NPS-01

Remote Power Controller

User's Guide

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Firmware Version 1.X

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Chapter 1
Introduction

This chapter provides an overview of the NPS-01 features and capabilities.

The Network Power Switch (NPS-01) controls AC power to any remote equipment by using commands received through a TCP/IP ethernet interface. The NPS-01 allows AC powered equipment to be turned on, off, or power cycled from any remote PC, or other ethernet device using a web browser or telnet client.

The NPS-01 provides status back to the controlling device so the remote operator knows if power to the controlled device is on or off. If the connection to the controlling device is lost, the NPS-01 maintains the current status of the switch.

The NPS-01 also features a watch dog type timer. It will issue a periodic ethernet PING command to any ethernet device. If the device doesn't respond, the NPS-01 will cycle power to it's controlled device.

Caution

The NPS controls AC power using a solid state relay instead of a mechanical contact relay. Using a SSR eliminates mechanical contacts and their tendency to arc, become "sticky" and relatively short life with many power cycles. However, SSRs allow some small leakage current when turned off. The SSR in this unit typically has a maximum off state leakage of 12 ma.

For safety reasons, always treat the output AC power as if the NPS is turned on. Prior to working on any powered equipment, always remove AC power by disconnecting the power plug.

Package Contents

You should find the following items packaged with your NPS product:

- The NPS-01 Unit
- This User's Guide CDROM
- Ethernet 10/100BaseT cable
- Ethernet 10/100BaseT Cross-over cable

If any of the above are missing, contact your dealer immediately.

Software Requirements

The NPS-01 functions with any modern web browser (Firefox, Internet Explorer, Safari, Chrome, etc) as well as any TELNET client. It is compatible with SNMP version 2 network management systems.

NPS-01 Hardware

Specifications

Ports

One AC Power port

One 10/100BaseT ethernet control port

Controls

Reset button

Indicators

AC Power on

Load Power on

10BaseT Ethernet Active

100BaseT Ethernet Active

Environmental

Operation: –40 to +70° C, non condensing humidity

Storage: –40 to +85° C, non condensing humidity

Physical / Electrical

1.5” x 5.75” x 5.5”

120 or 240VAC (model dependent), 10 Amps max.

Fuse: 250V 10A, Type ABC 10

Configuration

The NPS-01 is configured using a web browser or telnet client. The default IP address is 192.168.1.1. A PC workstation configured for that subnet is required for initial configuration. Minimum onfiguration consists of a proper IP address for your network. If using the Ping Monitor, more parameters must be configured.

The NPS-01 may be returned to default by powering up the unit while holding the reset button depressed.

Chapter 2
Installation

This Chapter details the installation process.

Overview

The NPS-01 is configured using a web browser directed to its address. If the default address of 192.168.1.1 is appropriate for your local network, then plug it in and simply direct your web browser to the NPS (without using a proxy) and continue with configuration. If this address is not appropriate for your network, the NPS's IP address must be configured to a valid IP address corresponding to your network. Initial configuration should be performed by adding a virtual IP interface to the controlling PC, or simply changing the controlling PC's address to the 192.168.1.0 subnet. A suitable temporary IP address for the PC might be 192.168.1.10.

Quick Start

Quick start instructions are in the following section. Prior to configuration, you should have an IP address and Lan information available, as well as SNMP configuration information if SNMP is to be used.

Help Screens and Field Edits

Each web screen contains a hyperlink to a help screen that is specific to the fields on that screen. These are your fastest link to detailed help.

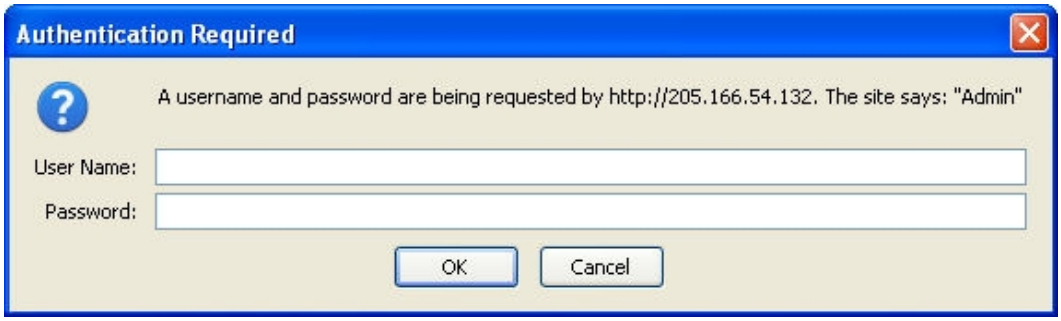
Installation and Configuration

1. Connect the Ethernet Cable

Connect a LAN cable from your hub or switch to the Ethernet port. Reboot the NPS-01 with a power cycle. The NPS0-01 will now be available to any web browser on the same LAN segment. If your web browser does not connect to the NPS, verify that you do not have a proxy server configured in the browser and the PC is on the 192.168.1.0 subnet. The NPS-01's default address is 192.168.1.1. This address must be appropriate for your local LAN and workstation or it should be changed prior to any other configuration.

2. Verify IP Address Configuration and Connection

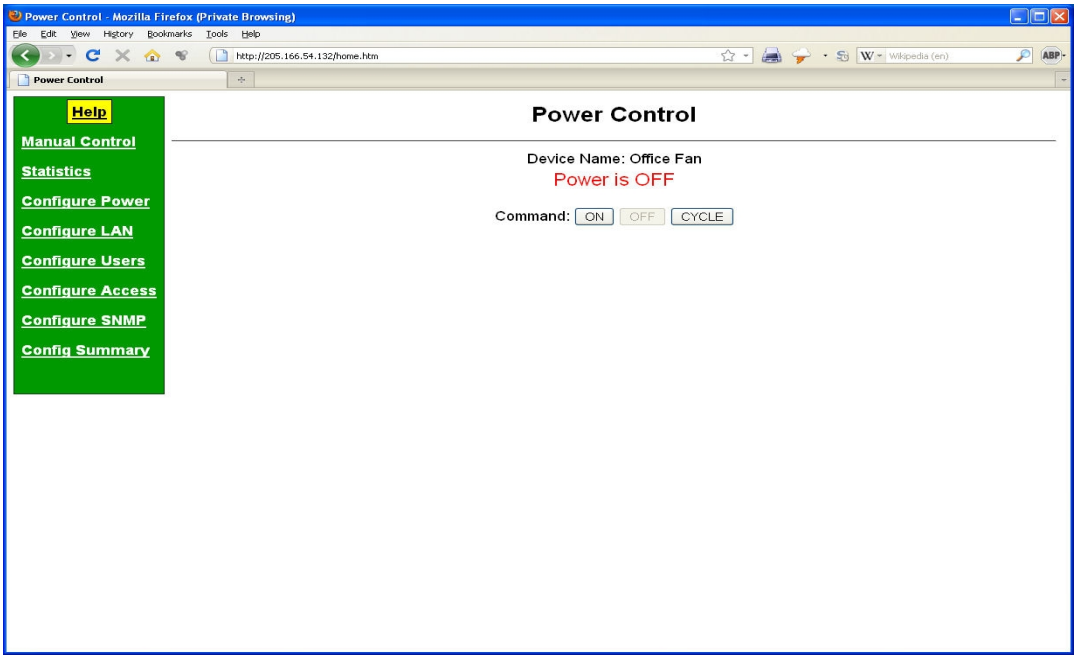
Enter the URL (or http://192.168.1.1 if using the default address) into your web browser. The login screen below should be displayed.



Login Screen

Log in using the user name “admin” and no password (blank field). If there is no user name or password configured, the password window will not display. That is the default state.

4. Enter Configuration Values

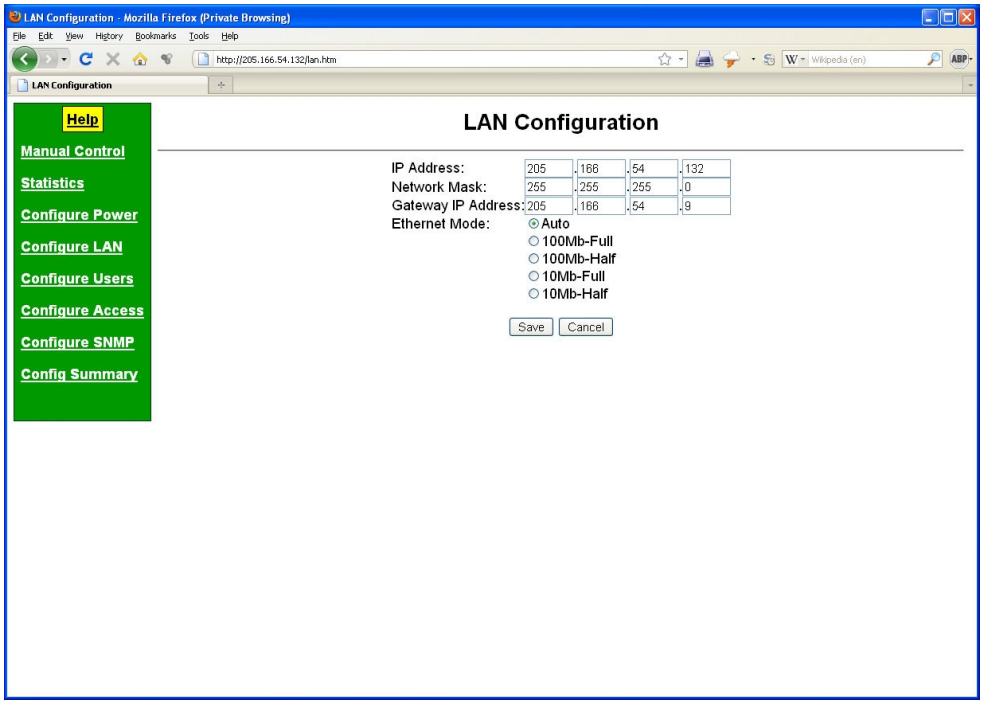


Initial Main Menu

From this index screen, you can select a section on the left and will be taken to configuration screens for each configuration subsystem. You must enter configuration values specific to your installation. This is also the screen that is used to manually control the power switch.

5. Minimum Configuration

Minimum configuration consists of a proper IP address for your network. If using the Ping Monitor, more parameters must be configured. If using SNMP, then that must also be configured.



LAN Configuration Screen

Configure these items and the NPS is ready for initial use controlling the power to attached devices by the web browser manual control buttons. If a temporary IP address was configured into the PC, once an IP address that is compatible with the local network has been entered on this screen and saved, the PC may be returned to it's original IP address.

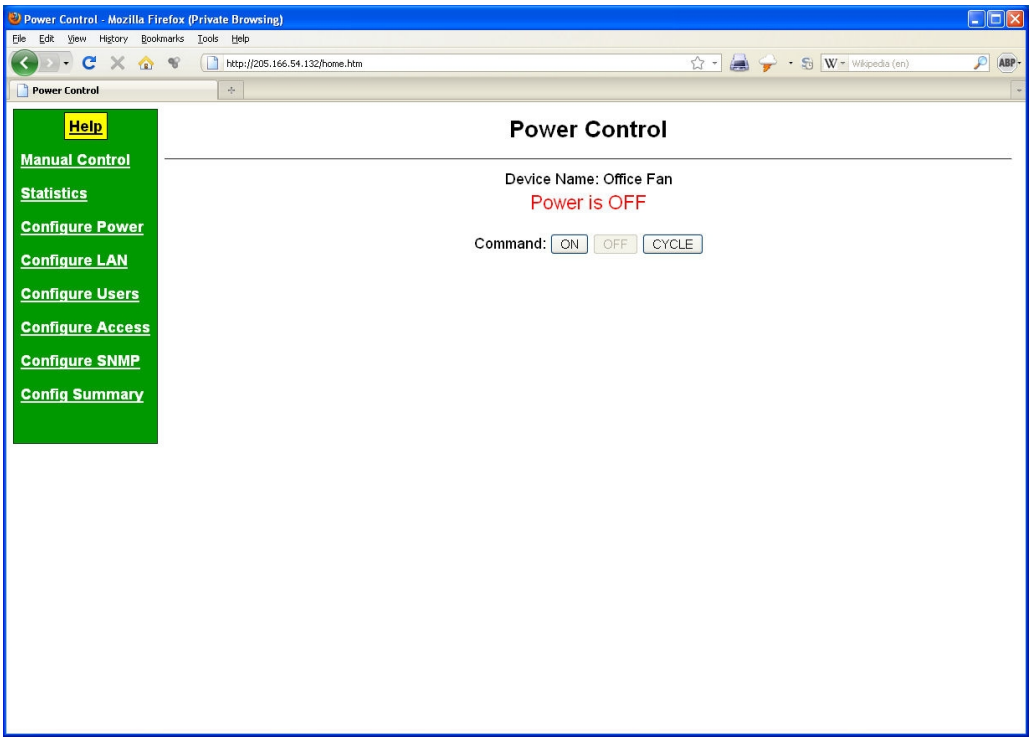
Chapter 3
Configuration

This Chapter describes configuration screens and some configuration hints.

Overview

The NPS-01 is usually configured using forms displayed on a web browser. In this chapter, we illustrate all entry forms, and describe their use.

All configuration screens are accessed from the main index menu available on the left side of all screens.

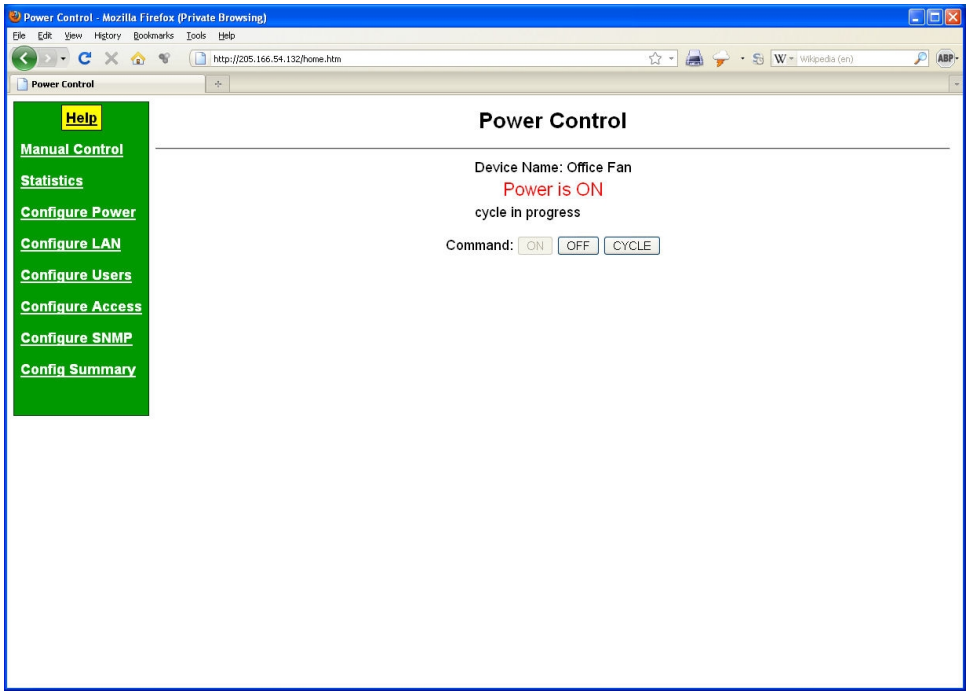


NPS-01 Power Control Screen

From this index, click on a menu keyword to open the appropriate screen. In this manual, screens are discussed in the order shown on the index screen.

Note that some screens are model specific, and some models do not contain all screens shown.

Power Control Configuration Screen



Power Control Screen

This is the first screen presented after logging on to the NPS-01. It indicates the current state of the power control, and any power cycle process that is in progress. This screen also has click buttons to turn the power ON, OFF, or CYCLE the power to the attached device.

Fields

These are click command buttons:

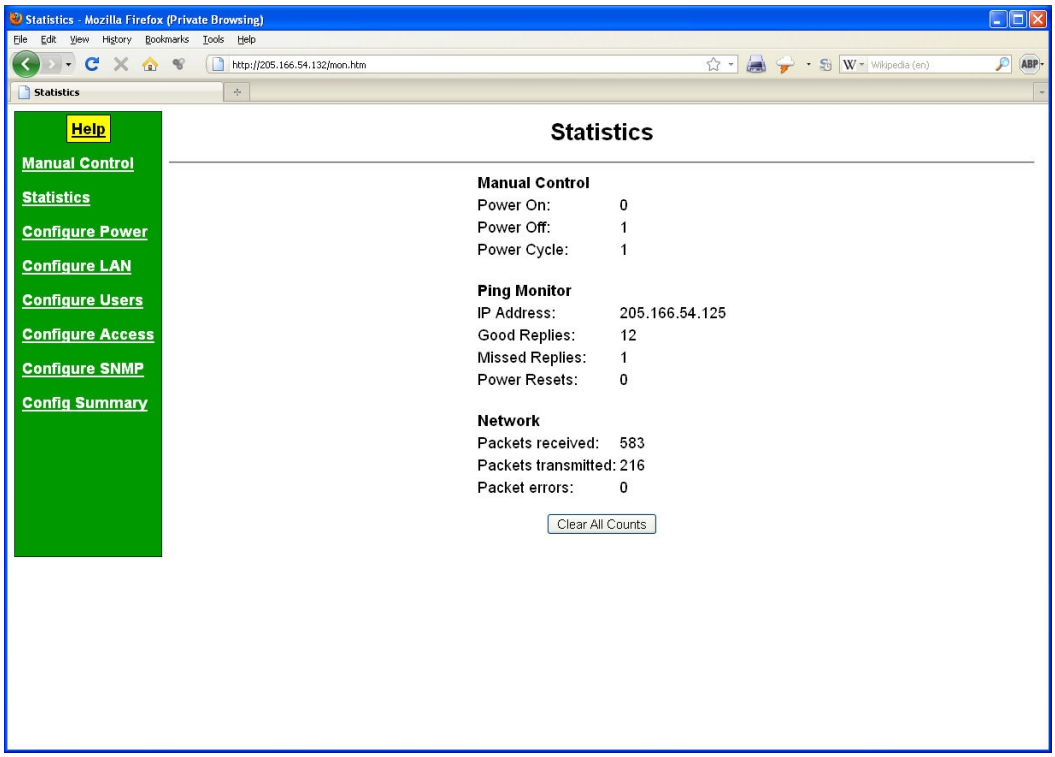
- ON
  Immediately turn power on to the attached device
- OFF
  Immediately turn power the attached device power off.
- CYCLE
  When the cycle command is clicked, the NPS-01 will switch from it's current state (either ON or OFF), pause for the indicated number of seconds, and return to the previous state.

Notes

This is the only screen that directly controls power to the attached device. The ADMIN user, USER-1, and USER-2 can all access this screen.

If the Ping Monitor feature is enabled, manually setting the power off will override the ping monitor and the power will remain in the off state until the power is manually set on.

Statistics



Statistics Screen

This screen presents a summary of NPS activity. The display is updated every 30 seconds.

Fields

Manual Control

Power On	Number of times the power was manually switched on.
Power Off	Number of times the power was manually switched off.
Power Cycle	Number of times the power was manually cycled.

Ping Monitor

IP Address	Currently configured ping target address.
Good Replies	Number of times the target responded to the ping request.
Missed Replies	Number of times the target failed to respond to the ping request.
Power Resets	Number of times the power was cycled automatically by the ping monitor.

Network

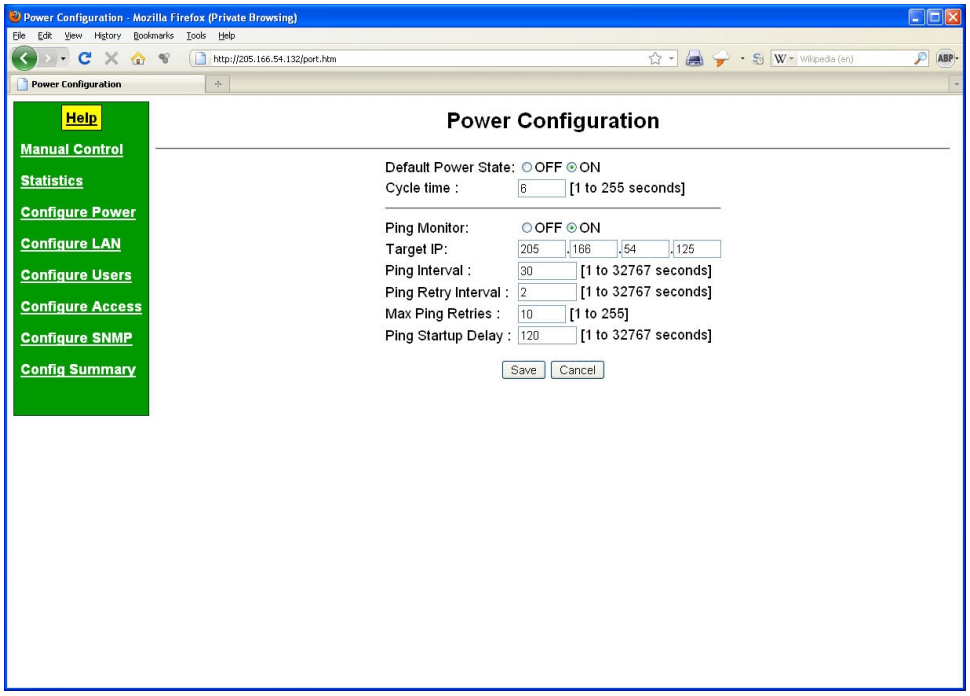
Packets received	Number of packets received by the NPS from the LAN.

Packets transmitted	Number of packets transmitted by the NPS to the LAN.
Packet errors	Number of packets transmitted or received by the NPS through the LAN connection that contained errors.

Clear All Counts

Clicking this button resets all counters to zero.

Configure Power



Configure Power Screen

Use this screen to configure NPS operation.

Fields

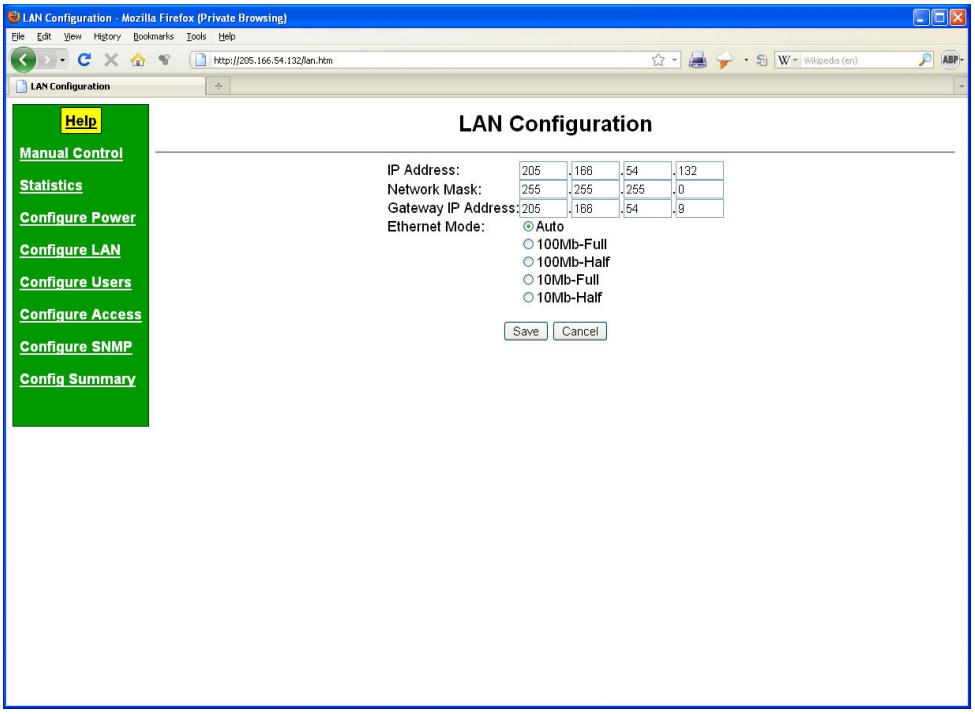
- Default Power State (ON, OFF)
  In the event that the NPS loses power or is reset, this field sets the default power state.
- Cycle Time
  This field configures the delay time when performing a power cycle. The applies to both a manual cycle and an automatic cycle generated by the ping monitor.
- Ping Monitor
  Enable/Disable the Ping Monitor. The NPS can monitor another network device by periodically sending ping (ICMP echo) requests to that device. If the device fails to respond to the ping, the NPS will cycle the AC power. Note: The NPS ping monitor will only cycle the power if the power is already set to on, either manually or by the default power state.

- Target IP
  The IP address of the device to monitor.
- Ping Interval
  This field sets the time period between successive ping tests.
- Ping Retry Interval
  If the target device fails to respond, this field sets the time period between resending a ping request.
- Max Ping Retries
  If the target device fails to respond, this field sets the maximum number of time to retry before the power is cycled.
- Ping Startup Delay
  Once the power has been cycled, it may be necessary to hold-off ping monitoring to allow time for a device to reboot. This field sets the time period to wait before resuming ping monitoring following a power cycle event. The delay period will also be applied following power-up of the NPS device and following manual power-off events.

Notes

- Manual control overrides Ping Monitor settings.

LAN Configuration



LAN Configuration Screen

Use this screen to configure the TCP/IP ethernet information.

Fields

- IP Address
  An IP address is a numeric identifier given to an interface. It consists of four 8-bit numbers and is

represented in a dotted notation. An example of an IP address is "192.168.0.10". An Ethernet IP address must be unique within your network and be compatible with your network addressing scheme. The default value is 192.168.1.1 .

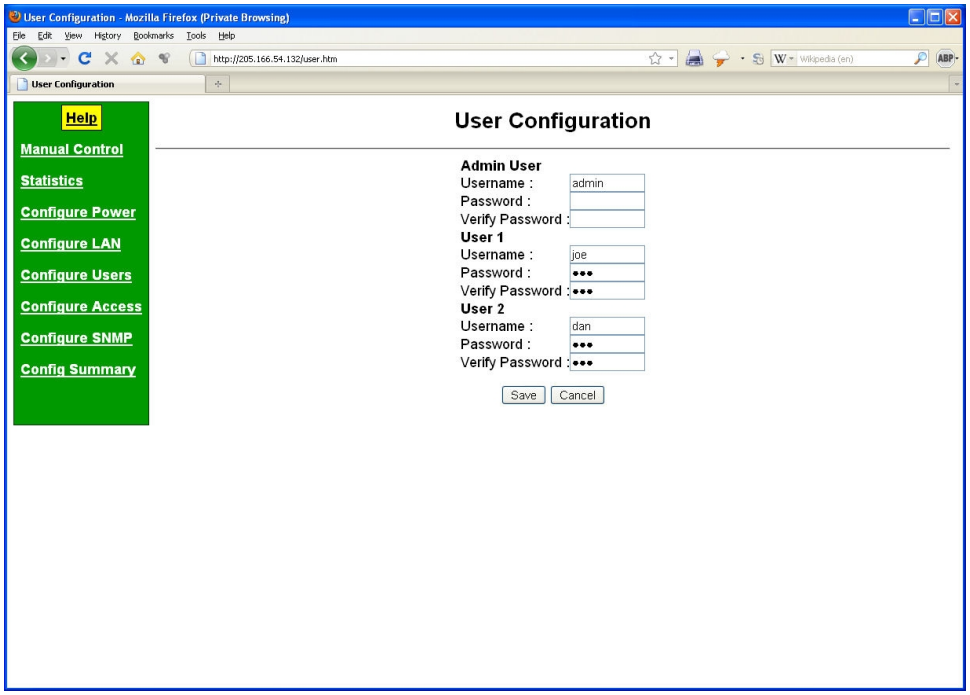
- Network Mask
  A subnet mask is a bit mask applied against the IP address. It specifies which portion of the IP address is the subnet identifier and which portion is the host identifier. For example, many subnets have a mask of 255.255.255.0. This means the first 24 bits of the address is the subnet identifier and the last 8 bits is the host identifier.

- Gateway IP Address

  The Gateway specifies the address of the gateway router on the local subnet. Packets destined for a host not on the local subnet are forwarded to the gateway router.

- Ethernet Mode
  Usually left at AUTO. This may be configured to match your ethernet switch/hub if there is a problem with auto-negotiation.

User Configuration



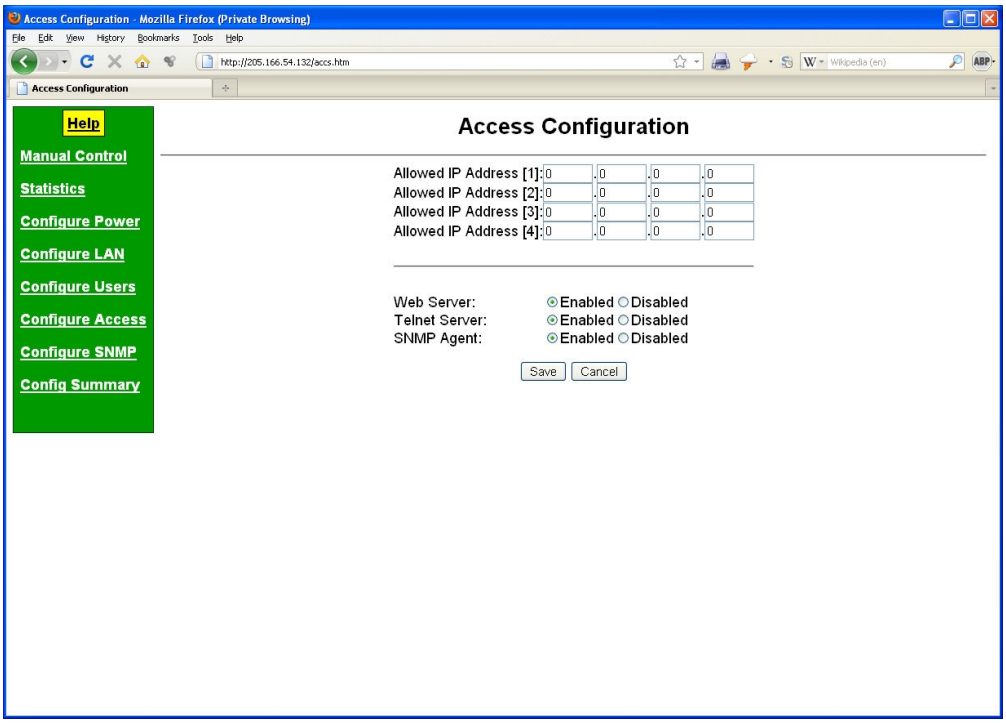
User Configuration Screen

Usernames and Passwords may be used to restrict access to the NPS. Three users are defined. One user is considered the Administrative user and has full access to the device. The other two users are restricted users and only have access to manual power control and activity counters. If all Usernames and Passwords are blank, the feature is disabled.

Fields

- **User Name**
  This field sets a username. The username may consist of 1 to 8 printable ASCII characters. Do not use control characters. Also, the space character may be used provided it is not at the start or end of the string.
- **User Password**
  This field sets a password for the user. (see username for allowed characters)
- **Verify Password**
  Since the password is not echoed, it must be entered twice to verify it was entered correctly.

Access Configuration



Access Configuration Screen

Access to the NPS may be restricted by IP address.

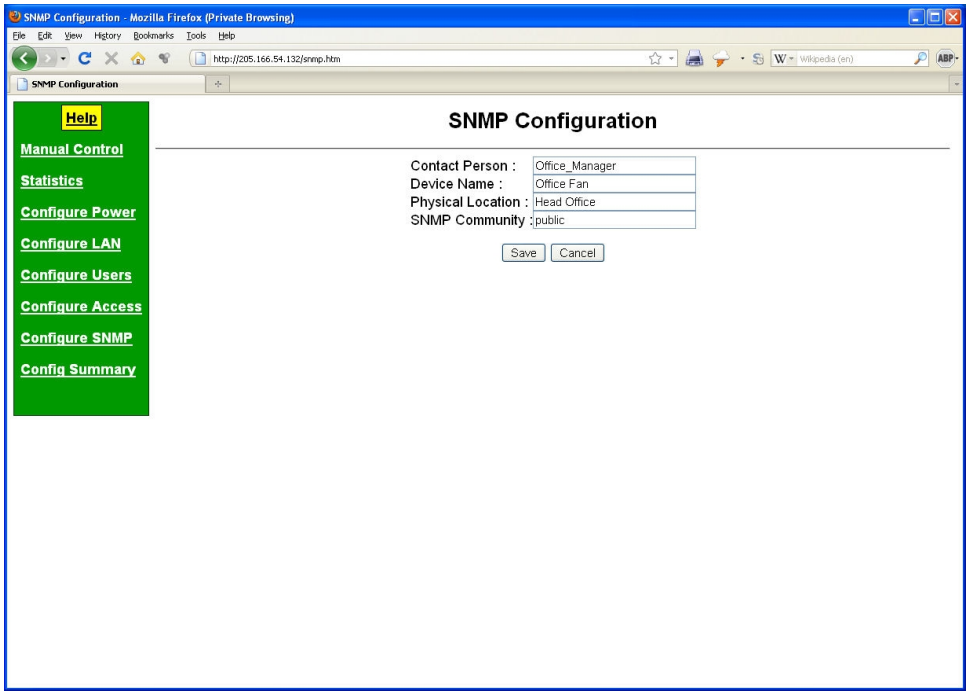
Fields

- **Allowed IP Addresses [1] to [4]**
  Enter the IP Addresses of the PCs which you wish to have access to the NPS. If these are left 0.0.0.0 (default) then all PCs have access.
- **Web Server**
  Enable/Disable the web server. See the Note below.
- **Telnet Server**
  Enable/Disable the telnet server. See the Note below.
- **SNMP Agent**
  Enable/Disable the SNMP agent. See the Note below.

Notes

The Web, Telnet, and SNMP interfaces may disabled. Use care not to disable all interfaces, otherwise the NPS will have to be reset to defaults in order to regain access.

SNMP Configuration



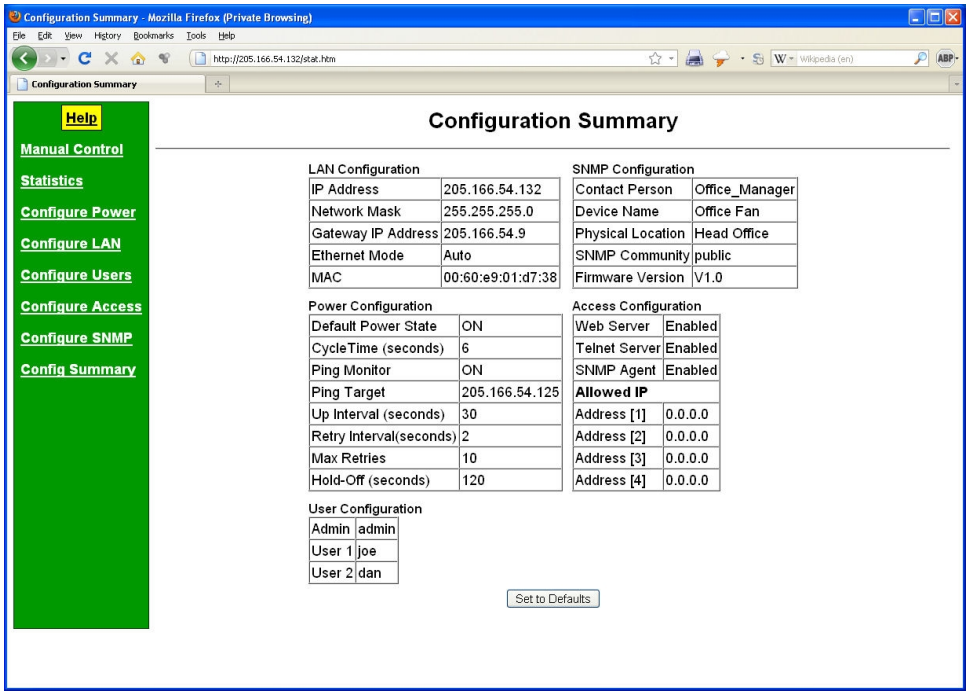
SNMP Configuration Screen

The NPS contains an SNMP agent and will respond to queries and commands from an SNMP manager. These are text fields, commonly used in SNMP (Simple Network Management Protocol) programs to identify this device when browsing the network.

Fields

- Contact Person
  This text field can be used to store the name of the person responsible for this device.
- Device Name
  A descriptive name for this device can be stored in this field.
- Physical Location
  This field can be used to store the location of this device.
- SNMP Community
  This field is used to set the SNMP community name. Only one community name is supported and it may be either a read-only or a read/write community.

Configuration Summary Screen



Configuration Summary Screen

This screen displays a summary of the NPS configuration. Clicking the "Set to Defaults" button will restore ALL values to their factory default values.

Fields

- Set to Default
  Clicking on this button will reset the NPS to default values, including the default IP address of 192.168.1.1 .

Chapter 4
Operation

This Chapter explains how to use the NPS, once it is installed and configured.

Common Uses – Overview

Some of the most commonly used configurations are :

- Manual remote control of power to an attached device.
- Automated "watchdog timer" control of an attached device.
- SNMP managed control of an attached device.

Manual Remote Power Control

Once configured with a proper IP address, power may be remotely controlled by accessing the NPS using a web browser. Simply click on the ON, OFF, or CYCLE button to control the power to attached devices.

Automated Watchdog Timer

The Ping Timer mode enables the NPS to watch over some other IP enabled device by sending it a periodic echo request (ping packet). If the device doesn't respond to the ping request after a configurable number of retires, the NPS will cycle the power. The number of failed requests, pause time between requests, and startup time are configurable.

SNMP Managed power Control

The NPS will answer queries and respond to power commands issued by an SNMP management workstation. The SNMP MIB includes entries for power off, power on, and power cycle, as responses to status queries.

Chapter 5
Troubleshooting

This chapter outlines some problems that may occur during installation or operation and some possible solutions to them.

If you follow the suggested troubleshooting steps and the NPS still does not function properly, please contact your dealer for further advice.

Hardware Problems

Before anything else, check that all cables are wired correctly and properly connected.

***P*:** All the LEDs are off.
S: Check the power supply or power connection.

***P*:** When using 10/100/1000Base-T cabling, the unit does not work.
S: Check the switch or hub's link LED for the port to which the NPS is connected. If it is off, make sure the network cable between the NPS and hub is in good condition.

Can't Connect via the LAN

***P*:** Can't connect with a Web Browser.
S: Check the following:

- Insure that you are addressing the NPS correctly .
- Start troubleshooting from a known state. Power the unit OFF and ON to reboot.
- Is a proper IP address configured in the NPS and PC?
- "Ping" the NPS to see if it responds. From the Windows command prompt or "Run" dialog box, use the command:

  ```
  ping IP_Address
  ```

  Where `IP_Address` is the IP Address of the NPS (e.g. `ping 192.168.1.1`). If it does not respond, then check all LAN connections. If the LAN connection are OK, the problem is in the LAN addresses or routing **The most common problem is incorrect IP address configurations. Make sure the workstation and NPS have compatible IP addresses.**
- It may be that your workstation "ARP table" contains invalid entries. You can clear the "ARP table" by rebooting, or, on Windows, by typing the following command at the command prompt or *Run* dialog box.: `ARP * -d` . **This is a common problem with test-bench setups.**
- The NPS is meant to be connected to a hub or ethernet switch. If connected directly to a PC, an ethernet crossover cable must be used.
- In some cases, "smart" hubs and switches must be power-cycled to clear their internal ARP cache. This **is often a problem on test bench setups where IP addresses are moved between different equipment or a unit is moved between ethernet switch receptacles.**

Other Problems

***P*:** How to set the NPS back to factory defaults?
S: If you know the IP address, you may browse to the Configuration Summary screen and click the button to "Set to Defaults". If the IP address is unknown, press and hold the reset button down while powering up the unit. The unit will be returned to factory defaults, including the IP address of 192.168.1.1.

Appendix A

Specifications

NPS-01 Specification

- One AC Power Port
- One 10/100BaseT ethernet control port
- Indicators: AC Power ON, Load Power ON, Ethernet 10BaseT, Ethernet 100BaseT
- Controls: One reset press button switch
- Environmental: Operation -40 to +70 C Non-condensing humidity
- Dimensions: 1.5” x 5.75” x 5.5”
- Power: 120 VAC or 240VAC (model dependent), 10 Amps maximum
- Fuse: 250V 10A, Type ABC 10
- Default IP address : 192.168.1.1