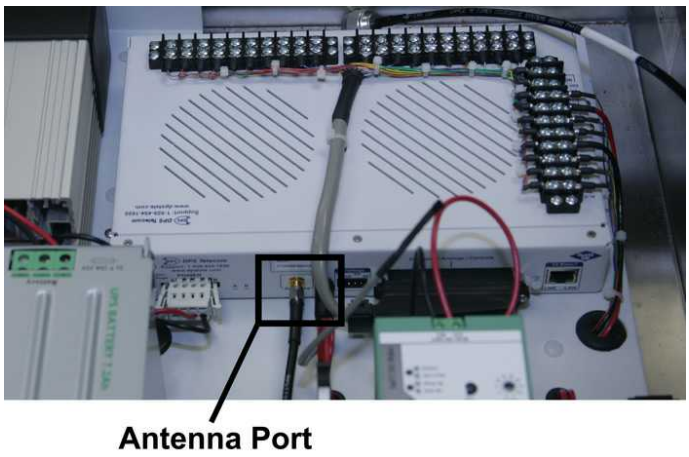
What you will need:

- 1 900MHz Antenna
- 1 3 ft. Antenna Cable

To connect the antenna:

1. Open the weather-proof case of the USS and locate the antenna port on the NetGuardian 216 G3 back panel.

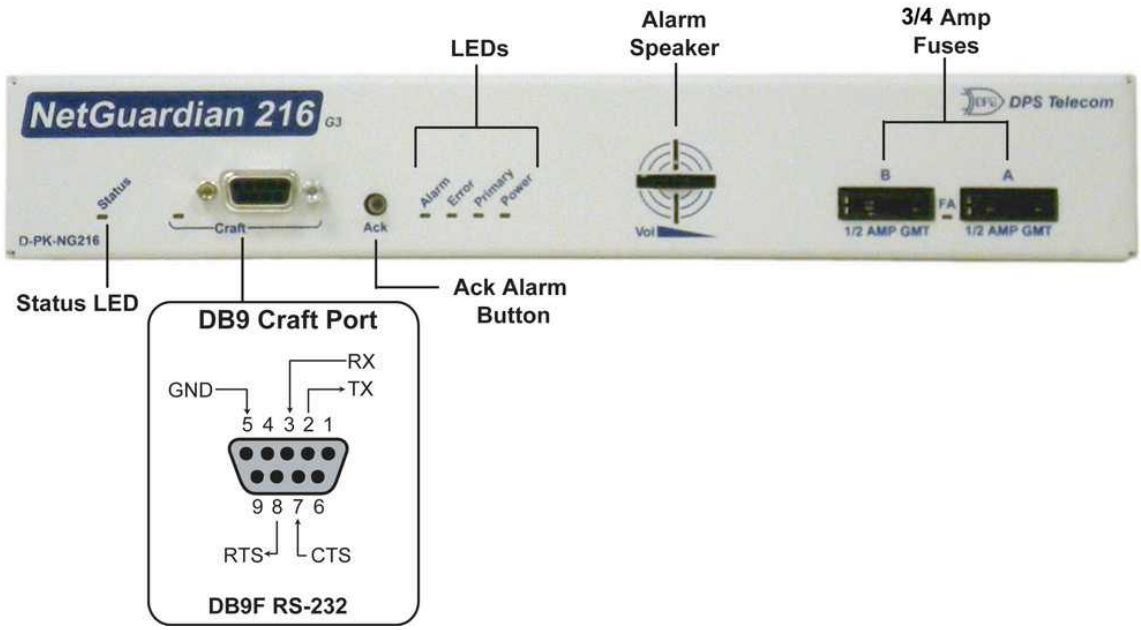
2. Attach the antenna cable to the node labeled "Antenna," and tighten the nut to fasten it to the NetGuardian.



3. Now attach the antenna surge protector to the hole in the metal weather-proof case. The surge protector will fit inside of the smaller hole, located above the three larger conduit holes.

4. Once the surge protector is set up, attach the antenna cable to the protector, tightening the nut to fasten it in place. Now attach the antenna to the the surge protector on the outside of the case.

5 NetGuardian 216 G3 Front Panel



NetGuardian 216 G3 Front panel connections

5.1 Craft Port

Use the front panel craft port to connect the NetGuardian 216 G3 to a PC for onsite unit configuration. To use the craft port, connect the included DB9 download cable from your PC's COM port to the craft port. Pinout is shown above for reference, but this is a standard DB9 to DB9.

5.2 Alarm Speaker

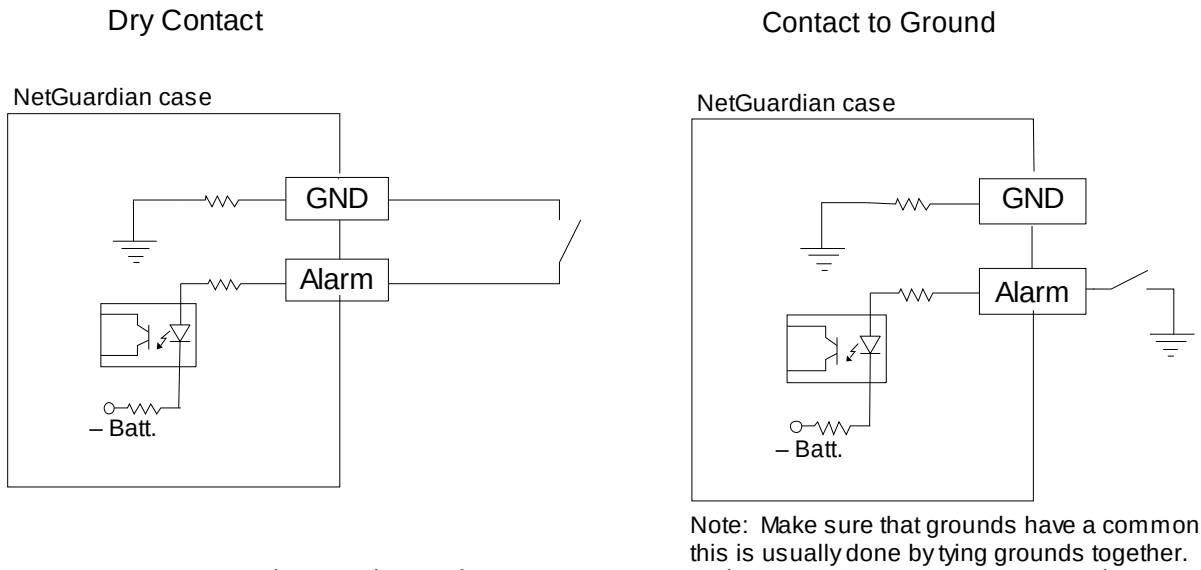
The NetGuardian 216 G3 has a built-in speaker for local audible alarm notification. The NetGuardian 216 G3 ships with the speaker turned off. When enabled, the speaker will beep repeatedly when new alarms happen.

To enable the speaker:

1. Log-in to Web Interface
2. Go to Edit Menu and select Timers
3. Change **Sound on time** setting to something other than zero.
4. Click Save

To adjust the speaker volume, use the volume control thumb wheel on the NetGuardian's front panel.

5.3 Discrete Alarms



5 *Discrete alarm points can connect as a dry contact or a contact to ground*

The Complete Tower Monitoring System's NetGuardian 216 G3 features 10 user discrete alarm inputs - also called digital inputs or contact closures. Discrete alarms are either active or inactive, so they're typically used to monitor on/off conditions like power outages, equipment failures, door alarms and so on.

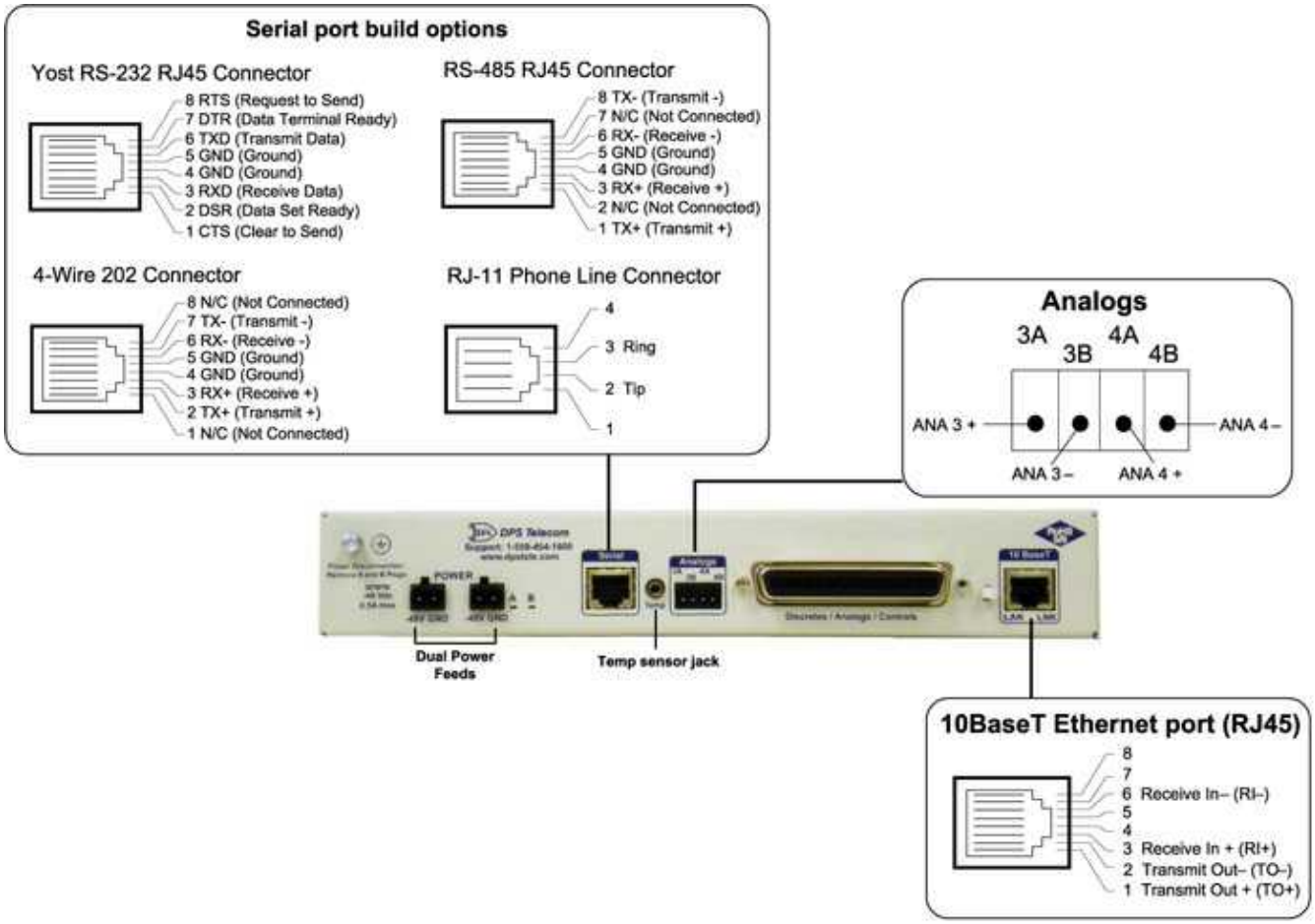
The NetGuardian's discrete alarm points are single-lead signals referenced to ground. The ground side of each alarm point is internally wired to ground, so alarm points can connect either as a dry contact or a contact to ground.

In a dry contact alarm: The alarm lead brings a contact to the ground lead, activating the alarm.

In a contact to ground alarm: A single wire brings a contact to an external ground, activating the alarm.

You can reverse the polarity of each individual discrete alarm point, so that the alarm is activated when the contact is open. This is done with a software configuration change.

6 NetGuardian 216 G3 Back Panel



NetGuardian 216 G3 back panel connections

6.1 LAN Connection

To connect the NetGuardian 216 G3 to the LAN, insert a standard RJ45 Ethernet cable into the 10BaseT Ethernet port on the back of the unit. If the LAN connection is OK, the LNK LED will light **SOLID GREEN**.

6.2 USS Wireless Modem

The Utility Shutdown System comes with a USS wireless modem. The unit polls devices by sending DNP3 over a cellular data network. Please refer to the Multitech website (multitech.com/support) for further instructions.

7 Quick Start: How to connect to the NetGuardian 216 G3

Most NetGuardian users find it easiest to give the unit an IP address, subnet and gateway through the front craft port (TTY interface) to start. Once these settings are saved and you reboot the unit, you can access it over LAN to do the rest of your databasing via the Web Browser interface.

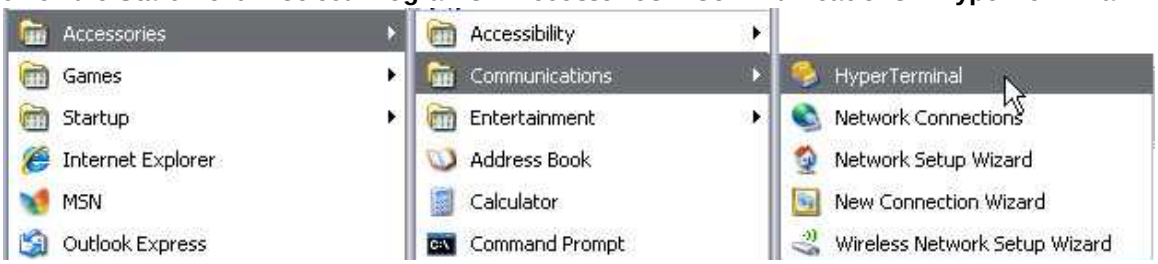
Alternative option: You can skip the TTY interface by using a LAN crossover cable directly from your PC to the NetGuardian 216 G3 and access its Web Browser. See Section 7.2.

7.1 ...Connect via Craft Port (using TTY Interface)

1. The simplest way to connect to the NetGuardian 216 G3 is over a physical cable connection between your PC's COM port and the unit's craft port. **Note:** You must be connected via craft port or Telnet to use the TTY interface. Make sure you are using the straight through (1 to 1) Male to Female DB9-DB9 download cable provided with your NetGuardian 216 G3 to make a craft port connection. We'll be using HyperTerminal to connect to the unit in the following example - however, most terminal-emulating programs should work.

To access HyperTerminal using Windows:

2. Click on the **Start** menu **>** select **Programs** > **Accessories** > **Communications** > **HyperTerminal.**



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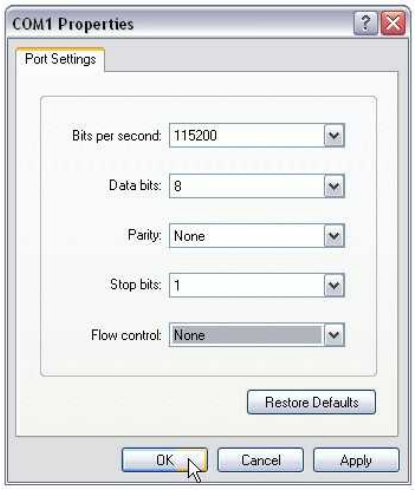
3. At the Connection Description screen, enter a name for this connection. You may also select an icon. The name and icon do not affect your ability to connect to the unit.

4. At the Connect To screen, select Com port you'll be using from the drop down and click OK. (COM1 is the most commonly used.)

5. Select the following COM port options:

- Bits per second: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: **None**

Once connected, you will see a blank, white HyperTerminal screen. Press Enter to activate the configuration menu.

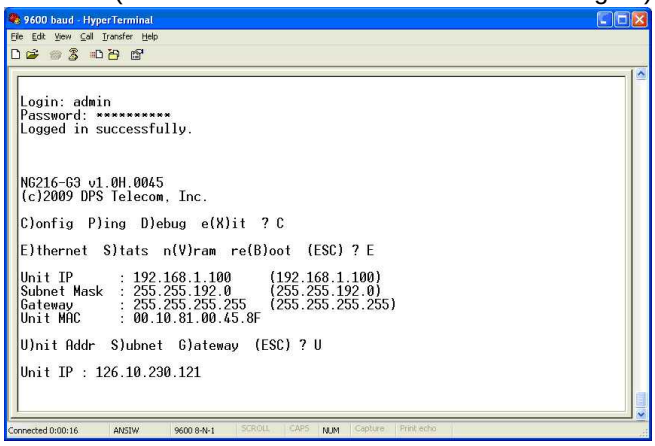


6. When prompted, enter the default user name **admin** and password **dpstelecom**. NOTE**:** If you don't receive a prompt for your user name and password, check the Com port you are using on your PC and make sure you are using the cable provided.

Additional cables can be ordered from DPS Telecom: *Part number* D-PR-045-10A-04

Continued on next page...

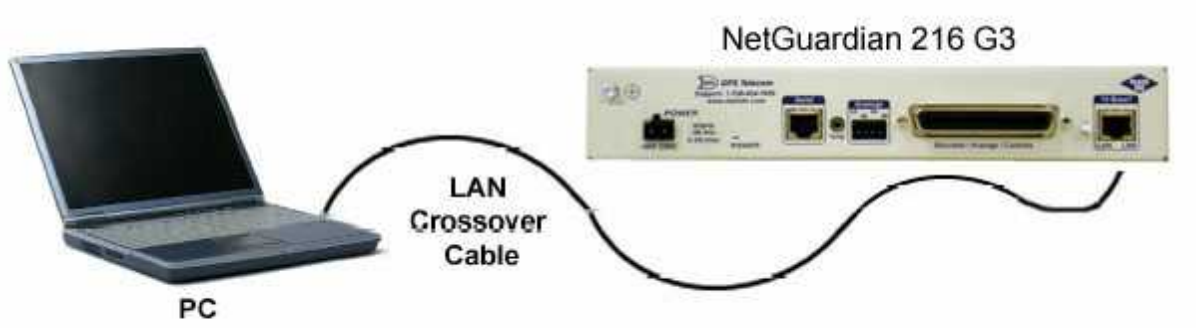
7. The NetGuardian 216 G3's main menu will appear. Type C for C)onfig, then E for E)thernet to display the unit's IP Address, Subnet Mask, Gateway and MAC Address. (**Note**: The MAC Address cannot be changed.)



8. To change the IP address, Subnet Mask or Gateway, see Section 7.3, "Configure Ethernet Settings".

Be sure to change the IP of your computer back to one that operates on your network. ***Now you're ready*** to do the rest of your configuration via LAN. Plug your LAN cable into the NetGuardian 216 G3 and see Section 9, "Logging On to the NetGuardian 216 G3" to continue databasing using the Web Browser.

7.2 ...Connect via LAN



Connection through Ethernet port

To connect to the NetGuardian 216 G3 via LAN, all you need is the unit's IP address (Default IP address is 10.0.6.100).

If you DON'T have LAN, but DO have physical access to the NetGuardian 216 G3, connect using a LAN crossover cable. **NOTE:** Newer PCs should be able to use a standard straight-through LAN cable and handle the crossover for you. To do this, you will temporarily change your PC's IP address and subnet mask to match the NetGuardian's factory default IP settings. Follow these steps:

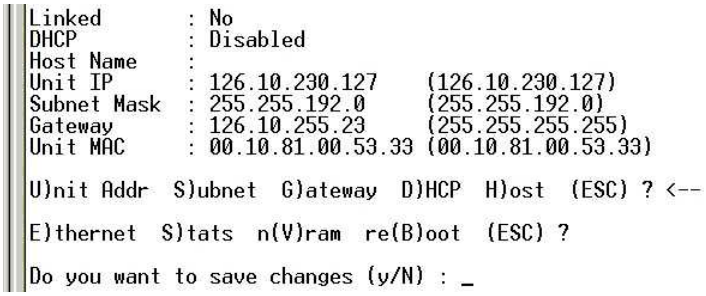
1. Get a LAN crossover cable and plug it directly into the NetGuardian 216 G3's LAN port.
2. Look up your PC's current IP address and subnet mask, and write this information down.
3. Reset your PC's IP address to **10.0.6.100**. Contact your IT department if you are unsure how to do this.
4. Reset your PC's subnet mask to **255.255.192.0**. You may have to reboot your PC to apply your changes.
5. Once the IP address and subnet mask of your computer coincide with the unit, you can access the

NetGuardian 216 G3 via a Telnet session or via Web browser by using the unit's default IP address of **10.0.6.100**.

6. Provision the NetGuardian 216 G3 with the appropriate information, then **change your computer's IP address and subnet mask back to their original settings.**

Now you're ready to do the rest of your configuration via LAN. Plug your LAN cable into the NetGuardian 216 G3 and see Section 9, "Logging On to the NetGuardian 216 G3" to continue databasing using the Web Browser.

7.3 ...Configure Ethernet Settings



To connect to the NetGuardian 216 G3 via Ethernet, you need to configure the unit's IP address, Subnet Mask, and Gateway.

1. From the main menu, type C for C)Config.

2. In the config menu type E for Ethernet.

3. To change the IP address, type U, and then type in the new IP address (Example: 123.123.123.123) and press enter.

4. To change the Subnet Mask type S and then type in the new Subnet Mask and press enter.

5. To change the Gateway, type G and then type in the new Gateway Address and press enter. Then press Escape twice to get back to the main menu.

6. You should see a "Do you want to save changes (y/N) :" prompt. **Make sure to type Y at this prompt, otherwise changes will not be saved.**

7. If done correctly you should see "Write. . . complete<--" text appear.

8. Reboot the NetGuardian 216 G3 by typing B to save its new configuration.

7.4 ...Enable Cellular Polling

To enable DNP3 polling of the CTMS over the cellular link, use the following steps:

1. In the web, click on the "Cellular" edit menu (see section 10.4). Under "Cellular Mode" check the box the says "Enabled". Click "Save".

2. In the web, click on the "DNP3" edit menu (see section 10.3). Under "DNP3 Mode of Operation" check the box that says "Cellular". Click "Save".

3. Reboot the NetGuardian. This can be done by clicking "Reboot" in the web interface. "Reboot" can be found in the lower left-hand corner of the web interface.

4. To make sure the cellular polling is enabled, give the NetGuardian a few minutes to boot up and establish a cellular connection. After 3-5 minutes, go to the web interface and click on the "Cellular" edit menu. The option that says "Cellular IP (readonly)" should NO LONGER say "0.0.0.0" and should instead show the Cellular IP address of the NetGuardian that was retrieved from the cellular provider. Note that this Cellular IP address will be different from the Ethernet IP address that you use to navigate to the device's web page.

8 TTY Interface

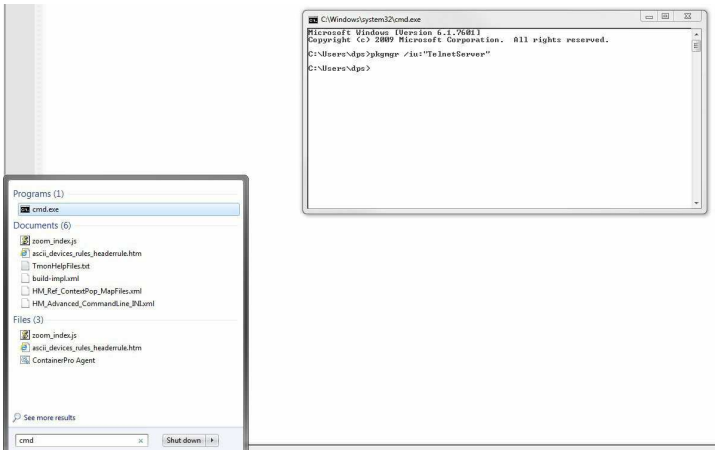
The TTY interface is the NetGuardian's built-in interface for basic configuration. From the TTY interface, you can:

- Edit the IPA, subnet, and gateway
- Set DNP3 Parameters
- Set unit back to factory defaults
- Configure data ports
- Ping other devices on the network
- Debug and troubleshoot

For more advanced configuration tools, please use the Web Browser Interface.

For Telnet, connect to the IP address at port 23 to access the configuration menus after initial LAN/WAN setup. **Telnet sessions are established at port 23, not the standard Telnet port** as an added security measure.

If you're using Windows 7, then you'll need to install telnet before you can use the TTY interface. To install telnet, open up your command line (type "cmd" into the search bar in the **Start Menu**). Select **cmd.exe** to run the command line.



From the command line, type in **pkgmgr /iu:"TelnetServer"** then press **enter**. When the command prompt appears again, the installation is complete.

Menu Shortcut Keys

The letters before or enclosed in parentheses () are menu shortcut keys. Press the shortcut key to access that option. Pressing the ESC key will always bring you back to the previous level. Entries are not case sensitive.

8.1 Set DNP3 Parameters

To set DNP3 Parameters:

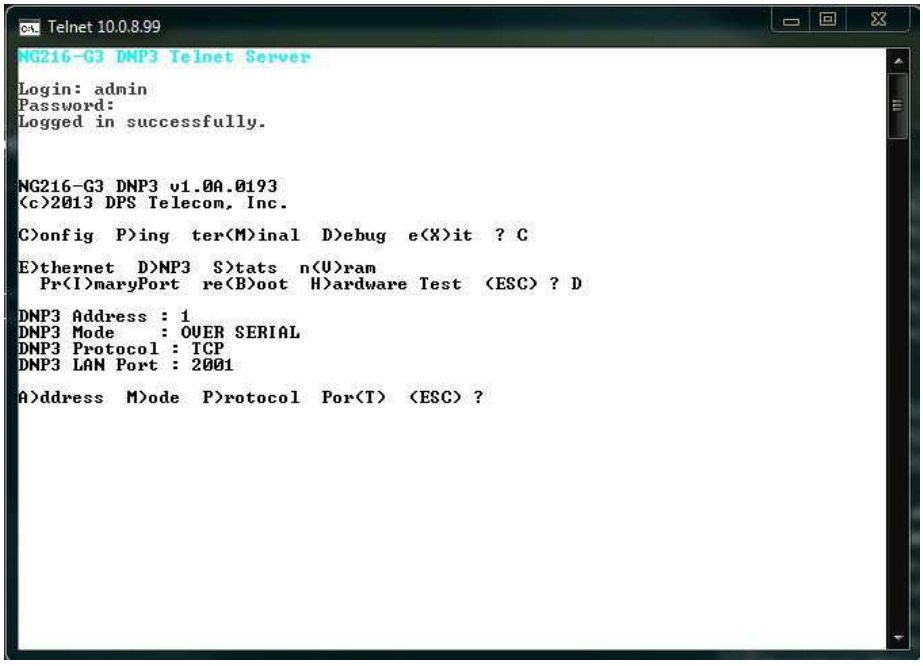
1. Login to the TTY Interface.

2. Select C)onfig.

3. Select D)NP3.

From the DNP3 menu, you have the option to configure:

- **Address**
- **Mode** (LAN, Serial, Cellular)
- **Protocol** (TCP or VDP)
- **LAN Port**



9 NetGuardian 216 G3 Web Browser

The Utility Shutdown System features a built-in Web Browser Interface that allows you to manage alarms and configure the unit through the Internet or your Intranet. You can quickly set up alarm point descriptions, view alarm status, issue controls, and configure paging information, and more using most commonly used browsers.

NOTE: Max # of users allowed to simultaneously access the CTMS via the Web is 4.

9.1 Logging on to the Utility Shutdown System

For Web Interface functionality, the unit must first be configured with some basic network information. If this step has not been done, refer to the section "Quick Start: How to Connect to the NetGuardian 216 G3" for instructions on initial configuration setup.

1. To connect to the NetGuardian 216 G3 from your Web browser, enter its IP address in the address bar of your web browser. It may be helpful to bookmark the logon page to avoid entering this each time.

2. After connecting to the unit's IP address, enter your login information and click OK. **NOTE:** The factory default username is "***admin***" and the password is "***dpstelecom***".

3. In the left frame you will see the **Monitor** menu (blue) and **Edit** menu (green) The Monitor menu links are used to view the current status of alarms. The Edit menu is used to change the unit's configuration settings. All the software configuration will occur in the **Edit** menu. The following sections provide detailed information regarding these functions.

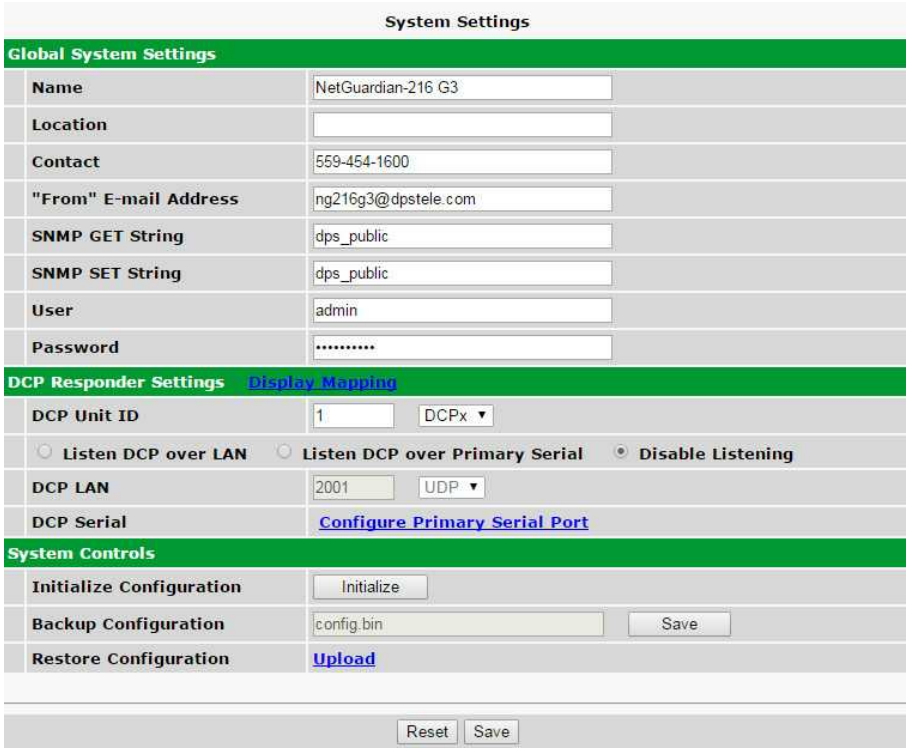
1. *Enter your password to enter the NetGuardian 216 G3 Web Browser Interface*

9.1.1 Changing the Default Password

The password can be configured from the **Edit** > **System** screen. The minimum password length is four characters; however, DPS recommends setting the minimum password length to at least five characters.

Use the following steps to change the logon password:

1. From the **Edit** menu select **System**.
2. Enter the new user name in the **User** field.
3. Enter the new password in the **Password** field.
4. Click the **Save** button.



***2** - Global System Settings section of the Provisioning > System menu*

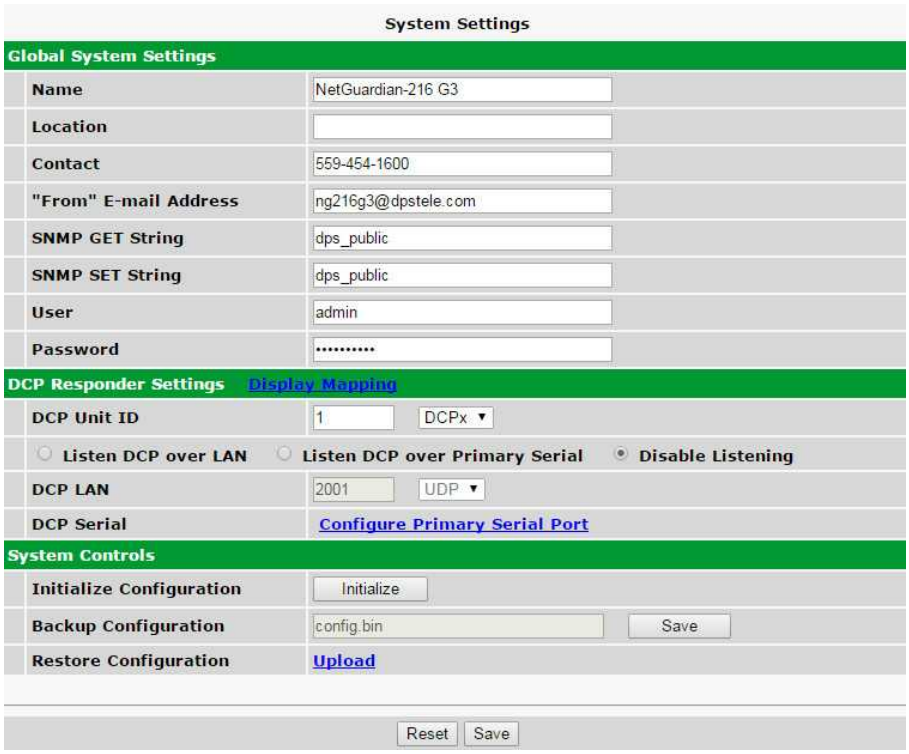
NOTE: You will see the following popup when making changes to the NetGuardian 216 G3 from the **Edit** menu. It will appear when confirming your changes to the database, either by clicking **Next** in the setup wizards or the **Save** button.

***3** - Commit to NVRAM popup*

10 Edit Menu Field Descriptions

10.1 System

From the **Edit** > **System** menu, you will configure and edit the global system, T/Mon and control settings for the NetGuardian 216 G3.



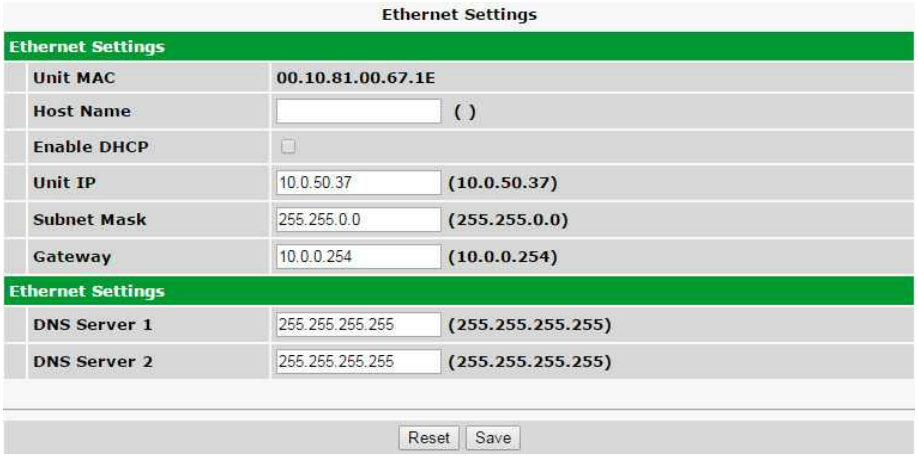
The Edit > System menu

Global System Settings	
Name	A name for this NetGuardian 216 G3. (Optional field)
Location	The location of this NetGuardian 216 G3. (Optional field)
Contact	Contact telephone number for the person responsible for this NetGuardian 216 G3. (Optional field)
"From" Email Address	A valid email address used by the NetGuardian 216 G3 for sending email alarm notifications.
SNMP GET String	Community name for SNMP requests. (case-sensitive).
SNMP SET String	Community name for SNMP SET requests. (case-sensitive).
User	Used to change the username for logging into the unit.
Password	Used to change the password for logging into the unit (case-sensitive).
DCP Responder Settings	
DCP Unit ID	ID number for the unit.
Listen	Select the transport type to receive DCP polls from the master.
DCP LAN	Choose the port and protocol to be used for DCP over LAN.
DCP Serial	Click the link to configure the primary serial port.
System Controls	
Initialize Configuration	Used to restore all factory default settings to the NetGuardian 216 G3. Do not initialize the non-volatile RAM (NVRAM) unless you want to re-enter all of your configuration settings again.
Upgrade Firmware	Clickable link that takes you to the Firmware Load screen, where you'll browse to the

	downloaded firmware update saved on your PC.

10.2 Ethernet

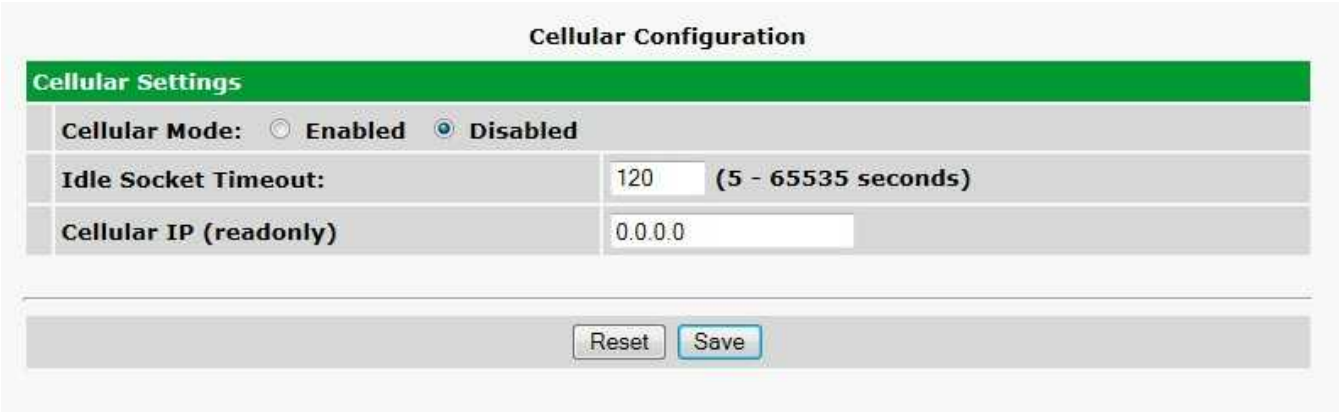
The **Edit** > **Ethernet** menu allows you to define and configure Ethernet settings.



The Edit > Ethernet menu

Ethernet Settings	
Unit MAC	Hardware address of the NetGuardian 216 G3. (Not editable - For reference only.)
Host Name	Used only for web browsing. Example: If you don't want to remember this NetGuardian's IP address, you can type in a name is this field, such as NG216G3. Once you save and reboot the unit, you can now browse to it locally by simply typing in "NG216G3" in the address bar. (no "http://" needed).
Enable DHCP	Used to turn on Dynamic Host Connection Protocol. NOT recommended, because the unit is assigned an IP address from your DHCP server. The IP you've already assigned to the unit becomes inactive. Using DHCP means the unit will NOT operate in a T/Mon environment.
Unit IP	IP address of the NetGuardian 216 G3.
Subnet Mask	A road sign to the NetGuardian 216 G3, telling it whether your packets should stay on your local network or be forwarded somewhere else on a wide-area network.
Gateway	An important parameter if you are connected to a wide-area network. It tells the NetGuardian which machine is the gateway out of your local network. Set to 255.255.255.255 if not using. Contact your network administrator for this info.
Ethernet Settings	
DNS Server 1	Primary IP address of the domain name server. Set to 255.255.255.255 if not using.
DNS Server 2	Secondary IP address of the domain name server. Set to 255.255.255.255 is not using.

10.3 Cellular Settings

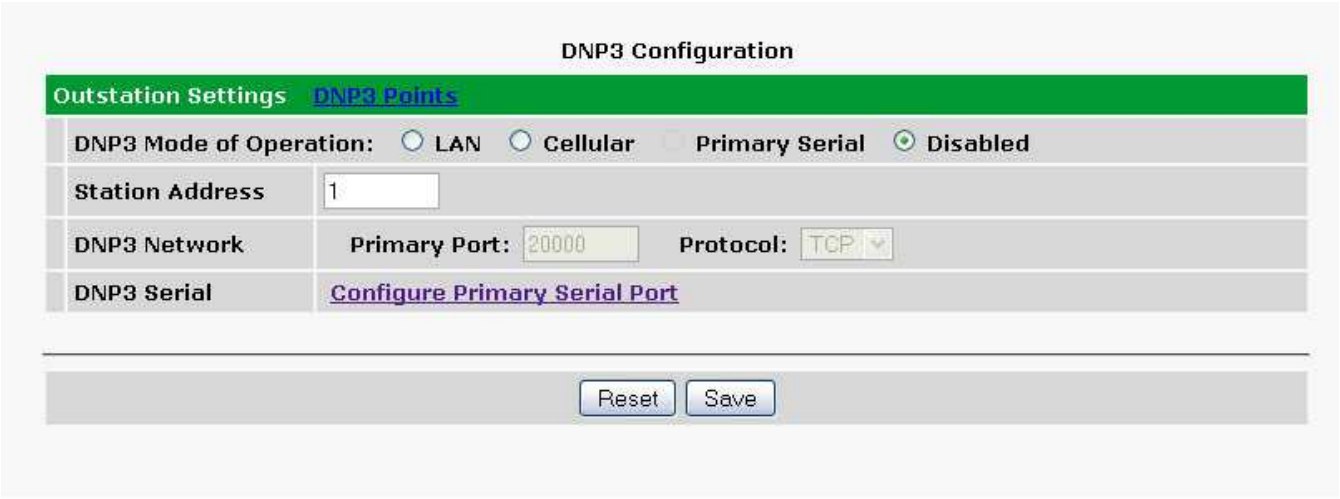


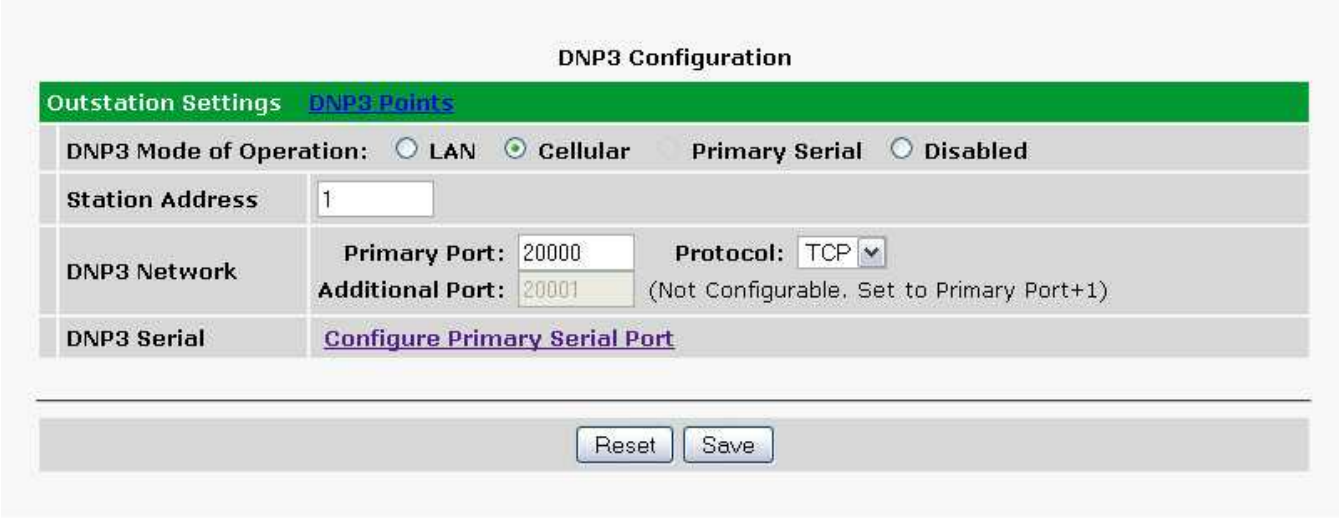
Make sure that the cellular radio is already provisioned before attempting to change any of the Cellular settings, see "Wireless Modem Activation section."

Cellular Settings	
Enabled	Select this to enable cellular notifications. Make sure that cellular is selected under the DNP3 Edit menu.
Idle Socket Timeout	How long an idle socket is left open before being closed by the NetGuardian.
Cellular IP (read only)	The IP of the NetGuardian over the cellular link. If 0.0.0.0, then the device is still establishing a cellular connection or no connection is established.

Note: Make sure to reboot the NetGuardian 216 G3 in order to apply any changes made to the Cellular Configuration.

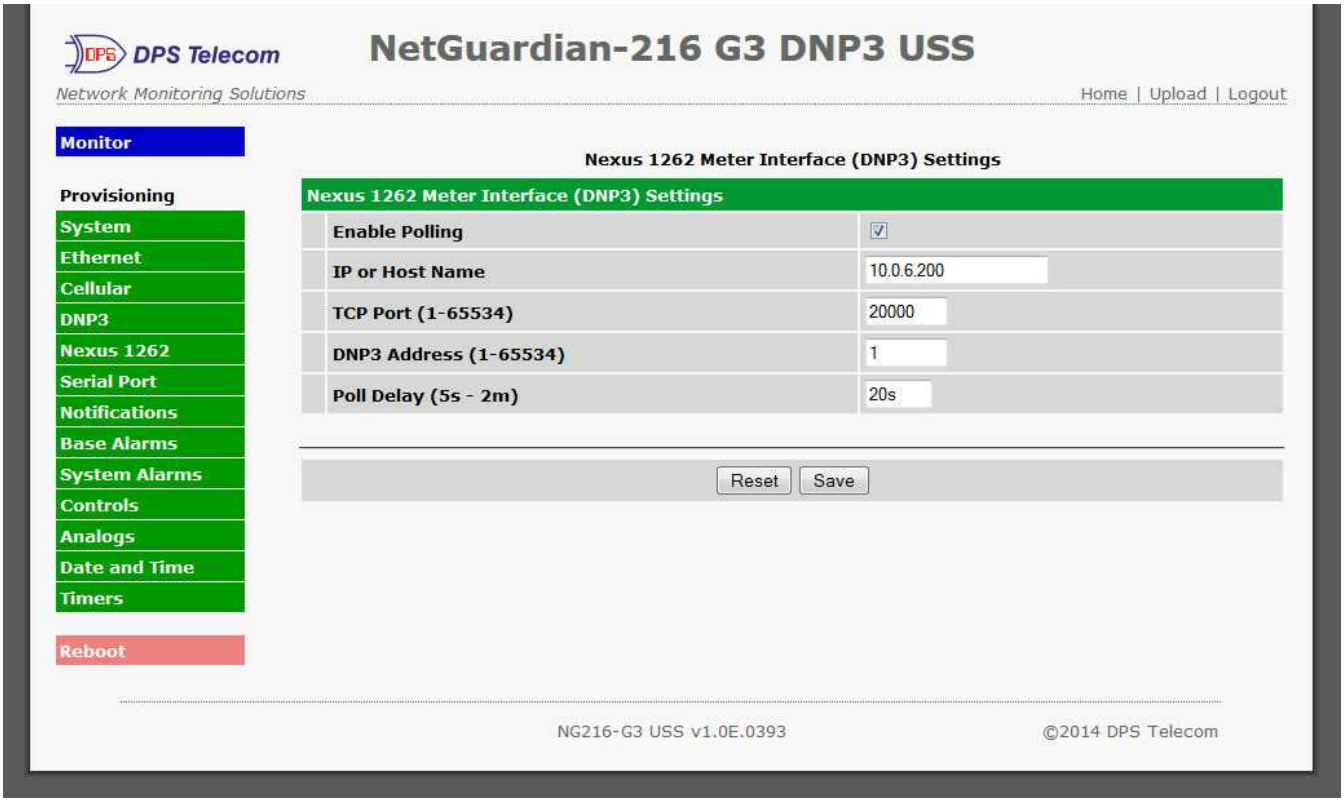
10.4 DNP3





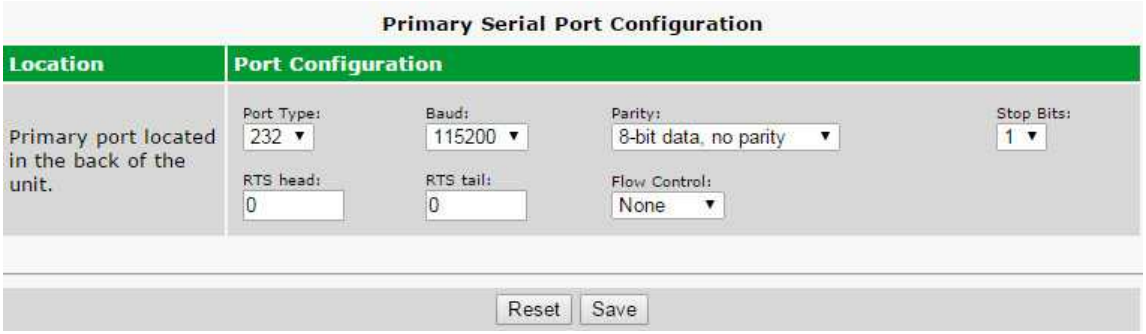
DNP3 Configuration	
DNP3 Mode of Operation	The DNP3 polling transport mode: **Disabled** - No DNP3 polling **Primary Serial** - DNP3 polling is enabled over the Primary Serial port, located on the back of the NetGuardian. **Cellular** - DNP3 polling is enabled over the Cellular connection. Note this option is only available if Cellular is enabled in the "Cellular" edit menu. **LAN** - DNP3 polling is enabled over the LAN connection.
Station Address	This is the DNP3 polling address of the NetGuardian. This value can range from 0 - 65519. The default is 1.
DNP3 Network	This option allows you to select the primary port and protocol for DNP3 polling over LAN or Cellular. This option is only available if "DNP3 Mode of Operation" is set to "LAN" or "Cellular". ***Note:** An additional port is available for use if "DNP3 mode of Operation" is set to "Primary Serial".
DNP3 Serial	This option allows you to select the serial port properties of the Primary Serial port. This is only necessary if "DNP3 Mode of Operation" is set to "Primary Serial".

10.5 Nexus Meter Config



10.6 Serial Ports

The **Edit > Serial Port** menu allows you to change settings depending on the port type of your NetGuardian. From this menu, you can select a mode of operation, tune the 202 modem, and enable reach-through serial port functionality.



The Edit > Serial Ports menu

Location	
A reminder that your primary serial port is located on the back of the NetGuardian 216 G3 chassis.	
Port Configuration	
Port Type	Select the serial port for your build of the NetGuardian. Choose from 232, 485...
Baud, Parity, Stop Bits, and Flow Control	Select the appropriate settings from the drop-down menu.
RTS Head	Only used if your NetGuardian was built with a 202 modem. The most commonly used value is 30.
RTS Tail	Only used if your NetGuardian was built with a 202 modem. The most commonly used value is 10.
Flow Control	

10.7 Notifications

Notifications

No.	Stat.	Type	Server	Time Window 1	Time Window 2
1	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
2	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
3	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
4	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
5	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
6	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
7	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time
8	OFF	Email		Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time	Sun,Mon,Tue,Wed,Thu,Fri,Sat, Any Time

Notification 1

Notification Setting

Notification Disabled

- (•) **Send Email Notification**
- ( ) **Send SNMP Notification**
- ( ) **Relay 1 Notification**

Next > Cancel

10.8 Base Alarms

Base Alarms (Basic)

Go to Advanced Config

			Notification devices							
Pnt	Description	Rev	N1	N2	N3	N4	N5	N6	N7	N8
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Reset Save

Base Alarms (Advanced)

Go to Basic Config

Pnt	Description	On Set	On Clear	Qual. Time	Qual. Type
1		Alarm	Clear	0s	Set
2		Alarm	Clear	0s	Set
3		Alarm	Clear	0s	Set
4		Alarm	Clear	0s	Set
5		Alarm	Clear	0s	Set
6		Alarm	Clear	0s	Set
7		Alarm	Clear	0s	Set
8		Alarm	Clear	0s	Set
9		Alarm	Clear	0s	Set
10		Alarm	Clear	0s	Set

Reset Save

10.9 System Alarms

System Alarms

			Notification devices							
Pnt	Description	Report	N1	N2	N3	N4	N5	N6	N7	N8
11	Surge Protector Tripped	☑	☐	☐	☐	☐	☐	☐	☐	☐
12	Low Battery Warning	☑	☐	☐	☐	☐	☐	☐	☐	☐
13	Battery Mode	☑	☐	☐	☐	☐	☐	☐	☐	☐
14	Battery Charging	☑	☐	☐	☐	☐	☐	☐	☐	☐
15	External Temp Sensor Failure	☑	☐	☐	☐	☐	☐	☐	☐	☐
16	Internal Temp Sensor Failure	☑	☐	☐	☐	☐	☐	☐	☐	☐
17	Default configuration	☑	☐	☐	☐	☐	☐	☐	☐	☐
18	DNP3 inactive	☑	☐	☐	☐	☐	☐	☐	☐	☐
19	MAC address not set	☑	☐	☐	☐	☐	☐	☐	☐	☐
20	IP address not set	☑	☐	☐	☐	☐	☐	☐	☐	☐

10.10 Controls

Controls

			Notification devices							
No.	Description	Mom. Time	N1	N2	N3	N4	N5	N6	N7	N8
1		1s	☐	☐	☐	☐	☐	☐	☐	☐
2		1s	☐	☐	☐	☐	☐	☐	☐	☐

Control 2 Automation Settings

Control 2 will follow master trigger control automatically. If master trigger is latched, control 2 will auto latch after "Latch Delay" time. If master trigger is released, control 2 will be auto released immediately.

	Latch Delay (0s - 15m)	30s

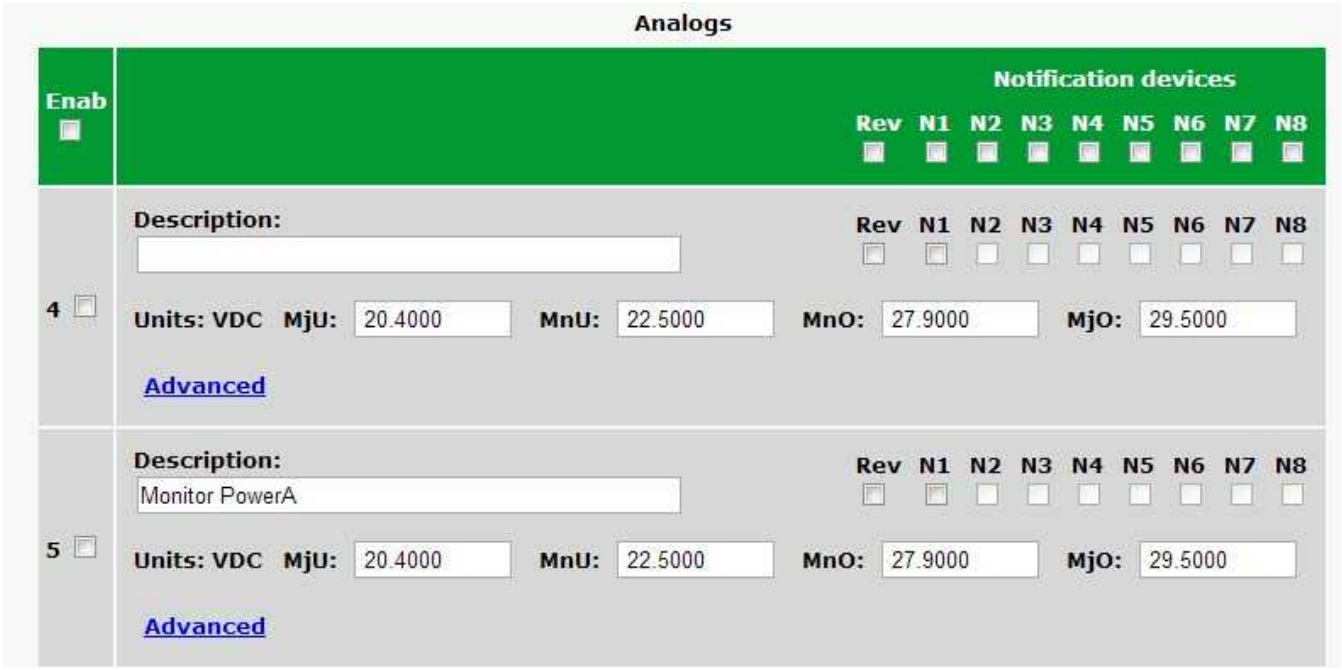
Fail Safe Automation Settings

After Control 2 is latched the "Release Delay" will start the delay. After "Release Delay" time, Control 2 will be released automaticaly.

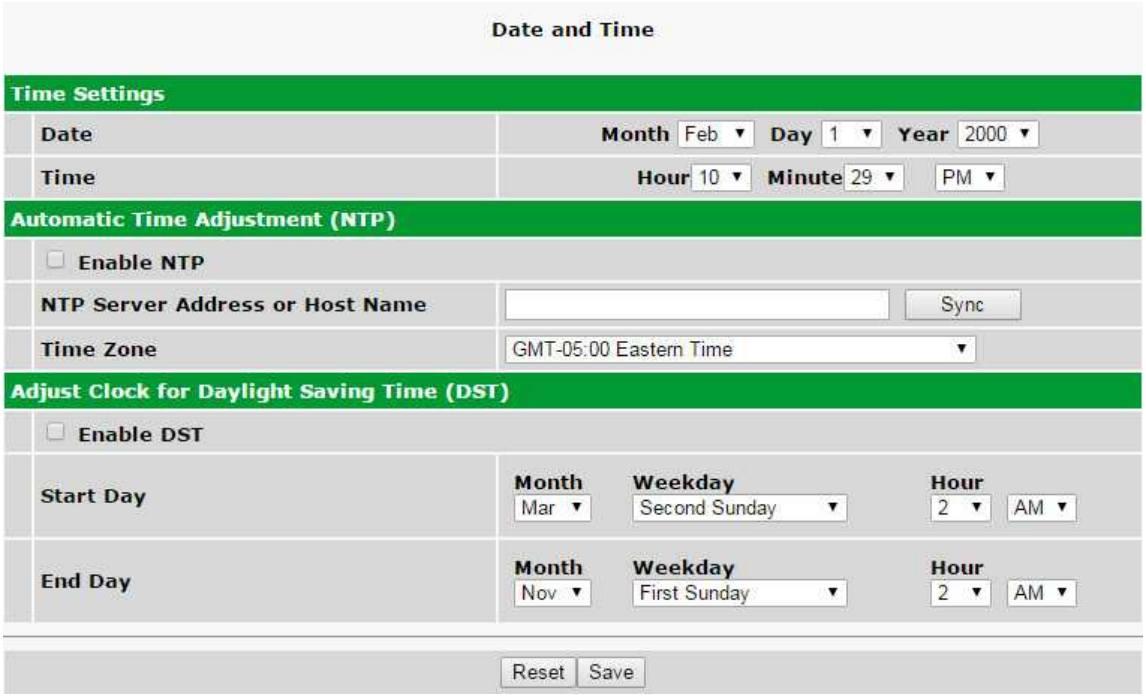
	Release Delay (15m - 60m)	15m

"Release Delay" is only used in USS-MR firmware. See "Automation Algorithm" section.

10.11 Analogs



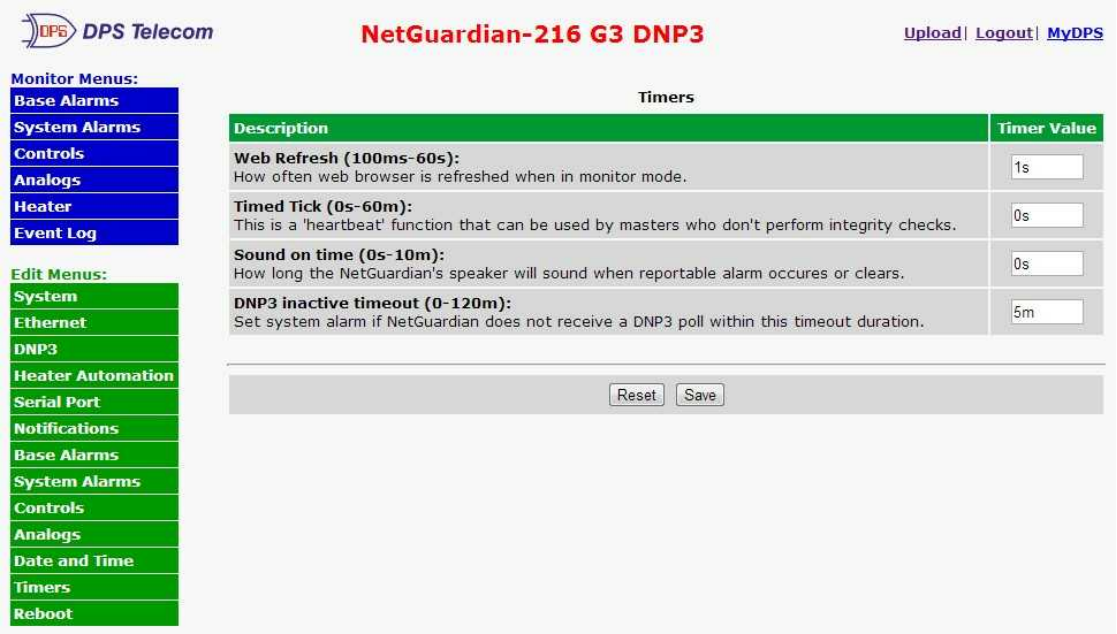
10.12 Date and Time



The Edit > Date and Time menu

Time Settings	
Date	Select the current month, day, and year from the drop-down menus.
Time	Select the current hour, minutes, and time of day fro the drop-down menus.
Automatic Time Adjustment (NTP)	
Enable NTP	Check this box to enable Network Time Protocol.
NTP Server Address or Host Name	Enter the NTP server's IP address or host name, then click Sync. Example: north-america.pool.ntp.org
Time Zone	Select your time zone from the drop-down menu.
Adjust Clock for Daylight Savings Time (DST)	
Enable DST	Check this box to have the NetGuardian 216 G3 observe Daylight Savings.
Start Day	Select the month, weekday, and time when Daylight Savings will begin.
End Day	Select the month, weekday, and time when Daylight Savings will end.

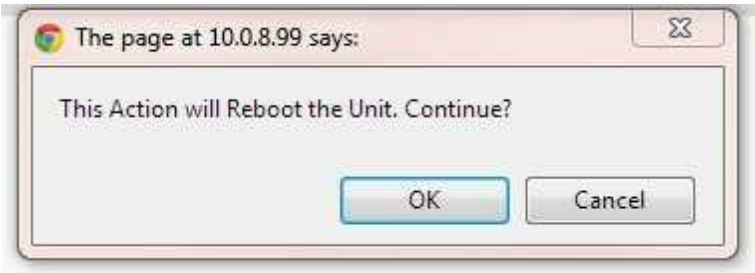
10.13 Timers



The Edit > Timers menu

10.14 Reboot

Click on the **Reboot** link from the **Edit** menu will reboot the NetGuardian 216 G3 after writing all changes to NVRAM.



The Edit > Reboot confirmation popup

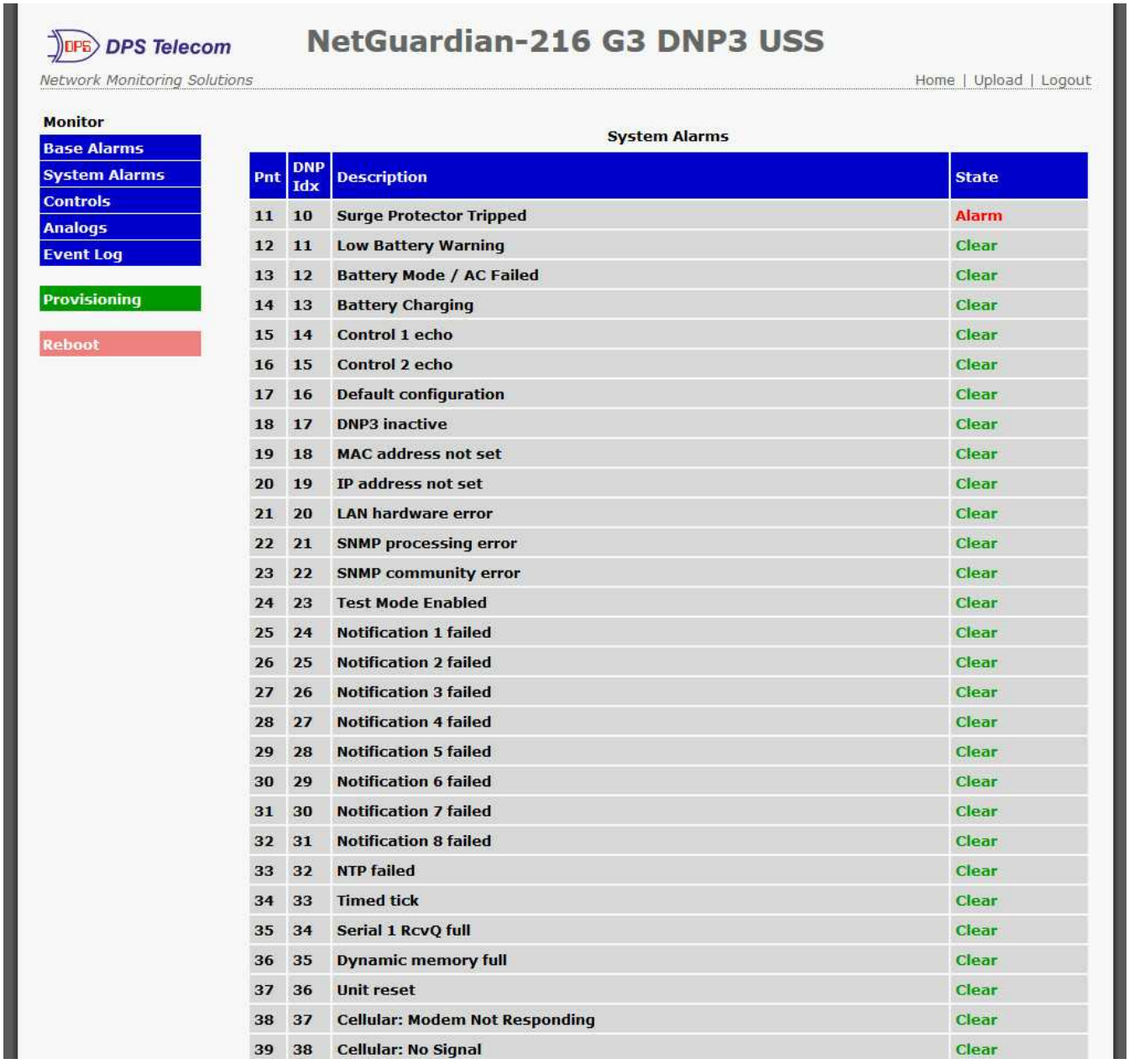
11 Monitor Menus

11.1 Base Alarms

Base Alarms

Pnt	DNP Idx	Description	State
1	0		Clear
2	1		Clear
3	2		Clear
4	3		Clear
5	4		Clear
6	5		Clear
7	6		Clear
8	7		Clear
9	8		Clear
10	9		Clear

11.2 System Alarms



DPS Telecom

NetGuardian-216 G3 DNP3 USS

Network Monitoring Solutions

Home | Upload | Logout

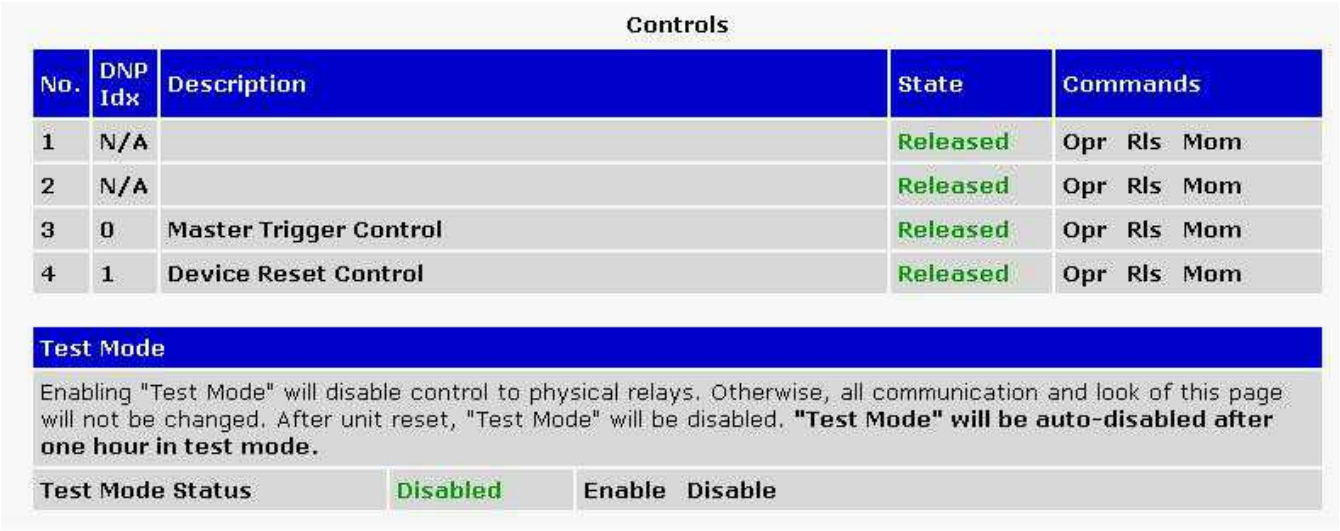
Monitor

- Base Alarms
- System Alarms
- Controls
- Analogs
- Event Log
- Provisioning
- Reboot

System Alarms

Pnt	DNP Idx	Description	State
11	10	Surge Protector Tripped	Alarm
12	11	Low Battery Warning	Clear
13	12	Battery Mode / AC Failed	Clear
14	13	Battery Charging	Clear
15	14	Control 1 echo	Clear
16	15	Control 2 echo	Clear
17	16	Default configuration	Clear
18	17	DNP3 inactive	Clear
19	18	MAC address not set	Clear
20	19	IP address not set	Clear
21	20	LAN hardware error	Clear
22	21	SNMP processing error	Clear
23	22	SNMP community error	Clear
24	23	Test Mode Enabled	Clear
25	24	Notification 1 failed	Clear
26	25	Notification 2 failed	Clear
27	26	Notification 3 failed	Clear
28	27	Notification 4 failed	Clear
29	28	Notification 5 failed	Clear
30	29	Notification 6 failed	Clear
31	30	Notification 7 failed	Clear
32	31	Notification 8 failed	Clear
33	32	NTP failed	Clear
34	33	Timed tick	Clear
35	34	Serial 1 RcvQ full	Clear
36	35	Dynamic memory full	Clear
37	36	Unit reset	Clear
38	37	Cellular: Modem Not Responding	Clear
39	38	Cellular: No Signal	Clear

11.3 Controls



Controls

No.	DNP Idx	Description	State	Commands
1	N/A		Released	Opr Rls Mom
2	N/A		Released	Opr Rls Mom
3	0	Master Trigger Control	Released	Opr Rls Mom
4	1	Device Reset Control	Released	Opr Rls Mom

Test Mode		
Enabling "Test Mode" will disable control to physical relays. Otherwise, all communication and look of this page will not be changed. After unit reset, "Test Mode" will be disabled. **"Test Mode" will be auto-disabled after one hour in test mode.**		
Test Mode Status	Disabled	Enable Disable

11.3.1 Automation Algorithm

Master Trigger Control - Virtual control triggered by DNP3 master to initiate automation algorithm.

USS Algorithm
*Fail Safe Display is disabled for non-MR version.

1. Master Trigger Control is latched.
2. Control 1 is latched.
3. Latch delay started.
4. Latch delay ended.
5. Control 1 and Control 2 latched.
6. If Master Trigger is released (at any time), both relays are released.

USS MR Algorithm

1. Master Trigger Control is latched.
2. No initial action.
3. Latch delay started.
4. Latch delay ended.
5. Control 1 and Control 2 latched.
6. Release delay started.
7. Release delay ended.
8. Control 1 is released.
9. If Master Trigger is released (at any time), both relays are released.

11.4 Analogs

Analogs (Gauge View)

No.	DNP Idx	Enb	Description	Reading	Units	MjU	MnU	MnO	MjO
1	0	Yes	Low Battery Threshold	0.0000	VDC				
2	1	Yes	Battery Mode / AC Failed	0.0000	VDC				
3	2	Yes	Battery Charging	0.0000	VDC				
4	3	No		0.0000	VDC				
5	4	No	Monitor PowerA	0.0000	VDC				
6	5	Yes	Monitor PowerB	0.0000	VDC	x	x		
7	6	Yes	Internal Temperature	79.6916	°F				
8	7	No	External Temperature	0.0000	°F				
Nexus1262 Analog Outputs									
9	8	Yes	Nexus1262 Alg0	1	VDC				
10	9	Yes	Nexus1262 Alg1	2	VDC				
11	10	Yes	Nexus1262 Alg2	3	VDC				
12	11	Yes	Nexus1262 Alg3	4	VDC				
13	12	Yes	Nexus1262 Alg4	5	VDC				
14	13	Yes	Nexus1262 Alg5	6	VDC				

11.5 Event Log

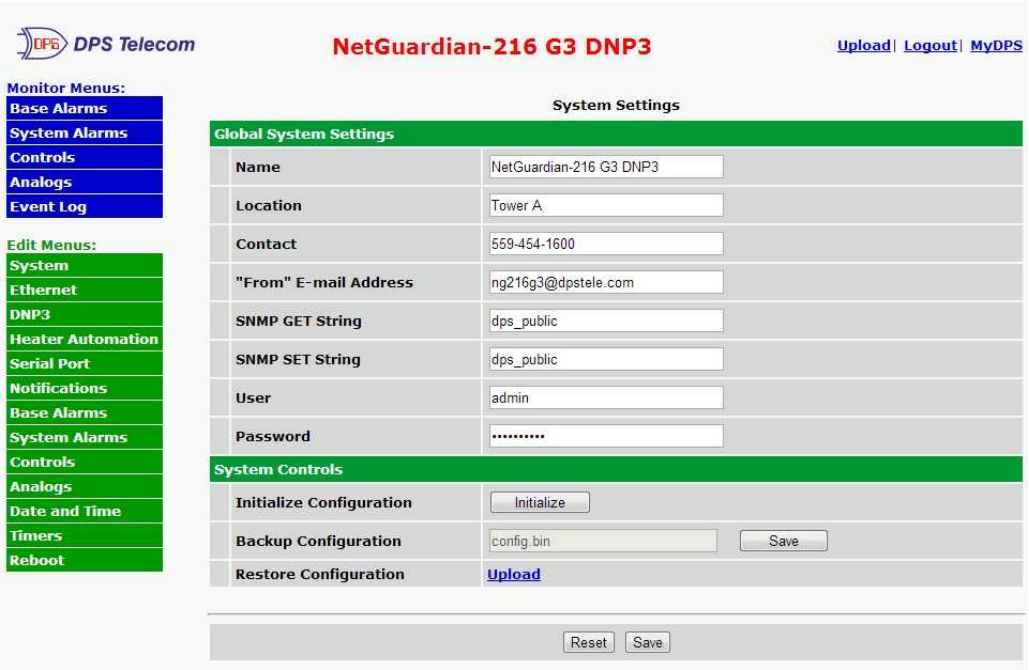
Event Log

Reset Refresh Rate 5 sec

Event Id	Date/Time	Status	Pref	Description
1	12/31/1969 23:43:10	Clear	10.03	MjU:External Temperature
2	12/31/1969 23:43:10	Alarm	10.02	MnO:External Temperature
3	12/31/1969 23:43:10	Clear	10.01	MnU:External Temperature
4	12/31/1969 23:43:02	Alarm	10.03	MjU:External Temperature
5	12/31/1969 23:43:02	Clear	10.02	MnO:External Temperature
6	12/31/1969 23:43:02	Alarm	10.01	MnU:External Temperature
7	12/31/1969 23:00:05	Alarm	1.15	External Temp Sensor Failure
8	12/31/1969 23:00:04	Alarm	10.02	MnO:External Temperature
9	12/31/1969 23:00:03	Alarm	8.03	MjU:Monitor PowerB
10	12/31/1969 23:00:03	Alarm	8.01	MnU:Monitor PowerB
11	12/31/1969 23:00:01	Alarm	1.11	Surge Protector Tripped
12	12/31/1969 23:00:01	Clear	1.37	Unit reset

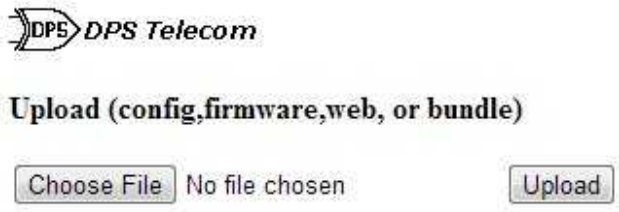
12 Firmware Upgrade

To access the **Firmware Load** screen, click on "Upload" at the top of the screen. For more firmware options, click on the **Edit** > **System** menu. At the bottom of this screen, click the firmware links located in the **System Controls** section.



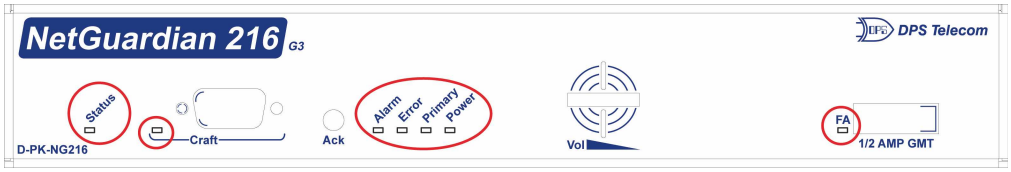
The clickable link to upgrade firmware from the Edit > System menu

At the **Firmware Load** screen, simply browse for the firmware update you've downloaded from www.dpstele.com and click **Load**.



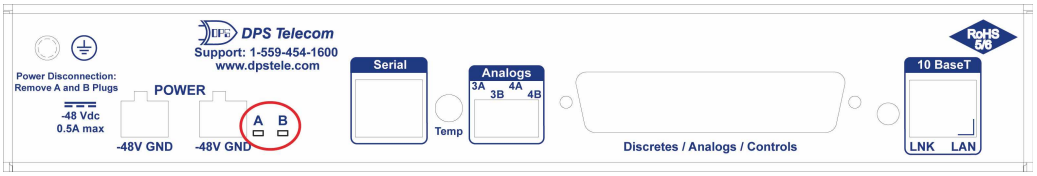
Browse for downloaded firmware upgrade

13 Front and Back Panel LED



Front panel LEDs

LED	Status	Description
Alarm	Flashing Red	New alarm
	Solid Red	Standing alarm acknowledged
Error		No Function: Reserved for future use
(Optional) Primary	Flashing Green	Data transmitted on PRI Serial
	Flashing Red	Data received on PRI Serial
(Optional) Wireless	Flashing Green	Data transmitted from modem
	Flashing Red	Data received by modem
Craft	Flashing Green	NG 216 G3 data transmit over craft port
	Flashing Red	NG 216 G3 data receive over craft port
Status	Flashing Green	Application is running
	Flashing Red	Boot Loader is running
Power	Solid Green	Power supply OK
	Off	No voltage or +24V and GND leads reversed



Back Panel LED Descriptions

LED	Status	Description
PWR	Solid Green	Power supply OK
	Off	No voltage or +24V and GND leads reversed

14 Reference Section

14.1 DNP3 Device Profile

The following table provides a "Device Profile Document" in the standard format defined in the DNP 3.0 Subset Definitions Document. While it is referred to in the DNP 3.0 Subset Definitions as a "Document," it is in fact a table, and only a component of a total interoperability guide.

<table>
<tr><td colspan="2">DNP V3.0
DEVICE PROFILE DOCUMENT
(Also see the DNP 3.0 Implementation Table in Section 2)</td></tr>
<tr><td colspan="2">Vendor Name: DPS Telecom Inc.</td></tr>
<tr><td colspan="2">Device Name: NetGuardian 216 G3 DNP3 USS</td></tr>
<tr><td>Highest DNP Level Supported:

For Requests: Level 3

For Responses: Level 3</td><td>Device Function:

Master

Slave</td></tr>
<tr><td colspan="2">Notable objects, functions, and/or qualifiers supported in addition to the Highest DNP Levels Supported (the complete list is described in the attached table):

The read function code for Object 50 (Time and Date), variation 1, is supported.</td></tr>
<tr><td>Maximum Data Link Frame Size (octets):

Transmitted: 128
Received: 128</td><td>Maximum Application Fragment Size (octets):

Transmitted: 128
Received: 128</td></tr>
<tr><td>Maximum Data Link Re-tries:

None
Fixed (3)</td><td>Maximum Application Layer Re-tries:

None
Configurable</td></tr>
<tr><td colspan="2">Requires Data Link Layer Confirmation:

Never
Always
Sometimes</td></tr>
<tr><td colspan="2">Requires Application Layer Confirmation:
Never
Always
When reporting Event Data (Slave devices only)
When sending multi-fragment responses (Slave devices only)
Sometimes</td></tr>
</table>

DNP V3.0

DEVICE PROFILE DOCUMENT
(Also see the DNP 3.0 Implementation Table in Section 2)

Timeouts while waiting for:

Fixed at 2s
None
Fixed at 10s
None

Transmission Delay, 0

Data Link Confirmation:
Complete Appl. Fragment:
Application Confirm:
Complete Appl. Response:

Other:

Sends/Executes Control Operations:

Never
Always
Never
Never

Never
Never
Never
Always
Always

Never
Never

WRITE Binary Outputs:
SELECT/OPERATE:
DIRECT OPERATE:
DIRECT OPERATE - NO ACK:

Count > 1:
Pulse On:
Pulse Off:
Latch On:
Latch Off:

Queue:
Clear Queue:

Reports Binary Input Change Events when no specific variation requested: **Never** Only time-tagged Only non-time-tagged	Reports time-tagged Binary Input Change Events when no specific variation requested: **Never** Binary Input Change With Time Binary Input Change with Relative Time
Sends Unsolicited Responses **Never** Only certain objects Sometimes (attach explanation) ENABLE/DISABLE UNSOLICITED Function codes supported	Sends Static Data in Unsolicited Responses: **Never** When Device Restarts When Status Flags Change
Default Counter Object/Variation: **No Counters Reported** Default Object	Counters Roll Over at: **No Counters Reported** Configurable (attach explanation) 16 Bits 32 Bits Other Value: ____ Point-by-point list attached

DNP V3.0

DEVICE PROFILE DOCUMENT
(Also see the DNP 3.0 Implementation Table in Section 2)

Sends Multi-Fragment Responses:
No
Yes

Sequential File Transfer Support:

No
No
No
No
No
No
0

Append File Mode:
Custom Status Code Strings:
Permissions Field:
File Events Assigned to Class:
File Events Send Immediately:
Multiple Blocks in a Fragment:
Max Number of Files Open:

DNP V3.0 Implementation Table

The following table identifies which object variations, function codes, and qualifiers the NetGuardian 216 G3 DNP3 supports in both request messages and in response messages. For static (non-change-event) objects, request send with qualifiers 00, 01, 06, 07, or 08 will be responded with qualifiers 00 or 01.

OBJECT			**REQUEST** (Library will parse)		**RESPONSE** (Library will respond with)	
Object Number	**Variation Number**	**Description**	**Function Codes (dec)**	**Qualifiers Codes (hex)**	**Function Codes (dec)**	**Qualifiers Codes (hex)**
1	1	Binary Input	1 (read)	00, 01 (start-stop) 06 (no range, or all)	129 (response)	00, 01 (start-stop)
10	2	Binary Output Status	1 (read)	00, 01 (start-stop) 06 (no range, or all)	129 (response)	00, 01 (start-stop)
12	1	Control Relay Output Block	5 (direct op) 6 (dir. op, noack)	17, 28 (index)	129 (response)	echo of request
30	3	32-Bit Analog Input Without Flag	1 (read)	00, 01 (start-stop) 06 (no range, or all)	129 (response)	00, 01 (start-stop)
50	1	Time and Date	1 (read)	07 (limited qty = 1)	129 (response)	07 (limited qty = 1)
			2 (write)	07 (limited qty = 1)		
60	1	Class 0 Data	1 (read)	06 (no range, or all)		
60	2	Class 1 Data	1 (read)	06 (no range, or all)		
60	3	Class 2 Data	1 (read)	06 (no range, or all)		
60	4	Class 3 Data	1 (read)	06 (no range, or all)		

DNP V3.0 Point List

The tables below identify all the default data points provided by the NetGuardian 216 G3 DNP3.

Binary Input Points

Binary Input Points Static Variation: Obj 01 Var 01 - Binary Input w/o status Request function codes supported: 1 (read)		
Point Index	**Description**	**Class**
0-9	Discrete Alarms	1
10	Surge Protector Tripped	1
11	Low Battery Warning	1
12	Battery Mode	1
13	Battery Charging	1
14	Control 1 Echo	1
15	Control 2 Echo	1
16	Default Configuration	1
17	DNP3 Poller Inactive	1
18	MAC Address not set	1
19	IP not set	1
20	LAN hardware error	1
21	SNMP processing error	1
22	SNMP community error	1
23	LAN TX packet drop	1
24	Notification 1 failed	1
25	Notification 2 failed	1
26	Notification 3 failed	1
27	Notification 4 failed	1
28	Notification 5 failed	1
29	Notification 6 failed	1
30	Notification 7 failed	1
31	Notification 8 failed	1
32	NTP failed	1
33	Time Tick	1

34	Serial 1 receive queue full	1
35	Dynamic memory full	1
36	Unit reset	1
37	Cellular: Modem Not Responding	1
38	Cellular: No Signal	1
39	Analog 4: Minor Under Threshold	1
40	Analog 4: Minor Over Threshold	1
41	Analog 4: Major Under Threshold	1
42	Analog 4: Major Over Threshold	1
43	Battery A: Minor Under Threshold	1
44	Battery A: Minor Over Threshold	1
45	Battery A: Major Under Threshold	1
46	Battery A: Major Over Threshold	1
47	Battery B: Minor Under Threshold	1
48	Battery B: Minor Over Threshold	1
49	Battery B: Major Under Threshold	1
50	Battery B: Major Over Threshold	1
51	Internal Temperature: Minor Under Threshold	1
52	Internal Temperature: Minor Over Threshold	1
53	Internal Temperature: Major Under Threshold	1
54	Internal Temperature: Major Over Threshold	1
55	External Temperature: Minor Under Threshold	1
56	External Temperature: Minor Over Threshold	1
57	External Temperature: Major Under Threshold	1
58	External Temperature: Major Over Threshold	1

Binary Output Status Points and Control Relay Output Blocks

The following table lists both the Binary Output Status Points (Object 10) and the Control relay Output Blocks (Object 12).

Binary Output Status Points Static Variation: Obj 10 Var 02 - Binary Output Status Control Variation: Obj 12 Var 01 - Control Relay Output Block Request function codes supported: 3 (select), 4 (operate) Supported relay output: Latch on, Latch off.

Point ID	Description	Class
0	Master Trigger Control	2
1	Device Reset Control	2

Analog Inputs

The following table lists Analog Inputs (Object 30). It is important to note that Analog Inputs, Analog Output Control Blocks, and Analog Output Statuses are transmitted through DNP as singed numbers.

Analog Inputs Static Variation: Obj 30 Var 03 - 32-Bit analog w/o flag Request function codes supported: 1 (read)			
Point ID	**Description**	**Default Unit**	**Class**
0	Base analog 1	Voltage (VDC)	3
1	Base analog 2	Voltage (VDC)	3
2	Base analog 3	Voltage (VDC)	3
3	Base analog 4	Voltage (VDC)	3
4	Battery Monitor A	Voltage (VDC)	3
5	Battery Monitor B	Voltage (VDC)	3
6	Internal Temperature	Temperature (F)	3
7	External Temperature (NOTE: used to monitor internal heater)	Temperature (F)	3
8	Nexus 1262 ALg0	N/A	3
9	Nexus 1262 ALg1	N/A	3
10	Nexus 1262 ALg2	N/A	3
11	Nexus 1262 ALg3	N/A	3
12	Nexus 1262 ALg4	N/A	3
13	Nexus 1262 ALg5	N/A	3

15 Frequently Asked Questions

Here are answers to some common questions from NetGuardian 216 G3 users. The latest FAQs can be found on the NetGuardian 216 G3 support web page, **http://www.dpstele.com.**

If you have a question about the NetGuardian 216 G3, please call us at **(559) 454-1600** or e-mail us at **support@dpstele.com**

15.1 General FAQs

Q. How do I connect my NetGuardian 216 G3 to the LAN?

A. To connect your NetGuardian 216 G3 to your LAN, you need to configure the unit IP address, the subnet mask and the default gateway. A sample configuration could look like this:
Unit Address: 10.0.6.100
subnet mask: 255.255.192.0
Save your changes by writing to NVRAM and reboot. Any change to the unit's IP configuration requires a reboot.

Q. When I connect to the NetGuardian 216 G3 through the craft port on the front panel it either doesn't work right or it doesn't work at all. What's going on?

A. Make sure your using the right COM port settings. Your COM port settings should read:
Bits per second: 9600 (9600 baud)
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
Important! Flow control **must** be set to **none**. Flow control normally defaults to hardware in most terminal programs, and this will not work correctly with the NetGuardian 216 G3.

Q. What characteristics of an alarm point can be configured through software? For instance, can point 4 be used to sense an active-low signal, or point 5 to sense a level or an edge?

A. The unit's standard configuration is for all alarm points to be level-sensed. You **cannot** use configuration software to convert alarm points to TTL (edge-sensed) operation. TTL alarm points are a hardware option that must be specified when you order your NetGuardian 216 G3. Ordering TTL points for your NetGuardian 216 G3 does not add to the cost of the unit What you can do with the configuration software is change any alarm point from "Normal" to "Reversed" operation. Switching to Reversed operation has different effects, depending on the kind of input connected to the alarm point:

· **If the alarm input generates an active-high signal,** switching to Reversed operation means the NetGuardian 216 G3 will declare an alarm in the absence of the active-high signal, creating the practical equivalent of an active-low alarm.

- **If the alarm input generates an active-low signal,** switching to Reversed operation means the NetGuardian 216 G3 will declare an alarm in the absence of the active-low signal, creating the practical equivalent of an active-high alarm.
- **If the alarm input is normally open,** switching to Reversed operation converts it to a normally closed alarm point.
- **If the alarm input is normally closed,** switching to Reversed operation converts it to a normally open alarm point.

16 Technical Support

DPS Telecom products are backed by our courteous, friendly Technical Support representatives, who will give you the best in fast and accurate customer service. To help us help you better, please take the following steps before calling Technical Support:

1. Check the DPS Telecom website.
You will find answers to many common questions on the DPS Telecom website, at **http://www.dpstele.com/support/**. Look here first for a fast solution to your problem.

2. Prepare relevant information.
Having important information about your DPS Telecom product in hand when you call will greatly reduce the time it takes to answer your questions. If you do not have all of the information when you call, our Technical Support representatives can assist you in gathering it. Please write the information down for easy access. Please have your user manual and hardware serial number ready.

3. Have access to troubled equipment.
Please be at or near your equipment when you call DPS Telecom Technical Support. This will help us solve your problem more efficiently.

4. Call during Customer Support hours.
Customer support hours are Monday through Friday, from 7 A.M. to 6 P.M., Pacific time. The DPS Telecom Technical Support phone number is **(559) 454-1600**.

Emergency Assistance: *Emergency assistance is available 24 hours a day, 7 days a week. For emergency assistance after hours, allow the phone to ring until it is answered with a paging message. You will be asked to enter your phone number. An on-call technical support representative will return your call as soon as possible.*

17 End User License Agreement

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Notes

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Technical Support

If a purchaser believes that a product is not operating in substantial conformance with DPS' published specifications or there appear to be defects in material and workmanship, the purchaser should contact our technical support representatives. If the problem cannot be corrected over the telephone and the product and problem are covered by the warranty, the technical support representative will authorize the return of the product for service and provide shipping information. If the product is out of warranty, repair charges will be quoted. All non-warranty repairs receive a 90-day warranty.

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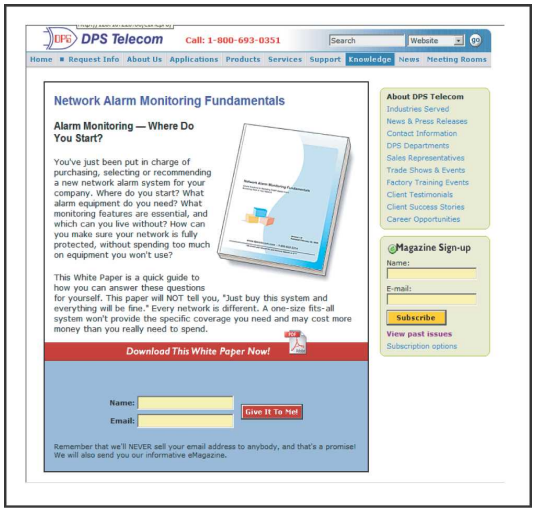

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