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RPC-4850-8N

Heavy Duty Remote DC Power Controller



User's Guide



Warnings and Cautions:

INSTALLATION INSTRUCTIONS



SECURE RACKING

If Secure Racked units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered.

1. The ambient within the rack may be greater than room ambient. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 45°C. Consideration should be given to the maximum rated ambient.
2. Installation should be such that a hazardous stability condition is not achieved due to uneven loading.

INPUT SUPPLY

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

GROUNDING

Reliable earthing of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

No Serviceable Parts Inside; Authorized Service Personnel Only

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

- **Shock Hazard - Do Not Enter**

Disconnect Power

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

1. If the power cord becomes frayed or damaged.
2. If liquid has been spilled into the device or if the device has been exposed to rain or water.

Two Power Supplies

Note that this unit includes two separate power circuits. Before attempting to service or remove this unit, please make certain that both power sources are disconnected.

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1. Introduction

Electronic equipment sometimes "locks-up," requiring a service call just to flip the power switch to perform a simple reboot. The RPC-4850-8N Heavy Duty Remote DC Power Controller gives you the ability to perform this function from anywhere, just point your browser to the RPC's IP address, enter the secure password, and you're just a click away from remote power and reboot control!

Intelligent Power Control

In addition to web browser access, the RPC-4850-8N can also communicate over any TCP/IP network using standard Telnet, or out-of-band using an external modem and basic VT100 type terminal emulation.

Security Features and Co-Location Features

To ensure security, access to sensitive configuration and control functions is protected by a user-defined password and user name. Passwords transmitted via web browser use basic 64 bit encryption techniques to assure secure access to your equipment.

The RPC provides two levels of operational passwords; the System Administrator Level, which allows access to all configuration and switching functions, and the User Level, which only allows access to assigned circuits and cannot be used to change unit configuration.

In addition to password security features, the RPC also includes an address specific IP security mask, which can be employed to prevent unauthorized network access to the RPC command mode.

Easy to Configure, Easy to Use

The RPC can be configured over the network, via modem, or locally via the RPC's Console Port. Simple, user-friendly commands let you assign a location name, set system parameters and view circuit status. Circuits can be switched On, Off, or booted using circuit numbers or names.

Reliability and Support

The RPC is built in the USA and backed by a two year warranty. NetReach products are installed in thousands of network sites world wide. Our customers know they can depend on WTI for superior quality and reliability for their most mission-critical operations.

Typographic Conventions

Throughout this manual, typefaces and characters have been used to denote the following:

COURIER FONT Indicates characters typed on the keyboard.
For example, **/ON 3** or **/OFF 4**.

[Bold Font] Text set in bold face and enclosed in square brackets indicates a specific key. For example, **[Enter]** or **[Esc]**.

2. Unit Description

2.1. Front Panel Components

As shown in Figure 2.1, the RPC-4850-8N front panel includes the following:

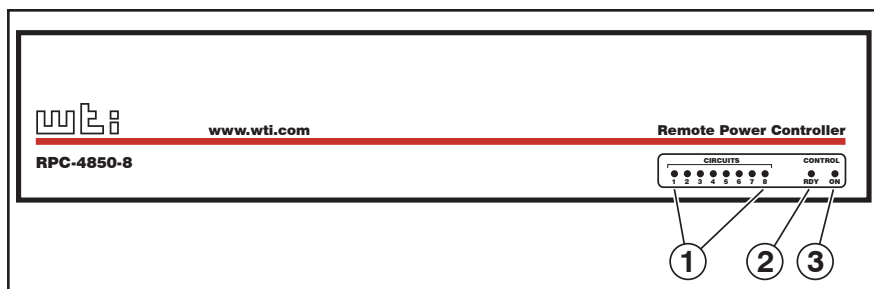


Figure 2.1: RPC-4850-8 Front Panel

- ① **Circuit Status Indicators:** A series of eight LED indicators, which light when power to the corresponding circuit is Switched On.
- ② **RDY Indicator:** Flashes when the RPC is ready to receive commands.
- ③ **ON Indicator:** Lights when power is applied to the Control Section.

2.2. Back Panel Components

As shown in Figure 2.2, the RPC-4850-8N back panel includes the following components:

- ① **Ground Screw**
- ② **Default Button:** This button can be used to either reset the unit to default parameters or manually toggle all circuits On or Off:
 - **Default Parameters:** To set all parameters to default values, first pull out both the Input Bus A and Bus B circuit breakers to the open position. Next, press and hold the Default Button, then press either Input Bus Circuit breaker in (Closed.) Continue to hold the Default Button. After about three seconds, the ACT Indicator on the Network Port will flash. Release the Default button. Make certain to return the other Input Bus Circuit Breaker to the closed position.
 - **Manual Circuit Toggle:** Press the Default Button and hold it down for three seconds. All RPC circuits will be toggled On or Off.

Note: If desired, the Default Button's manual circuit control capabilities can also be disabled as described in Section 5.3.1.

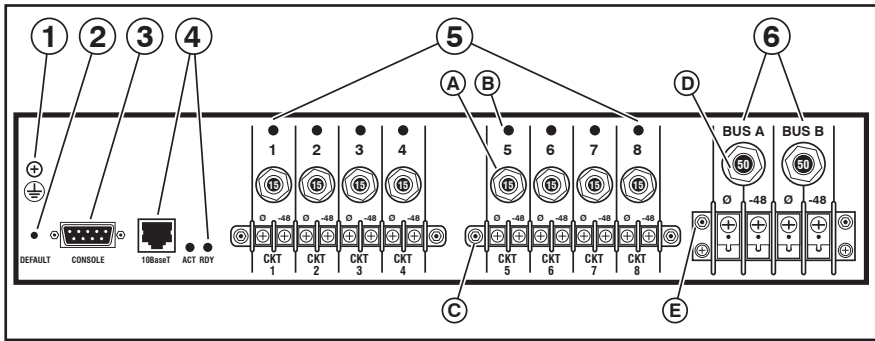


Figure 2.2: Back Panel

- ③ **Console Port:** A DB9, RS232 serial port (DTE), for connection to a local terminal or external modem, as described in Section 4.3.
- ④ **Network Port and Indicators:** An RJ45 Ethernet Port for connection to your TCP/IP network. The default IP Address is 192.168.168.168, for more information, please refer to Section 4.4. The Indicator lights adjacent to the Network Port function as follows:
 - **ACT:** Flashes to indicate activity at the Network Port.
 - **RDY:** Flashes to indicate the Network Port is ready to receive commands.
- ⑤ **Switched Output Circuits:** A series of eight -48 VDC, 15 Amp circuits divided into two terminal blocks.
 - A. **15 Amp Circuit Breakers:** Each circuit includes a 15 Amp breaker.
 - B. **Status Indicators:** Each circuit includes a Status Indicator, which lights when the circuit is switched On.
 - C. **Mounting Screw Receptacles:** Each terminal block includes two mounting screw receptacles, which are used to install the protective cover (not shown.)
- ⑥ **Power Input:** Two -48 VDC, 50 Amp input Buses.
 - D. **50 Amp Circuit Breakers:** Each power input bus includes a 50 Amp breaker.
 - E. **Mounting Screw Receptacles:** The power input terminal block includes two mounting screw receptacles, which are used to install the protective cover (not shown).

3. Quick Start

This Quick Start Guide describes a simplified installation procedure for the RPC-4850-8N hardware, which will allow you to communicate with the unit in order to demonstrate basic features and check for proper operation.

Note that this Quick Start procedure does not provide a detailed description of unit configuration, or discuss advanced operating features in detail. For more information, please refer to the installation, configuration and operation sections in this User's Guide.

3.1. Hardware Installation

3.1.1. Apply Power to the RPC-4850-8N

Refer to power rating nameplate on the back panel, and then connect the RPC unit to an appropriate -48 VDC, 50 Amp (maximum) power source as shown in Figure 3.1..

CAUTION: Prior to connecting power to the unit, make certain to review the Safety Precautions listed at the beginning of this User's Guide.

The RPC features two separate DC inputs; connect power cables to the unit's Circuit "A" and/or Circuit "B" terminal blocks, install the protective cover over the Power Input terminal block, and then connect the cables to an appropriate power supply.

Note that it is not necessary to connect power to both input circuits; either circuit will supply power for operation and control functions. However, when power is connected to both input circuits, this allows the second circuit to function as a back-up in the event of a power outage.

Note that each individual output circuit will support up to 15 Amps maximum, and that the total for all eight circuits cannot exceed 50 Amps.

Once power is applied to the unit, the ON LED should light, and the RDY LED should begin to flash. This indicates that the RPC-4850-8N is ready to receive commands.

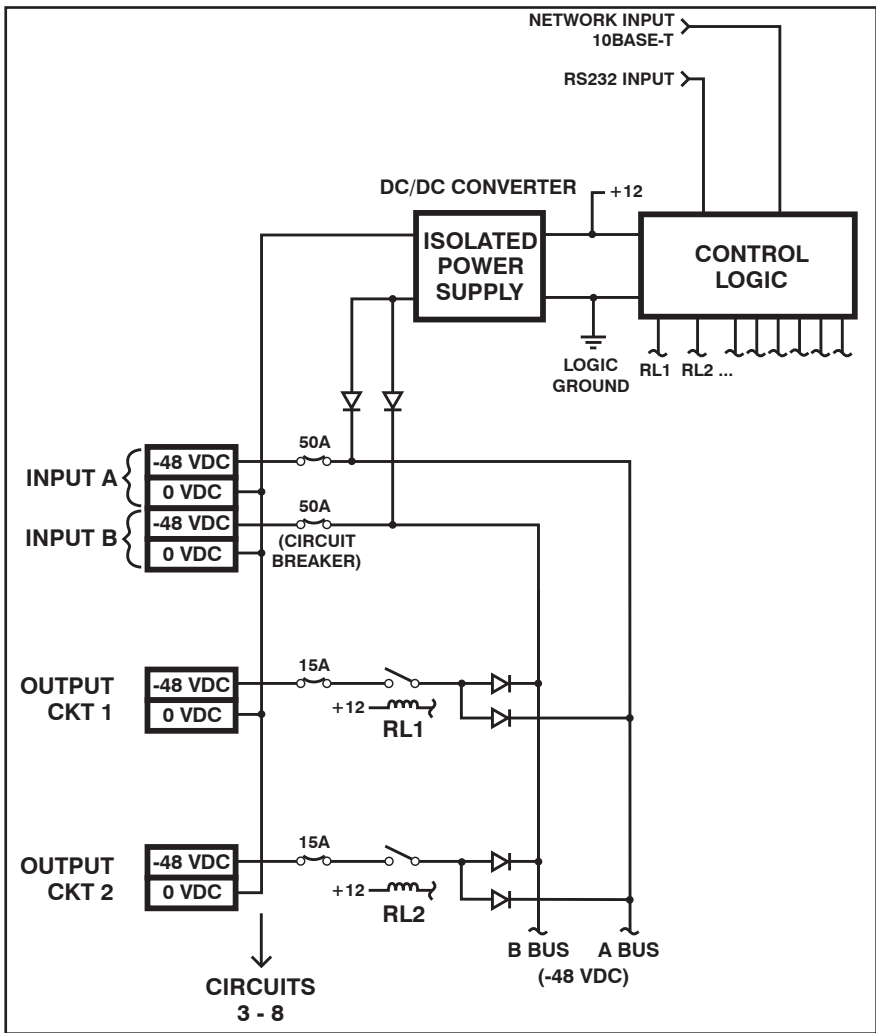


Figure 3.1: RPC-4850-8N Block Diagram

3.1.2. Connect your PC to the RPC-4850-8N

The RPC can either be controlled by a local PC, that communicates with the unit via cable, controlled via external modem, or controlled via TCP/IP network. In order to switch circuits On/Off or select parameters, commands are issued to the RPC via either the Network Port or Console Port. Note that it is not necessary to connect to both the Network and Console Ports, and that the Console Port can be connected to either a local PC or External Modem.

- **Network Port:** Connect your 10Base-T or 100Base-T network interface to the RPC Network port.
- **Console Port:** Use the supplied null modem cable to connect your PC COM port to the RPC Console (RS232) Port.
- **External Modem:** Use a standard AT to Modem cable to connect your external modem to the RPC Console (RS232) Port.

Note that when the RPC is shipped from the factory, RS232 Port Parameters are set as follows: 9600 bps, 8 Data Bits, One Stop Bit, No Parity. Although the RPC allows these parameters to be easily redefined, for the purpose of this Quick Start procedure, it is recommended that you configure your communications program to accept these default parameters.

3.2. Communicating with the RPC-4850-8N

The RPC-4850-8N offers two separate user interfaces: the Web Browser Interface and the Text Interface. The Web Browser interface allows you to contact the unit via a TCP/IP network, using a standard, JavaScript enabled web browser (such as Internet Explorer.) The Text Interface consists of a series of ASCII text menus, which may be accessed via TCP/IP network, Local PC or modem using a communications program such as Hyperterminal or Tera Term.

Note: The RPC features a default IP Address (192.168.168.168) and a default Subnet Mask (255.255.255.0). This allows initial network access to command mode without first setting up the unit's network parameters (providing that you are contacting the RPC from a node on the same subnet.) Before attempting to access the RPC from a node that is not on the same subnet, please refer to Section 5.3.4 for further configuration instructions.

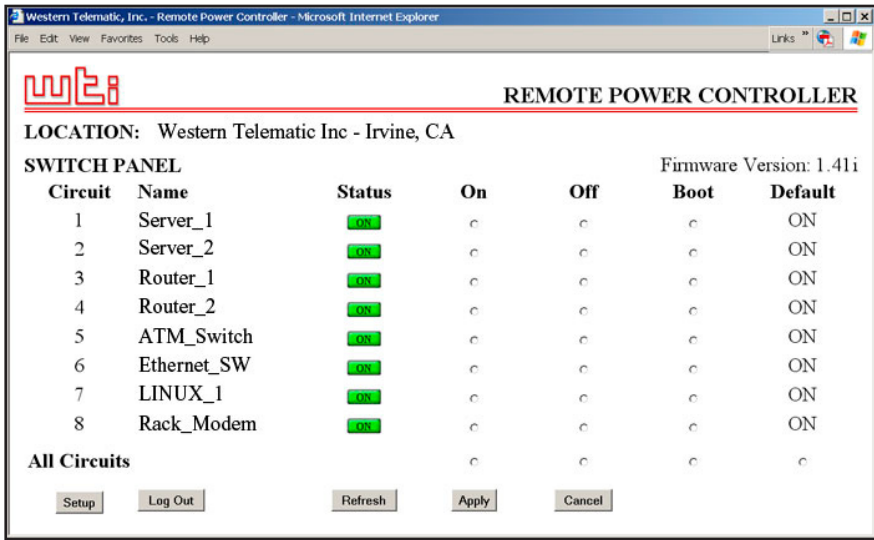


Figure 3.2: Circuit Status Screen - Web Browser Interface (Sample Values Show)

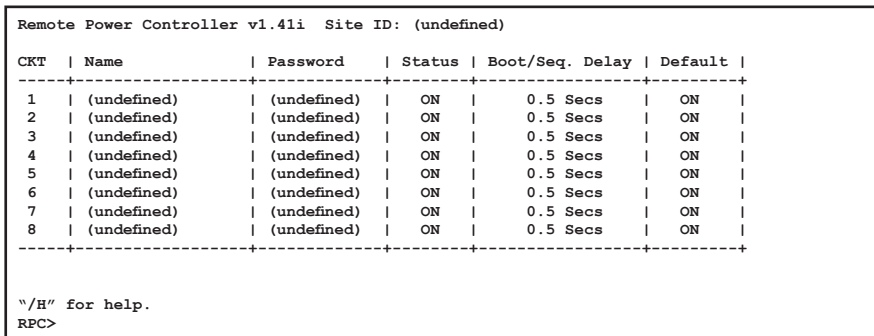


Figure 3.3 : Circuit Status Screen - Text Interface

1. **Access Command Mode:** This procedure differs slightly, depending on whether you're contacting the RPC via the Web Browser Interface or Text Interface.
 - a) **Web Browser Interface:** Start your JavaScript enabled Web Browser. Enter the RPC's default IP address (192.168.168.168) in your browser address bar and then press **[Enter]**. A password prompt will be displayed. Since at this point, the user name and password have not yet been defined, you can simply click OK without keying in a user name or password. The Circuit Status Screen will be displayed as shown in Figure 3.2.

-
- b) **Text Interface:**
- i. **Via Telnet:** Telnet to the RPC's default IP address (192.168.168.168). The Circuit Status Screen (Figure 3.3) should be displayed.
 - ii. **Via Local PC:** Start your communications program and then press **[Enter]**. The Circuit Status Screen should be displayed as shown in Figure 3.3. The default communications parameters for the Console Port are 9600 bps, No Parity, 8 data bits, One stop bit.
 - iii. **Via Modem:** Use your communications program to dial the number for the phone line which is connected to your external modem. Note that in order to communicate with the unit via modem, you must first access the command mode via Network or Local PC, and use the Serial Parameters Menu to set the Port Mode to "Modem."
2. **Test Switching Functions:** You may wish to perform the following tests in order to make certain that the RPC is responding to commands.
- a) **Reboot Circuit:** If you are communicating with the unit via the Web Browser Interface, select the button in the "Boot" column for Circuit 1, and then click "Apply." If you are operating the unit via the Text interface, type **/BOOT 1** and press **[Enter]**. The status indicator for Circuit 1 should go off, pause for a moment, and then go back on, indicating that the boot cycle has been successfully completed.
 - b) **Switch Circuit Off:** From the Web Browser Interface, select the button in the "Off" column for Circuit 1, and then click "Apply." From the Text Interface, type **/OFF 1** and press **[Enter]**. The status indicator for Circuit 1 should go Off, indicating that the command has been successfully completed. Leave Circuit 1 in the "Off" state for now, and then proceed to the next step.
 - c) **Switch Circuit On:** From the Web Browser Interface, select the button in the "On" column for Circuit 1, and then click "Apply." From the Text Interface, type **/ON 1** and press **[Enter]**. The status indicator for Circuit 1 should then go back On, indicating that the command has been successfully completed.

3. **Log Out:** When you have finished communicating with the unit, it is important to always log off by issuing the appropriate RPC command, rather than simply closing your Telnet or communications program. When you log off using the proper RPC command, this ensures that the unit has completely exited from command mode, and is not waiting for the inactivity timeout to elapse before allowing additional connections.
 - a) **Web Browser Interface:** Click on the "Log Out" button.
 - b) **Text Interface:** Type **/x** and press **[Enter]**.

This completes the Quick Start procedure for the RPC-4850-8N. Please proceed to Section 4 and Section 5 for complete installation and configuration instructions.

4. Installation

This Section provides further details regarding installation of the RPC-4850-8N unit.

4.1. Power Supply Connection

Connect the RPC-4850-8N unit to an appropriate -48 VDC, 50 Amp power supply as shown in Figure 3.1.

The RPC includes two separate -48 VDC DC inputs; connect power cables to the unit's Circuit "A" and/or Circuit "B" terminal blocks, then connect the cables to an appropriate power supply. Note that it is not necessary to connect power to both input circuits; either circuit will supply power for operation and control functions. However, when power is connected to both circuits, this allows the second circuit to function as a back-up in the event of a power outage.

After connecting the power cables to the RPC, install the protective cover (supplied with the unit) over the power input. Make certain that the power cables are securely fastened to the input terminal block, and then use the mounting screw receptacles to attach the protective cover to the terminal block.

Apply DC power to the RPC unit; the ON LED should light, and the RDY LED should begin to flash. This indicates that the RPC is ready to receive commands.



- **Before attempting to install this unit, please review the warnings and cautions listed at the front of the user's guide.**
- **This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please contact your local power company.**
- **Reliable earthing (grounding) of this unit must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than directly to the branch circuit.**

4.2 Connecting Switched Devices to the RPC-4859-8N

Make certain that the power supply to the RPC unit is switched Off, and then connect the supply cables from your -48 VDC powered devices to the Switched Output Circuits on the RPC back panel. Check to make certain that cables are securely attached, and then install the protective covers over each output terminal block. The protective covers are held in place by screws that pass through the holes in the cover and then thread into the screw receptacles at the end of each Output Terminal Block.

4.3. Serial Console / RS232 Port Connection

The Console Port is a male, RS232C DB9 connector, wired in a DTE configuration. In the default state, the Console port is configured for 9600 bps, no parity, 8 data bits, 1 stop bit. The Console Port can be connected to either an external modem or a local PC, but not both items at the same time. Appendix A describes the Console Port interface.

4.3.1. Connecting a Local PC

Use the supplied null modem cable to connect your PC Console port to the RPC Console (RS232 Port.) Make certain that the Serial Port Mode is set to "Console" as described in Section 5.3.2.

4.3.2. Connecting an External Modem

When connecting directly to an external modem, use a standard AT to Modem cable. Make certain that the modem is initialized at the same default parameters as the RPC Console Port. Make certain that the RPC Serial Port Mode is set to "Modem" as described in Section 5.3.2.

4.4. Connecting the Network Cable

The Network Port is an RJ45 Ethernet jack, for connection to a TCP/IP network. Connect your 10Base-T cable to the Network Port. Note that the RPC includes a default IP address (192.168.168.168) and a default subnet mask (255.255.255.0.) When installing the RPC in a working network environment, it is recommended to define network parameters as described in Section 5.3.4.

Note: The RPC features a 10Base-T, Half Duplex Interface. When connecting to a 100Base-T interface, most router switches will autosense to determine if the device is 100Base-T or 10Base-T, and then configure the network interface accordingly. If your router switch does not autosense, the network interface port must be manually set to 10Base-T.

This completes the RPC installation instructions. Please proceed to the next Section for instructions regarding unit configuration.

5. Configuration

5.1. System Mode and User Mode

In order to restrict access to sensitive command functions, the RPC-4850-8N features two operating modes; System Mode and User Mode.

- **System Mode:** Allows access to all configuration menus, switching functions, reboot functions and status screens. The System Mode Status Screens show On/Off conditions for all switched circuits, and lists all currently defined system parameters.
- **User Mode:** Allows access to switching and reboot commands, but does not allow access to configuration functions. Users may only issue commands to, or view status of the circuits that are specifically allowed by their password.

The RPC will display a password prompt when the unit is contacted via the Console Port or Network Port. The password entered at this prompt determines whether the unit will start-up in System Mode or User Mode. If the System Password is entered, the System Mode will be active. If a Circuit Password is entered, the User Mode will be active. The System Password is defined via the General Parameters menu (Section 5.3.1), and the Circuit Passwords are defined via the Circuit Parameters Menus (Section 5.3.3.)

Notes:

- If you wish to restrict access to configuration menus, you must define the System Password. If the System Password is not defined, the RPC will always start-up in System Mode, allowing unprotected access to configuration and switching functions.
- If the System Password is not defined, the Password Prompt will not be displayed when you access the RPC via the Text Interface. The prompt will always be displayed when the RPC is contacted via the Web Browser Interface.
- When the RPC is contacted via Network, the password prompt will also include a field for the user name. If you have not defined a user name, then you may leave this field blank, and only the password is required to gain access to the unit. The user name prompt is not displayed when the unit is contacted via the Text Interface.

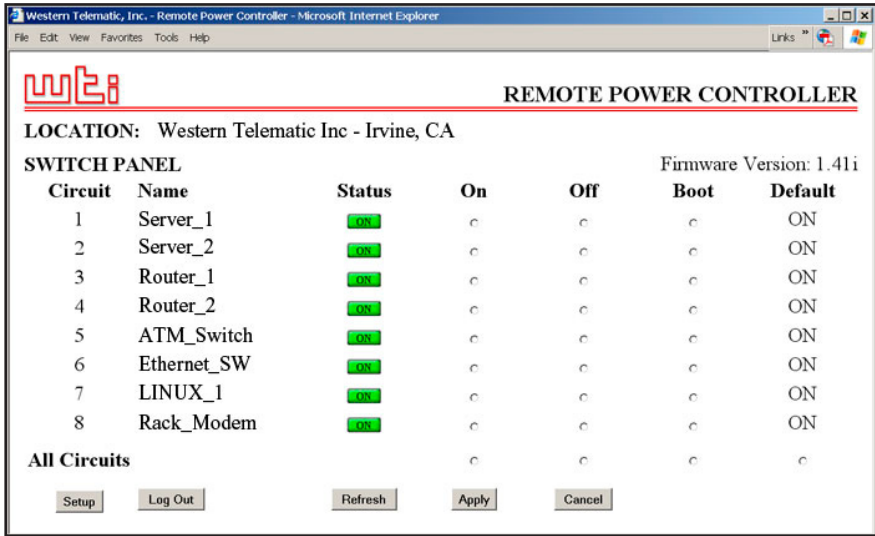


Figure 5.1: Circuit Status Screen - Web Browser Interface

5.2. Communicating with the RPC-4850-8N

In order to configure the unit or invoke command functions, you must first connect to the RPC and access command mode. As discussed in previously, the RPC offers two separate command interfaces: the Web Browser Interface, and the Text Interface.

The RPC also offers three different methods for accessing command mode; via network, via external modem, or via local PC. The Web Browser Interface is only available when the RPC is contacted via network, and the Text Interface is available via network, modem or local PC. The sections that follow describe the procedure for accessing the Web Browser Interface or the Text Interface.

Note: Configuration functions are only available when you have logged into the RPC command mode using the System Password.

5.2.1. Accessing the Web Browser Interface

In order to use the Web Browser Interface, the RPC must be connected to a TCP/IP network, and your PC must be equipped with a JavaScript enabled web browser.

1. Start your JavaScript enabled Web Browser.
2. Key the RPC's IP address (default = http://192.168.168.168) into the web browser's address bar, and then press **[Enter]**.

3. **Password Prompt:** The RPC will display a prompt, which asks for your name and password.
 - a) **User Name:** If you have not previously defined a user name, then this field should be left blank. A user name is only required when one has been defined via the General Parameters menu.
 - b) **Password:** Key in your System Password or Circuit Password and then click "OK" (Note that Circuit Passwords do not permit access to configuration functions.)
 - c) If the System Password has *not* been defined, simply click the "OK" button without keying in a name or password.

If a valid password is entered, the Circuit Status Screen will appear.

5.2.2. Accessing the Text Interface

The Text Interface can be accessed via Network, modem or local PC. In order to access the Text Interface, your installation must include the following:

- **Access Via Network:** The RPC must be connected to your TCP/IP Network, and your PC must include a communications program (such as Hyperterminal or Tera Term.)
- **Access Via Modem:** An external modem must be connected to the RPC RS232 Console Port, and a phone line must be connected to the external modem. Your PC Must include a communications program.
- **Access Via Local PC:** Your local PC must be connected to the RPC's RS232 Console Port. The local PC must include a communications program.

To access command mode via the Text Interface, proceed as follows:

1. The RPC is transparent to parity and will accept 7 or 8 bit characters, but will always answer back at 8 bits, no parity. Make certain your communication program is set for the appropriate baud rate, bits, parity and Communications Port.
 - a) **Via Modem:** Start your communications program. Dial the external modem connected to the RPC. Wait for the Connect message, then proceed to Step 2.
 - b) **Via Local PC:** Start your communications program and press **[Enter]**. Wait for the connect message, then proceed to Step 2.

```

Remote Power Controller v1.41i Site ID: (undefined)

CKT | Name | Password | Status | Boot/Seq. Delay | Default |
-----+-----+-----+-----+-----+-----+
 1 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 2 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 3 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 4 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 5 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 6 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 7 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
 8 | (undefined) | (undefined) | ON | 0.5 Secs | ON |
-----+-----+-----+-----+-----+-----+

"/H" for help.
RPC>
    
```

Figure 5.2: Circuit Status Screen - Text Interface

c) **Via Network:** The RPC includes a default IP address (192.168.168.168), which allows you to contact the unit from any network node on the same subnet. When the RPC is installed in a working network environment, it is recommended to redefine the IP Address, Subnet Mask, and Gateway Address as described in Section 5.3.3.

i. Telnet to the RPC's IP address. For example, if the IP address is "192.168.168.168", then on a UNIX system, the Telnet command would be:

```
$ telnet 192.168.168.168 [Enter]
```

ii. If the Telnet connection is refused, this may mean that either the IP Security feature has denied the connection (See Section 5.3.4.1), or that the unit is operating on a 100Base-T network that does not autosense for 10Base-T devices (see Section 4.4.)

2. **Password:** If the System Password has been defined, the unit will display the Password Prompt. Key in either the System Password or Circuit Password, and press [Enter]. If the System Password has *not* been defined, the prompt will not be displayed when the unit is accessed via the Text Interface. Note that the Password feature is case sensitive.
3. If a valid System Password or Circuit Password is entered, the RPC will display the Circuit Status Screen shown in Figure 5.2, followed by the Command Prompt.

Note: The Circuit Status Screen will not display actual passwords. Instead, the password column will read either "defined" or "undefined."

5.3. Configuration Menus

As described in the sections that follow, configuration parameters for the RPC can be selected via the Web Browser Interface or Text Interface. Although the Web Browser Interface and Text Interface provide two separate means for selecting parameters, both allow access to essentially the same set of parameters, and parameters selected via one interface will also be applied to the other.

Web Browser Interface: Click the "Setup" button to gain access to the configuration menus; a row of buttons will be displayed along the left hand edge of the screen. Click the appropriate button to access the desired menu. Note the following:

- Newly selected parameters will not be activated until you click the "Apply" button.
- Click "Switch Panel" to return to the main status screen.

Text Interface: Refer to the Help Screen (/H), then enter the appropriate command to access the desired menu. When the configuration menu appears, key in the number or letter for the parameter that you wish to define and follow the instructions in the resulting submenu. Note the following:

- To exit from a parameters menu, press the [Esc] key.

The following sections describe options and parameters that can be accessed via each of the configuration menus. Please note that essentially the same selection of parameters and options are available via both the Web Browser Interface and Text Interface.

Note: Configuration menus are only available when the System Mode is active. Configuration menus are not available if you have logged in using a Circuit Password.

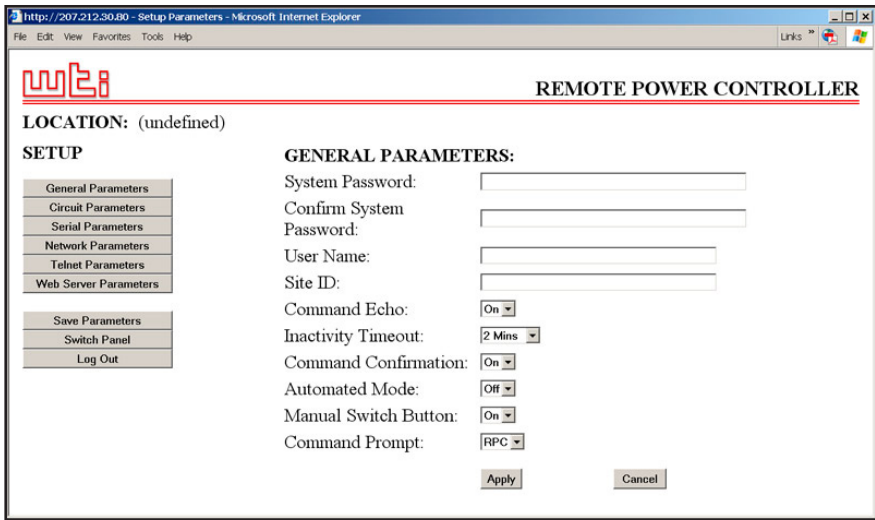


Figure 5.3: General Parameters Menu - Web Browser Interface

5.3.1. The General Parameters Menus

The General Parameters Menus allow you to select parameters such as the System Password, User Name, Site I.D. and other options.

- **Web Browser Interface:** Click the "Setup" button to access the Setup Menus, and then click the "General Parameters" button. The General Parameters Menu will be displayed as shown in Figure 5.3.
- **Text Interface:** Type `/G` and press **[Enter]**. The General Parameters Menu will be displayed as shown in Figure 5.4.

The General Parameters Menus allow you to define the following parameters:

- **System Password:** The RPC will display a password prompt when you attempt to access command mode. When the System Password is entered at log on, the System Mode will be active, allowing access to both switching functions and configuration menus. (Four to 16 Characters, Default = undefined.)

Notes:

- If the System Password is *not* defined, then the RPC will always start up in System Mode, and configuration functions will then be available to anyone who accesses command mode.
- The System Password cannot begin with a forward slash (/) or backslash (\) character.
- The System Password cannot include non printable characters, space characters, asterisks (*) or quotation marks.


```
GENERAL PARAMETERS:

1. System Password:      (undefined)
2. User Name:            (undefined)
3. Site ID:              (undefined)
4. Command Echo:        On
5. Inactivity Timeout:  2 Mins
6. Command Confirmation: On
7. Automated Mode:      Off
8. Manual Switch Button: On
9. Command Prompt:      RPC

A. Default Parameters

Enter Selection,
Press <ESC> to Exit ...
```

Figure 5.4: General Parameters Menu - Text Interface

- **User Name:** (Optional) The User Name allows you to set up an additional layer of security for web access to command mode by requiring that users correctly enter a name in addition to a password. Note that the User Name is only required when the unit is accessed via the Web Browser Interface. (Four to 16 Characters, Default = undefined.)

Notes:

- If a User Name is defined, then users who login with a Circuit Password (User Mode) will also need to enter this same User Name at the login prompt when attempting to access command mode via the Web Browser Interface.
 - The User Name cannot begin with a forward slash (/) or backslash (\) character.
 - The User Name cannot include non printable characters, space characters, asterisks (*) or quotation marks.
- **Site ID:** Defines a brief text message, which can describe the location of the RPC unit. (Up to 32 characters, Default = undefined.)

Notes:

- The Site ID Message cannot begin with a forward slash (/) or backslash (\) character.
 - The Site ID Message cannot include non printable characters or quotation marks.
- **Command Echo:** When enabled, ASCII commands sent via the Text Interface will be echoed back, allowing keystrokes to be displayed. This feature applies only to the Text Interface, and has no visible effect on the Web Browser Interface. (Default = On.)

- **Inactivity Timeout:** Determines how long the RPC will wait for additional commands during periods of inactivity. When the Timeout Period elapses, the user will be disconnected from command mode. (Default = 2 Minutes.)
- **Command Confirmation:** When enabled, the RPC will display a confirmation prompt before executing certain commands. When disabled, the prompt will be suppressed and commands will be executed immediately. (Default = On/Enabled.)
- **Automated Mode:** When enabled, the RPC will execute On, Off, Boot, and exit commands without displaying a confirmation prompt, status screen or confirmation messages. For more information, please refer to Section 6.4. (Default = Off.)

Note: When this option is enabled, security functions are suppressed, and users are able to access configuration menus and control circuits without entering a password. If security is a concern and the Automated Mode is required, it is recommended to use the IP Security feature (Section 5.3.4.1) to restrict access.

- **Manual Switch Button:** Enables and configures the Default Button's manual circuit control function, but does not effect the Default Button's ability to reset parameters to default values. (Default = "On".)
 - **Off:** Disables the manual circuit control function.
 - **On:** Enables manual circuit control. When Default is pressed and held for three seconds, all circuits will be toggled On or Off.
- **Command Prompt:** Allows the Text Interface command prompt to be set to either "RPC", "IPS", "NPS", or "NBB." (Default = RPC.)

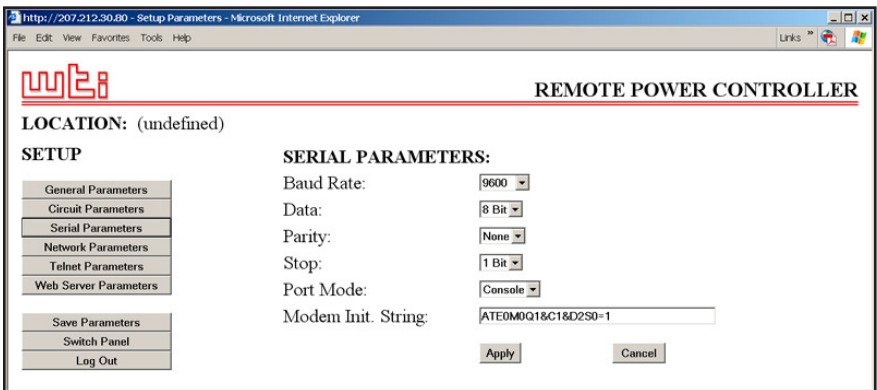


Figure 5.5: Serial Parameters Menu - Web Browser Interface

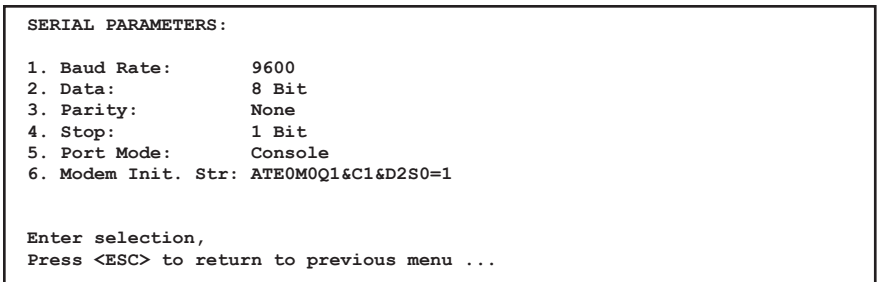


Figure 5.6: Serial Parameters Menu - Text Interface

5.3.2. The Serial Parameters Menu

The Serial Parameters Menus are used to configure the RPC's serial Console Port, and allow you to select parameters such as the Baud Rate, Parity and Modem Initialization String. To access the Serial Parameters Menu, proceed as follows:

- **Web Browser Interface:** Click the "Setup" button to access the Setup Menus, and then click the "Serial Parameters" button. The Serial Parameters Menu will be displayed as shown in Figure 5.5.
- **Text Interface:** Type `/C` and press **[Enter]**. The Serial Parameters Menu will be displayed as shown in Figure 5.6.

As shown in Figure 5.5 and Figure 5.6, the Serial Parameters Menus allow you to define the following parameters:

- **Baud Rate:** Baud Rate for the RPC Console Port. (Default = 9600 bps.)
Note: When this setting is changed, the new baud rate will not be applied until the user exits and then re-enters command mode.
- **Data:** The Data Bits setting for the RPC Console Port. (Default = 8 Bits.)
- **Parity:** The parity setting for the RPC Console Port. (Default = None.)
- **Stop:** The Stop Bits setting for the RPC Console Port. (Default = 1 Bit.)
- **Port Mode:** Sets up the serial Console (RS232) Port for use with either a local PC or an external modem. Note that when the Port Mode is set to "Modem" the modem initialization string will be sent every 15 minutes. (Default = Console.)
- **Modem Initialization String:** Defines a command string (up to 32 characters long) which can be sent out the serial Console Port to initialize an external modem. If the Port Mode is set to "Console", the modem initialization string will not be sent. For more information on initialization commands, please refer to the user's guide for your modem. (Default = **ATE0M0Q1&C1&D2S0=1**)

Notes:

- The Modem Initialization String cannot begin with a forward slash (/) or backslash (\) character.
- The Modem Initialization String cannot include non printable characters or quotation marks.

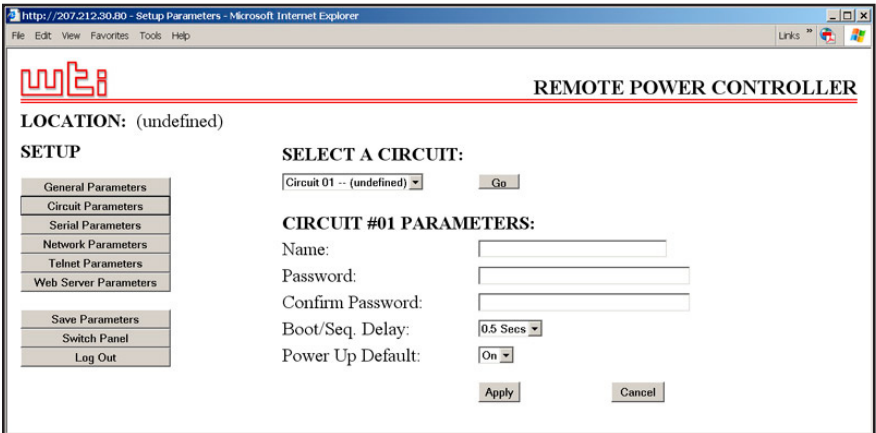


Figure 5.7: Circuit Parameters Menu - Web Browser Interface

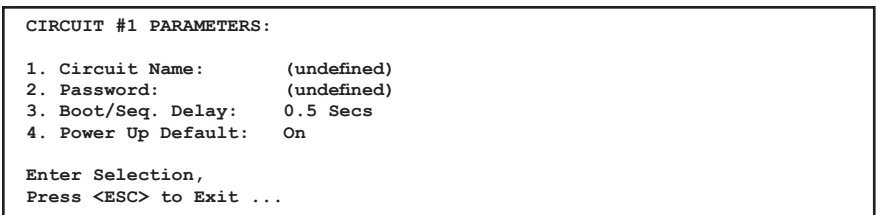


Figure 5.8: Circuit Parameters Menu - Text Interface (Circuit 1 Shown)

5.3.3. Circuit Parameters Menus

The Circuit Parameters Menus are used to define Circuit Names, Circuit Passwords, boot/sequence delay times and Power-Up Defaults for each of the RPC's Switched DC Circuits.

- **Web Browser Interface:** Click the "Setup" button to access the configuration menus, then click the "Circuit Parameters" button. The Circuit Parameters Menu will be displayed as shown in Figure 5.7.
- **Text Interface:** Type `/P n` and then press **[Enter]** (Where `n` is the number or name of the circuit you wish to configure.) The Circuit Parameters Menu will be displayed as shown in Figure 5.8.

Note that in this case, the major difference between the Web Browser Interface and Text Interface is that the Web Browser Interface allows you to select parameters for all circuits from a single menu, whereas the Text Interface includes a separate menu for each circuit.

The Circuit Parameters Menu allows you to define the following parameters:

- **Circuit Name:** (Up to 16 Characters, Default = undefined.)
Note: Circuit Names cannot begin with a number, dash (-), underscore character (_), slash character (/) or backslash character (\), and cannot include non-printable characters, asterisks (*), colons (:), "plus" symbols (+), space characters or quotation marks.
- **Circuit Password:** When this password is entered at login, the user will be able to issue commands to this circuit, and any other circuit that shares the same password as this circuit as described in Section 5.3.3.1. (Four to 16 Characters, Default = undefined.)
Note: Passwords cannot begin with the forward slash character (/) or backslash (\) character, and cannot include non printable characters, asterisks (*), space characters or quotation marks.
- **Boot/Seq. Delay:** When more than one circuit is switched On/Off or a reboot cycle is initiated, the Boot/Sequence delay determines how much time will elapse between switching operations, as described in Section 5.3.3.2. (Default = 0.5 Second.)
- **Power Up Default:** Determines how this circuit will react when the Default command (/D) is invoked, or after power to the unit has been interrupted and then restored. After the default command is invoked, or power is restored, the RPC will automatically switch each circuit On or Off as specified by the Power-Up Default. (Default = On).
Note: If you have accessed command mode using the System password, the Default command will apply to all eight RPC circuits. If you have accessed command mode using a Circuit password, then the command will only be applied to circuits that share the same password entered at login.

5.3.3.1. Circuit Passwords and Co-Location Features

The Circuit Passwords allow you to determine which circuit an individual user will be permitted to control. When a circuit password is entered at the login prompt, the user will be able to issue switching and reboot commands for every circuit that shares this same password.

For example, if the password "switch" is defined for circuits 1, 2, and 3, then a user who logs into command mode using the password "switch" will only be allowed to issue commands to circuits 1, 2, and 3, but will not be allowed to issue commands to the remaining circuits. Note that Circuits Passwords do not allow access to configuration menus, and users are only allowed to view the status of circuits permitted by their password.

5.3.3.2. The Boot / Sequence Delay Period.

The Boot / Sequence Delay value will be applied differently for reboot operations as opposed to simple On/Off operations as described below:

1. **Reboot Cycles:**

- a) **Single Circuit:** The Boot/Seq. Delay determines how long the circuit will remain Off before it is switched back On again.
- b) **Several Circuits:** The Boot/Seq. Delay determines how long the circuit will remain "Off", and also how long the RPC will pause before proceeding to the next circuit.

2. **On/Off Switching:** The Boot/Seq. Delay determines how long the RPC will pause before proceeding to the next circuit.

Examples: Assume that a user is only allowed access to circuits one through four, and that the Boot / Sequence Delays for each circuit have been set as follows: Circuit 1 = 1 Second, Circuit 2 = 2 Seconds, Circuit 3 = 5 Seconds, Circuit 4 = 1 Minute.

If the user applies an "On" command to all four circuits, the RPC will respond as follows:

1. Turn On Circuit 1, Wait 1 Second.
2. Turn On Circuit 2, Wait 2 Seconds.
3. Turn On Circuit 3, Wait 5 Seconds.
4. Turn On Circuit 4.

If a "Reboot" Command is applied to Circuit 3, the RPC will respond as follows:

1. Turn Off Circuit 3, Wait 5 Seconds, Turn On Circuit 3.

If a Reboot Command is applied to all four circuits, the RPC will respond as follows:

1. Turn Off all four Circuits (short delay between Circuits.)
2. Wait 1 Second, Turn On Circuit 1, Wait 1 Second.
3. Wait 2 Seconds, Turn On Circuit 2, Wait 2 Seconds.
4. Wait 5 Seconds, Turn On Circuit 3, Wait 5 Seconds.
5. Wait 1 Minute, Turn on Circuit 4.

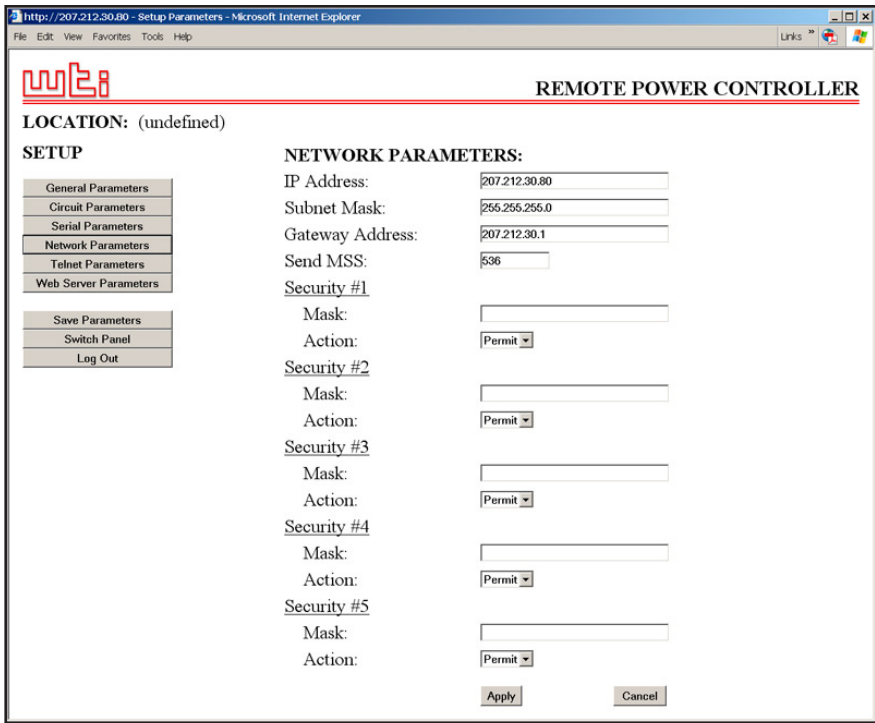


Figure 5.9: Network Parameters Menu - Web Browser Interface

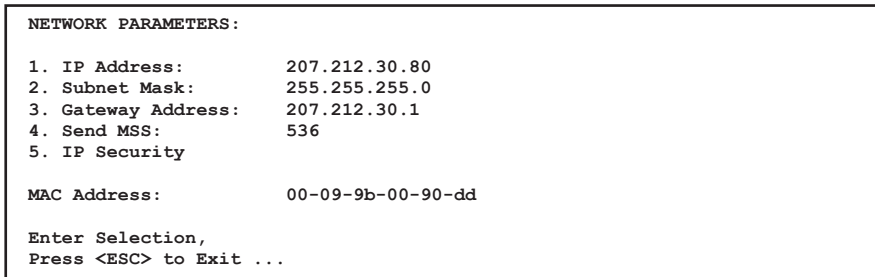


Figure 5.10: Network Parameters Menu - Text Interface

5.3.4. Network Parameters Menus

The Network Parameters Menus are used to select the IP Address, Subnet Mask, Gateway Address and other network parameters.

- **Web Browser Interface:** Click the "Setup" button to access the Setup Menus, and then click the "Network Parameters" button. The Network Parameters Menu will be displayed as shown in Figure 5.9.
- **Text Interface:** Type **/N** and press **[Enter]**. The Network Parameters Menu will be displayed as shown in Figure 5.10.

Notes:

- Although the Web Browser Interface and Text Interface both allow configuration of the same network parameters, note that for the Text Interface, the IP Security feature is configured via a separate submenu. For more information on IP Security, please refer to Section 5.3.4.1.
- Settings for network parameters depend on the configuration of your individual network. Contact your network administrator for appropriate settings.

The Network Parameters Menus allow the following parameters to be defined. Except where noted, all parameters listed here are available via both the Web Browser Interface and Text Interface.

- **IP Address:** Defines the IP address for the RPC unit. (Default = 192.168.168.168.)
- **Subnet Mask:** Defines the Subnet Mask for the RPC unit. (Default = 255.255.255.0.)
- **Gateway Address:** Defines the Gateway Address for the RPC unit. (Default = undefined.)
- **Send MSS:** Defines the Maximum Segment Size that will be sent by the RPC. (Default = 536.)
- **IP Security:** Sets up the IP Security feature. Please refer to Section 5.3.4.1 for a detailed description of the IP Security feature.
- **MAC Address:** Displays the unit's MAC Address. Please note that this item only displays the assigned MAC Address, and cannot be used to redefine the address. Note also that the MAC Address is not displayed via the Web Browser Interface.

```
IP SECURITY:

1. Security Mask #1: (undefined)
2. Mask #1 Action: Permit
3. Security Mask #2: (undefined)
4. Mask #2 Action: Permit
5. Security Mask #3: (undefined)
6. Mask #3 Action: Permit
7. Security Mask #4: (undefined)
8. Mask #4 Action: Permit
9. Security Mask #5: (undefined)
10. Mask #5 Action: Permit

Enter selection,
Press <ESC> to return to previous menu ...
```

Figure 5.11: IP Security Menu - Text Interface

5.3.4.1. IP Security Feature

The IP Security feature can be used to restrict unauthorized IP addresses from establishing a connection with the RPC. In the default state, the RPC accepts incoming IP connections from all hosts. To configure the IP Security feature, proceed as follows:

1. Access the IP Security Menu:
 - a) **Web Browser Interface:** The IP Security feature is configured using the fields at the bottom of the Network Parameters Menu as shown in Figure 5.9.
 - b) **Text Interface:** Go to the Network Parameters menu (/N), type 5 and press [Enter]. The IP Security menu will be displayed as shown in Figure 5.11.
2. The IP Security menu lists five IP Security "masks" along with the selected permit/deny action for each mask.
 - a) Each Security Mask prompt defines a specific IP address or range of addresses. Each Mask Action prompt defines the permit/deny action for the corresponding mask.
 - b) Masks are listed in order of ascending priority; Mask 1 has the lowest priority, Mask 5 has the highest priority.
 - c) Masks have a cumulative effect; high priority masks supersede the effect of lower priority masks.
 - d) Each IP Address consists of a series of four eight bit numbers. The number 255 is used as a wild card.

Example 1: Deny access to all hosts except 192.1.1.5:

Security Mask #1: 255.255.255.255	Mask #1 Action: Deny
Security Mask #2: 192.1.1.5	Mask #2 Action: Permit

Since 255 is a wild card, Mask #1 blocks all IP Addresses. Mask #2 then specifically grants access to 192.1.1.5 only.

Example 2: Allow access only by addresses that begin with 192.

Security Mask #1: 255.255.255.255	Mask #1 Action: Deny
Security Mask #2: 192.255.255.255	Mask #2 Action: Permit

Since 255 is a wild card, Mask 1 blocks all IP addresses. Mask 2 then grants access to all addresses that begin with 192.

Example 3: Allow access only by addresses that begin with 192, deny access to 192.1.1.5.

Security Mask #1: 255.255.255.255	Mask #1 Action: Deny
Security Mask #2: 192.255.255.255	Mask #2 Action: Permit
Security Mask #3: 192.1.1.5	Mask #3 Action: Deny

Since 255 is a wild card, Mask 1 blocks all IP addresses. Mask 2 then grants access to all addresses that begin with 192. Finally, Mask 3 specifically blocks access by 192.1.1.5.

Note:

- Mask #5 has priority over the other four masks. If Mask #5 is set to deny access by "255.255.255.255" (all wild cards), you will not be able to access RPC Command Mode via network. Access will only be allowed via a Local PC or external modem connected to the RPC's Console Port.
- When using the wild card address "255.255.255.255", make certain that at least one higher priority mask permits access by your IP address.

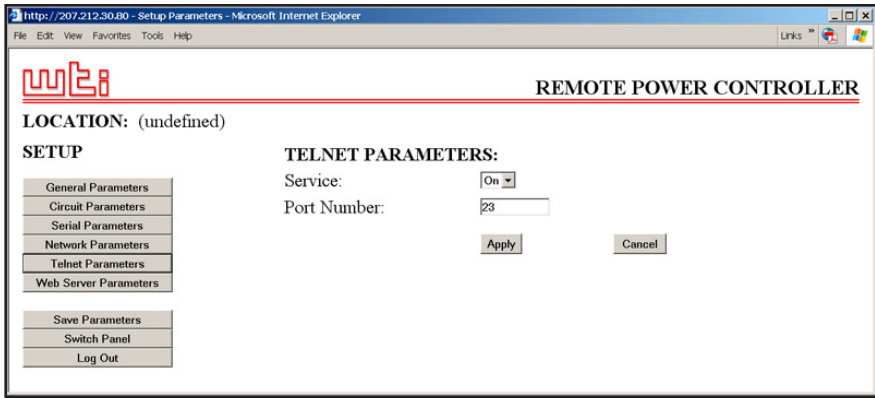


Figure 5.12: Telnet Parameters Menu - Web Browser Interface

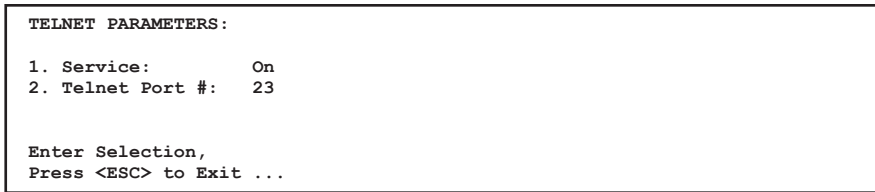


Figure 5.13: Telnet Parameters Menu - Text Interface

5.3.5. The Telnet Parameters Menus

The Telnet Parameters Menus are used to enable/disable Telnet access to the RPC command mode and select the TCP port for Telnet connections.

- **Web Browser Interface:** Click the "Setup" button to access the configuration menus, and then click the "Telnet Parameters" button to display the menu shown in Figure 5.12.
- **Text Interface:** Type **/T** and press **[Enter]**. The Telnet Parameters Menu will be displayed as shown in Figure 5.13.

The Telnet Parameters Menus allow the following parameters to be defined. Please note that all parameters listed here are available via both the Web Browser Interface and Text Interface.

- **Service:** Enables/Disables Telnet communication with the RPC unit. When this item is "Off," users will not be able to contact the unit via Telnet. (Default = On.)
- **Port Number:** Selects the TCP/IP port number that will be used for Telnet connections. (Default = 23.)

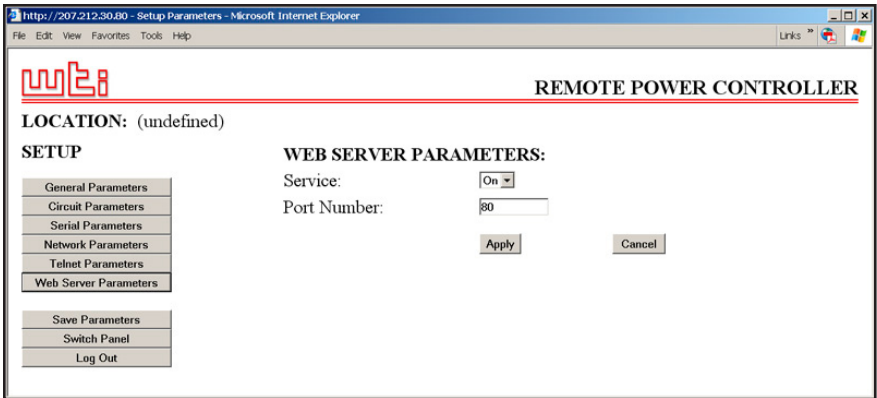


Figure 5.14: Web Server Parameters Menu - Web Browser Interface



Figure 5.15: Web Server Parameters Menu - Text Interface

5.3.6. Web Server Parameters Menus

The Web Server Parameters Menus are used to configure the internal web server, which allows the unit to be operated via the Web Browser Interface.

- **Web Browser Interface:** Click the "Setup" button to access the configuration menus, and then click the Web Server Parameters button. The Web Server Parameters Menu will be displayed as shown in Figure 5.14.
- **Text Interface:** Type **/w** and press **[Enter]**. The Web Server Parameters Menu will be displayed as shown in Figure 5.15.

The Web Server Parameters Menu allows you to define the following:

- **Service:** Enables/Disables the RPC's Web Server. Note that when the Web Server is disabled, you will not be able to communicate via the Web Browser Interface. (Default = On.)
- **Port Number:** Sets the TCP/IP Port Number. The Port Number can be set to any valid number except 23; this is because 23 is the default port number that is used for communication with the unit via Telnet. (Default = 80.)

5.4. Save Configuration Parameters

The RPC offers two methods for saving parameters; Saving to Memory, and Saving to an ASCII File.

Saving parameters to memory ensures that your user-defined configuration will remain intact if power to the RPC is temporarily interrupted. After the configuration menus have been used to change parameters, the RPC will prompt you to save parameters before exiting from command mode. At this point, the RPC offers the options to Save parameters, continue without saving, or revert to the previously saved parameters.

Saving Parameters to an ASCII file allows you to create a "backup" of your currently defined configuration. As described in Section 7, this provides quick recovery in the event that the unit is accidentally reset to default parameters, and also allows you to copy parameters to other RPC units when several units need to be configured with the same parameters.

Notes:

- After new Parameters have been applied, the RPC will display a "Save" prompt. In the Web Browser Interface, this prompt appears when you leave the configurations menus. In the Text Interface, the "Save" prompt appears when you disconnect from the unit. At this point, you have the option of saving new parameters to memory, continuing without saving, or reverting to previously saved parameters.
- If parameters have not been saved, and if power to the RPC is interrupted, newly defined parameters will be lost. When power is restored, the unit will then be configured with the previously saved parameters.

6. Operation

As discussed in Section 5, the RPC-4850-8N offers two separate command interfaces; the Web Browser Interface and the Text Interface. Note that both command interfaces offer essentially the same options and features, and that parameters defined via the Web Browser Interface will also apply when communicating via the Text Interface (and vice versa.)

6.1. Operation via the Web Browser Interface

When using the Web Browser Interface, all switching and reboot commands are invoked via the Circuit Status Screen (Switch Panel,) which also displays the status of the RPC's eight switched circuits.

6.1.1. The Circuit Status Screen - Web Browser Interface

When you login to the RPC command mode using the Web Browser Interface, the first screen that is displayed is the Circuit Status Screen (or "Switch Panel".) The Circuit Status Screen (Figure 6.1) lists the current On/Off status of the RPC's Switched Circuits and includes a series of "radio buttons" which are used to control switching and rebooting of the circuits.

To invoke commands or view circuit status via the Web Browser Interface, proceed as follows:

1. Access the RPC Command Mode as described in Section 5.2.1.
2. When the Circuit Status Screen (Figure 6.1) appears, note that the screen includes a status field and On/Off/Boot controls for each of the RPC's Switched DC Circuits.

Notes:

- When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.3.3.2.
- Users who login to command mode using a Circuit (User) Password, will only be allowed to issue commands to the circuits allowed by that password.

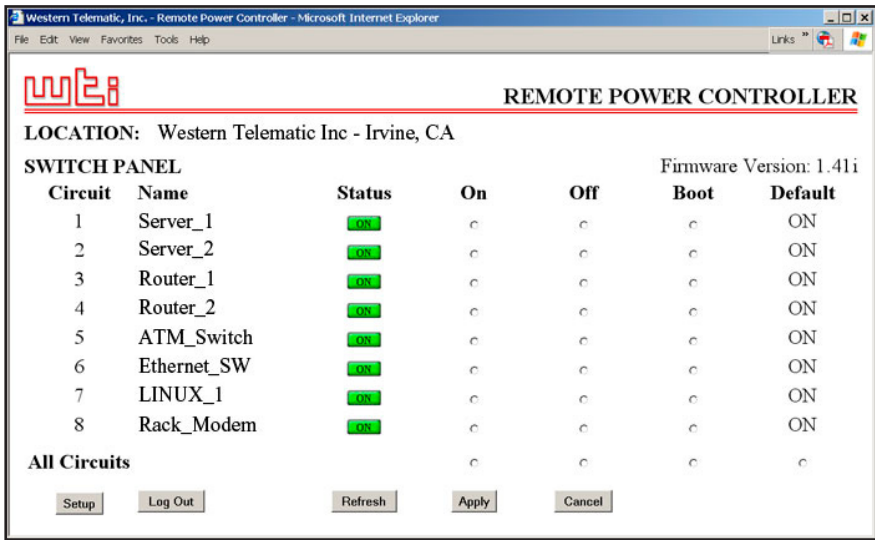


Figure 6.1: Circuit Status Menu - Web Browser Interface (Sample Values Shown)

3. **Switching Circuits On:** Click the "On" radio button next to the desired circuit(s), then click "Apply". To switch all circuits On, click the "On" button in the "All Circuits" row, then click "Apply."
4. **Switching Circuits Off:** Click the "Off" radio button next to the desired circuit(s), and then click "Apply". To switch all circuits Off, click the "Off" button in the "All Circuits" row, and then click "Apply."
5. **Reboot Cycles:** Click the "Boot" radio button next to the desired circuit(s), and then click the "Apply" button. To reboot all circuits, click the "Boot" button in the "All Circuits" row, and then click "Apply."
6. **Set Circuits to Power Up Defaults:** To set all circuits to their user-defined Power-Up Default On/Off status, click the "Default" button in the "All Circuits" row and then click "Apply." Note that in order for this feature to function properly, Power Up Default values for each circuit must first be defined as described in Section 5.3.3.

When each switching, default or reboot command is invoked, the RPC will display a screen which indicates that a switching operation is in progress, then return to the Circuit Status screen when the command is complete. At that time, the Status Screen will list the updated On/Off status of each circuit.


```

Remote Power Controller v1.41i Site ID: (undefined)

```

CKT	Name	Password	Status	Boot/Seq. Delay	Default
1	(undefined)	(undefined)	ON	0.5 Secs	ON
2	(undefined)	(undefined)	ON	0.5 Secs	ON
3	(undefined)	(undefined)	ON	0.5 Secs	ON
4	(undefined)	(undefined)	ON	0.5 Secs	ON
5	(undefined)	(undefined)	ON	0.5 Secs	ON
6	(undefined)	(undefined)	ON	0.5 Secs	ON
7	(undefined)	(undefined)	ON	0.5 Secs	ON
8	(undefined)	(undefined)	ON	0.5 Secs	ON

```

"/H" for help.
RPC>

```

Figure 6.2: Circuit Status Screen - Text Interface (Sample Values Shown)

6.2. Operation via the Text Interface

When using the Text Interface, all switching functions are performed by invoking simple, ASCII commands. ASCII commands are also used to display status screens and to log out of command mode. The Text Interface includes a Help Menu, which summarizes all available RPC commands. To display the Text Interface Help Menu (Figure 6.3), type `/H` and press **[Enter]**.

6.2.1. The Circuit Status Screen - Text Interface

When you login to the RPC command mode using the Text Interface, the first screen displayed after login is the Circuit Status Screen. The Circuit Status Screen (Figure 6.2) lists the current status of the RPC's Switched DC Circuits and displays the firmware version and currently defined Site I.D. Message.

Normally, the Circuit Status Screen will also be redisplayed each time a command is successfully executed. Note however, that if desired, the Automated Mode (See Section 6.4) can be enabled to suppress the display of the Circuit Status Screen after each command.

```

Remote Power Controller v1.41i Site ID: (undefined)

Display
/H      Display Help Screen
/S      Display Circuit Status
/SN     Display Network Status

Control
/D      Set Circuits to Default
/Boot <n> Boot Circuit n
/On <n>  Turn On Circuit n
/Off <n> Turn Off Circuit n
/X      Exit/Disconnect

Configuration
/G      View/Set General Parameters
/P [n]  View/Set Circuit Parameters
/C      View/Set Serial Parameters
/N      View/Set Network Parameters
/T      View/set Telnet Parameters
/W      View/Set Web Server
/E      Save Parameters
/R      Recall Parameters
/DL     Download Parameters to File

Utilities
/I      Reset Network Interface
/U      Upgrade Firmware

+-----+
| [n] = optional CKT name or number |
| <n> = required CKT name or number |
| n+n or n n = CKT n and CKT n    |
| n:n = CKT n through CKT n       |
| * = all CKTs                     |
| ,y = bypass "Sure? (y/n)"        |
+-----+

RPC>
    
```

Figure 6.3: The RPC Help Screen - Text Interface

6.2.2. Switching and Reboot Commands - Text Interface

These commands can Boot or toggle the RPC's switched circuits. Circuits may be specified by name or number.

Notes:

- Wait for the "RPC>" prompt to appear before entering additional commands. The prompt will not reappear until the previous command is complete.
- Commands are not case sensitive. All commands are invoked by pressing **[Enter]**.
- Users who login to command mode using a Circuit password, will only be allowed to issue commands to the circuits allowed by that password.
- If command confirmation is enabled, the RPC will display the Status Screen after switching commands are successfully completed.
- When switching and reboot operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.3.3.2.

To Switch Circuits On or Off, initiate a boot cycle, or set circuits to Power Up Default values, proceed as follows:

1. **Switch Circuit(s) On:** To power-on a circuit, type **/ON n** and press **[Enter]**. Where "n" is the number or name of the desired circuit.
For example:

/ON 1 or /ON ROUTER

2. **Switch Circuit(s) Off:** To power-off a circuit, type **/OFF n** and press **[Enter]**. Where "n" is the number or name of the desired circuit. Note that the **" /OFF"** command can also be entered as **" /OF"**. For example:

/OFF 2 or /OF ROUTER

3. **Boot Circuit(s):** To initiate a boot cycle, type **/BOOT n** and press **[Enter]**. Where "n" is a the number or name of the desired circuit. Note that the **" /BOOT"** command can also be entered as **" /BO"**. For example:

/BOOT 1 or /BO ATMSWTCH

4. **Set Circuits to Power Up Defaults:** To set each circuit to it's user defined Power-Up Default On/Off status, type **/D** and press **[Enter]**. Circuits will be set to their default On/Off status, which is defined using the Circuit Parameters Menu as described in Section 5.3.3.

Notes:

- When you have accessed command mode using the System Password, the Default command will be applied to all eight RPC circuits.
 - When you ave accessed command mode using a Circuit (User) Password, the Default command will only be applied to the circuits permitted by the password.
5. **Suppress Command Confirmation Prompt:** To execute a switching command without displaying the "Sure?" prompt, include the **", Y"** option at the end of the command line. For example:

/ON ROUTER, Y or /BOOT 2, Y

6.2.3. Applying Commands to Several Circuits - Text Interface

As described below, switching commands can be applied to only one switched DC circuit, or to an assortment of circuits.

Note: When switching operations are initiated, Boot/Sequence Delay times will be applied as described in Section 5.3.3.2.

1. **Several Circuits:** To apply a switching command to several circuits, enter the numbers or names for the circuits, separated by a "plus sign" (+). For example to switch circuits 1, 3, and 4 Off, enter the following:

`/OFF 1+3+4 [Enter]`

2. **Range of Circuits:** To apply a command to a range of RPC circuits, enter the number for the circuits that mark the beginning and end of the range, separated by a colon. For example, to switch circuits 1 through 3 On, enter the following:

`/ON 1 : 3 [Enter]`

4. **All Circuits:** To apply a command to all circuits, enter an asterisk in place of the name or number. For example, to Boot all circuits, enter the following:

`/BO * [Enter]`

6.3. Logging Out of Command Mode

When you have finished communicating with the RPC, it is important to always disconnect using either the "Log Out" button (Web Browser Interface) or /X command (Text Interface), rather than simply closing your browser window or communications program.

When you disconnect using the Log Out button or /X command, this ensures that the RPC has completely exited from command mode, and is not waiting for the inactivity timeout period to elapse before allowing additional connections.

6.4. The Automated Mode

The Automated Mode allows the RPC to execute switching commands, without displaying menus or generating response messages. Automated Mode is designed to allow the RPC to be controlled by a device which can generate commands to control power switching functions without human intervention.

When Automated Mode is enabled, the /ON, /OFF, /BOOT, and /X commands are executed without a "Sure?" confirmation prompt and without command response messages; the only reply to these commands is the "RPC>" prompt, which is displayed when the command is complete.

Note that although Automated Mode can be enabled using either the Web Browser Interface or Text Interface, Automated Mode is designed primarily for users who wish to send ASCII commands to the RPC without operator intervention, and therefore does not specifically apply to the Web Browser Interface. When Automated Mode is enabled, the Web Browser Interface can still be used to invoke switching and reboot commands.

Notes:

- When Automated Mode is enabled, all RPC password security functions are disabled, and users are able to access System Level command functions (including the configuration menus) and control circuits without entering a password.
- If you need to enable the Automated Mode, but want to restrict network access to RPC configuration menus, it is recommended to enable and configure the IP Security Function as described in Section 5.3.4.1.

To enable/disable Automated Mode, access the General Parameters menu (see Section 5.3.1.) then set the "Automated Mode" option to "On". When Automated Mode is enabled, RPC functions will change as follows:

1. **All Password Security Suppressed:** When a user attempts to access command mode, the password prompt will not be displayed at either the Console Port or the Network Port. Unless specifically restricted by the IP Security Function, all users will be allowed to access both switching and configuration functions, and all commands will be immediately accepted without the requirement to enter a password.
2. **Status Screen Suppressed:** The status screens will not be automatically displayed after commands are successfully executed. Note however, that the /S command can still be invoked to display the status screen as needed.

3. **"Sure?" Prompt Suppressed:** All commands are executed without prompting for user confirmation.
4. **Some Error Messages Suppressed:** If the [Enter] key is pressed without entering a command, the RPC will not respond with the "Invalid Command" message. Note however, that an error message will still be generated if commands are invoked using invalid formats or arguments.

All other status display and configuration commands will still function as normal.

6.5. Manual Operation

In addition to the command driven functions available via the Web Browser Interface and Text Interface, the RPC's switched circuits can also be toggled On and Off manually. To manually toggle all circuits On or Off, press the Default Button, and hold it down for approximately three seconds.

If desired, the Default Button's manual circuit control ability can also be disabled via the General Parameters menu as described in Section 5.3.1.

7. Saving and Restoring Configuration Parameters

After the RPC-4850-8N has been properly configured, parameters can be downloaded and saved as an ASCII text file on your local or remote PC. Later, if the configuration is accidentally altered, the file with the saved parameters can be uploaded to automatically reconfigure the unit without the need to manually assign each parameter.

Saved parameters can also be uploaded to other RPC units. This allows rapid set-up when several units will be configured with the same parameters.

The "Save Parameters" procedure can be performed from any terminal emulation program (e.g. ProComm, Crosstalk, Hyperterminal, etc.), which allows downloading of ASCII files.

Note: Although this function is only available via the Text Interface, parameters that are defined via the Web Browser Interface will also be sent to the ASCII file.

7.1. Sending Parameters to a File

1. Start your communications program and access the RPC command mode using the System Password.
2. When the RPC command prompt appears, type **/DL** and press **[Enter]**. The RPC will prompt you to prepare your communications program. Set up your communications program to receive an ASCII download, and specify a name for the file that will receive the saved parameters (e.g. RPC.PAR).
3. When the communications program is ready to receive the file, return to the RPC command mode, and press **[Enter]** to proceed.
4. The RPC will send a series of ASCII command lines which specify the currently selected RPC parameters.

7.2. Restoring Saved Parameters

This Section describes the procedure for using your communications program to send saved parameters to the RPC.

Note: Parameters saved to an ASCII file can only be restored via the Text Interface. This procedure cannot be performed via the Web Browser Interface.

1. Start your communications program and access the RPC command mode via the Text Interface as described in Section 5.2.2.
2. If the Password Prompt is displayed, key in your System Password and press **[Enter]**.
3. Configure your communications program to upload an ASCII text file.
4. Upload the file with the saved parameters. If necessary, key in the file name and directory path.
5. When the upload is complete, make certain to terminate the communications program's upload mode.

Note:

- The current On/Off status of each RPC circuit will not be saved or restored.
- When the configuration file is sent to the RPC via telnet, the unit's IP Address, Subnet Mask, and Gateway Address will not be changed until after you exit from command mode.

At this point, saved parameters should have been restored to the RPC unit. Check the Circuit Status Screen, General Parameters Menu, Circuit Parameters Menu and Network Parameters Menu to make certain that saved parameters have been accurately restored.

8. Upgrading the RPC Firmware

When new, improved versions of the RPC-4850-8N firmware become available, the "Upgrade Firmware" function can be used to update the unit. Updates can be installed via the Console Port or Network Port.

Notes:

- The upgrade procedure can only be performed via the Text Interface.
 - All other network ports will be disabled during the firmware upgrade procedure.
 - When the upgrade procedure is complete, all parameters will be set to their default states. Therefore, it is recommended to save RPC configuration parameters to an ASCII file (as described in Section 7) before beginning this upgrade procedure.
1. Obtain the update file. Firmware modifications can either be mailed to the customer on a CDR, or downloaded from WTI. Place the upgrade CDR in your disk drive or copy the file to your hard drive.
 2. Access the RPC command mode via the Text Interface. When the password prompt is displayed, key in the System Level Password.
 3. When the command prompt appears, type `/U` and press **[Enter]**. The RPC will display a screen which offers the following options:
 - 1. Upgrade Sector 0
 - 2. Upgrade Sectors 1 - 4
 - 3. Upgrade Sectors 5 - 7
 - 4. Abort Upgrade

Note: Instructions regarding the proper Sector option will be supplied when upgrades become available.

Select the Sector Option indicated for the upgrade and press **[Enter]**, or type **4** **[Enter]** to abort the upgrade procedure.

4. Set your communication program for ASCII Mode, then use the program's "Send File" function to transfer the upgrade file to the RPC. Select ASCII format, then specify the filename and directory location where the firmware upgrade file resides.
5. If the upload is successful, the RPC will load the upgrade firmware into memory, and then reboot itself.

Note: If you are performing the upgrade procedure via the Network Port, the RPC will break the network connection when the system is reinitialized. However, the RPC will retain the current settings for the IP Address, the Telnet Port Number, Web Server Port Number and Console Port Mode and Baud Rate.

6. **Incomplete Upload:** If the upload is interrupted, times-out, or if the update file becomes corrupted during transfer, the RPC will display a screen which asks for confirmation before proceeding. To proceed, type **1** and press **[Enter]**, then return to Step 4 above to retry the upload, or press **[Esc]** to reboot the RPC unit.
7. **Recovery Mode:** In the rare event that the RPC operating system becomes corrupted during installation, front panel indicators will blink, and the unit will automatically switch to Recovery Mode. If the unit switches to Recovery Mode, first access the RPC command mode to reset the Console Port to 9600 bps, Eight Data Bits, No Parity, One Stop Bit, and then return to step 3 above and repeat the upload procedure.

When firmware upgrades are available, WTI will provide the necessary files via download or mailed CDR. At that time, an updated Users Guide or addendum will also be available.

A. Interface Description

A.1. Serial Console / RS232 Port Interface

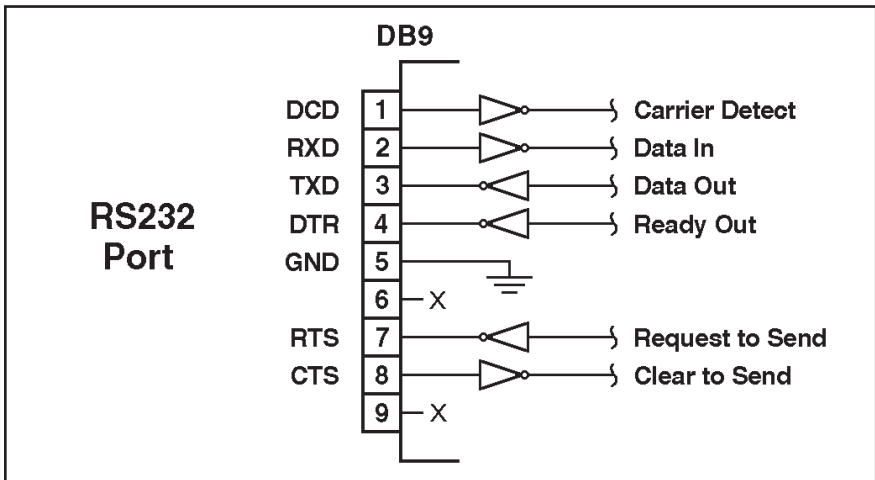


Figure A.1: Console Port Interface

B. Specifications

Power Input / Output:

- **Voltage:** -48 VDC
- **DC Inputs:** Two (2); Bus A and/or Bus B, 50-Amps Maximum per Bus.
 - **Connector:** Terminal Block; #10 Screws
- **DC Output Circuits:** Eight (8)
 - **Connectors:** Terminal Block, #8 Screws
 - **Load:** 15 Amps Max per Circuit
(Total for Circuits One through Eight not to exceed 50 Amps.)

Control Ports:

- **Network Port:** Ethernet, 10Base-T
- **Console / Modem Port:** DB9M, RS232C, DTE
- **RS232 Coding:** Serial ASCII, 7/8 Bits, No Parity, 300 bps - 38.4 Kbps.

Physical / Environmental:

- **LED Indicators:** ON, RDY, RXD, Circuit On (1 - 8)
- **Size:**
 - **Height:** 3.5" (8.9 cm) (2 RU)
 - **Width:** 19.0" (48.3 cm) Standard Rack
 - **Depth:** 9.5" (24.1 cm)
- **Shipping Weight:** 13 Lbs. (5.9 Kg)
- **Operating Temperature:** 32°F to 149°F (0°C to 65°C)
- **Humidity:** 10 - 90% RH

C. Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST/PDT, Monday through Friday. When calling, please be prepared to give the name and model of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

WTI Customer Service
5 Sterling
Irvine, California 92618

Toll Free Service Line: 1-888-280-7227

Local Phone: (949) 586-9950

Service Fax: (949) 457-8138

Email: service@wti.com

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WTI Part Number: 13532 Rev. A

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