Series 5000
ADSL Modem / Router

Quick Start Guide

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MODEL 5100

STS   SIG

PWR   DSL

LAN 1   LAN 2   SERIAL 1

CYBERTEC

Documentation Control

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More information about Cybertec can be found at the following Internet address: http://www.cybertec.com.au

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1 Introduction

The Cybertec Series 5000 is an ADSL Modem / Router capable of data rates up to 24Mbps download and up to 3 Mbps upload. The Series 5000 features include stateful inspection firewall and virtual private networks for security, dynamic and static routing, network management and event reporting.

This guide will provide an overview of the features and interfaces of the Series 5000. Installation of the unit and connection to the phone line will be described as well the configuration of the unit for a standard Internet connection. Further information can be obtained from the Series 5000 User Manual.

Note: The guide assumes that the configuration of the Series 5000 Modem/Router is in the factory default state. If the modem has been previously configured it may be necessary to perform a configuration reset to return the the configuration to the default state, prior to configuring the device. The procedure to perform a configuration reset is described is Section 4.5.

2 Safety

Please observe the general safety precautions outlined in this manual during all phases of operation and service of the Series 5000 Modem/Router. If you do not comply with these precautions or with specific safety warnings contained elsewhere in this manual or on the product itself, you will violate the standards of design, manufacture, and intended use of the product. Cybertec does not assume any liability for failure to comply with these precautions.

Read this manual completely and make sure it is understood fully before commencing installation. Check that the intended application does not exceed the safe operating specifications for this unit. This unit should only be installed by qualified personnel. The power supply wiring must be sufficiently fused, and if necessary it must be possible to manually disconnect the unit from the power supply.

3 Care Recommendations

To maintain correct operation of unit and to fulfill the warranty obligations the following care recommendations should be followed. This unit must not be operated with the covers removed. Do not attempt to disassemble the unit, no user serviceable parts are contained within the unit. Do not drop, knock or shake the unit, rough handling may cause damage to internal circuit boards. Do not use harsh chemicals, cleaning solvents or strong detergents to clean the unit. Do not expose the unit to any kind of liquids (rain, beverages, etc), the unit is not waterproof. Keep the unit within the specified humidity levels. Do not use or store the unit in dusty, dirty areas, connectors as well as other mechanical part may be damaged.

4 Indicators and Interfaces

This section describes the indicators and interfaces of the Series 5000 Modem / Router.

4.1 Model 5100

The Ethernet ports, serial port and indicators are located on the front panel as show in figure 1. The rear panel contains the connectors for power, and ADSL line, as shown in figure 2.
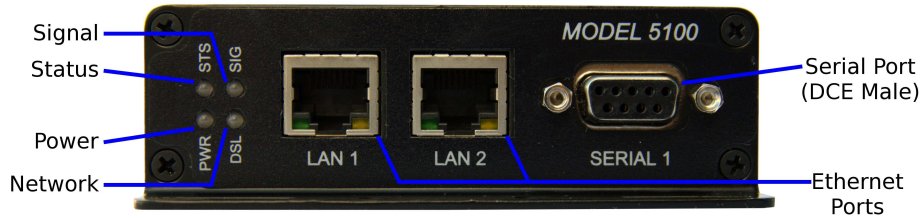

Figure 1: Model 5100 front panel.

Figure 2: Model 5100 rear panel.

4.2 Indicators

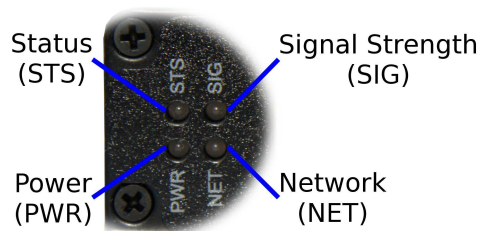The Series 5000 has 4 LED indicators on the front panel of the unit, refer to Figure 3 for the locations.

Figure 3: Front panel indicators

4.2.1 Power Indicator

The power indicator will light green when power is applied. If the indicator does not light when power is applied check the power supply voltage and connections, refer to Section 5.4 for details.

4.2.2 Network Indicator

The network indicator reports the status of the connection to the network. When powered up the indicator will be off, the indicator will then flash green whilst the unit searches for a network, once connected to the network the indicator will light green. The possible states are shown in Table 1.

Indicator	Description
Off	Not ready
green flashing	Searching for network
green (solid)	Locked to network

Table 1: Network Indicator.

4.2.3 Status Indicator

The status indicator reports the health of the unit. In normal operation the indicator will be green, if a fault is detected either at boot-up or during normal operation the indicator will light red. When the unit is first switched on or is reset the indicator will first light red, then flash red in sequence with the Signal Strength Indicator (refer to section 4.2.4), this is normal behaviour during boot-up and does not indicate a fault.

Indicator	Boot-up behaviour	Normal operation
Red	No Fault	Fault
Red Flashing	No Fault	Fault
Green	N/A	No Fault

Table 2: Status Indicator.

4.2.4 Signal Strength Indicator

The Signal Strength Indicator reports on the state of the ADSL network connection. The ADSL sync speed is indicated by the number of green flashes of the indicator within an indicator period. Each indicator green flash will be followed by a short off time, an extended off time indicates the end of the indicator period. So an indicator period starts with a green flash followed by up to 5 additional flashes, then an extended off time, the cycle will then repeat. The maximum number of flashes in an indicator period is 6.

The indicator may be red during the extended off time following the green flashes, this indicates an ADSL network connection fault. The indicator will solid red if an ADSL connection cannot be established.

When the unit is first switched on, or is reset the indicator will first light red, then flash red in sequence with the Status Indicator (refer to section 4.2.3), this is normal behaviour during boot-up and does not indicate a fault.

Indicator	Description
Green Flashing	Indication of ADSL line sync speed
Green flashing then Red	ADSL Network connection fault
Red	Initialisation or ADSL network connection fault

Table 3: Signal Strength Indicator.

4.3 Ethernet

The Ethernet ports are on the front of the unit and are marked LAN 1 and LAN 2, each port has a LED indicating the connection speed and a LED indicating activity as shown in Figure 4. Both ports are capable of auto-negotiation, meaning cross-over cables are not required. The Ethernet ports are switched, allowing more than one Ethernet device to be connected to the unit at one time.
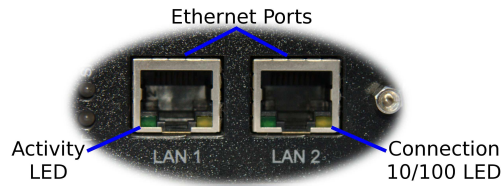

Figure 4: Ethernet ports.

4.4 Modem / DCE Serial Port

The Series 5000 has one Data Communications Equipment (DCE) serial port. The Modem / DCE Serial port is an RS232 level serial port, accessed via the front panel DB9 female connector. Refer to Figure 5 and Table 4 for the connections to this port.
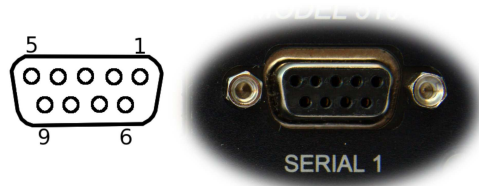
Figure 5: Modem / DCE Serial port.

Pin	Name	Direction	Description
1	DCD	Out	Data Carrier Detect
2	RxD	Out	Receive Data
3	TxD	In	Transmit Data
4	DTR	In	Data Terminal Ready
5	SG	-	Signal Ground
6	DSR	Out	Data Set Ready
7	RTS	IN	Request to Send
8	CTS	Out	Clear to Send
9	RI	Out	Ring Indicator

Table 4: Modem / DCE Serial port connections.

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4.5   Factory Default Reset Switch

The factory default reset switch is used to restore the configuration of the Series 5000 to the factory defaults. The switch is accessed through a small hole on the rear of the unit adjacent to the power connector, refer to Figure 6. To reset the configuration first power down the unit then using a suitable tool depress the factory default reset switch, restore power to the unit ensuring the switch remains depressed for approximately 5 seconds after power is applied. The status and signal strength indicators will flash red then green to indicate the configuration has been reset. The modem will re-boot as normal with the factory default settings.
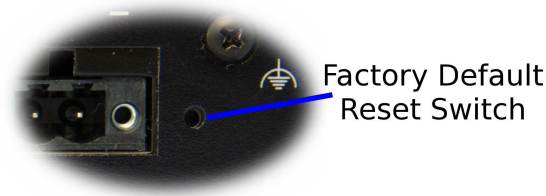

Figure 6: Factory Default Switch access.

⚠️ Using the Factory Default Reset Switch will erase all existing configuration settings and restore the factory default settings. This includes the network connection profile settings APN, user name and password.

5 Installation

The steps required to install the Series 5000 Modem / Router are described.

⚠️ The Series 5000 Modem/Router should be mounted in a clean and dry location, protected from water, excessive dust, corrosive fumes, extremes of temperature and direct sunlight. The unit uses convection cooling, allow sufficient ventilation to ensure adequate cooling of the modem.

5.1 Panel Mounting

The Series 5000 Modem/Router includes integrated mounting flanges and can be attached to a panel or tray by means of screws, using the slots shown in figure 7.

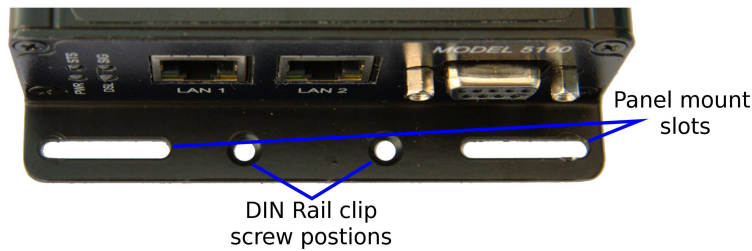⚠️ Do not drill or file the mounting flanges as this may damage the unit and will void the warranty.

Figure 7: Mounting flange.

5.2 DIN Rail Mounting

The Series 5000 can be DIN rail mounted, using the DIN rail mounting kit supplied. The DIN rail clips should be screwed to the mounting flanges as shown in figure 8. The DIN rail clips can then be used to attach the Series 5000 to a DIN rail.
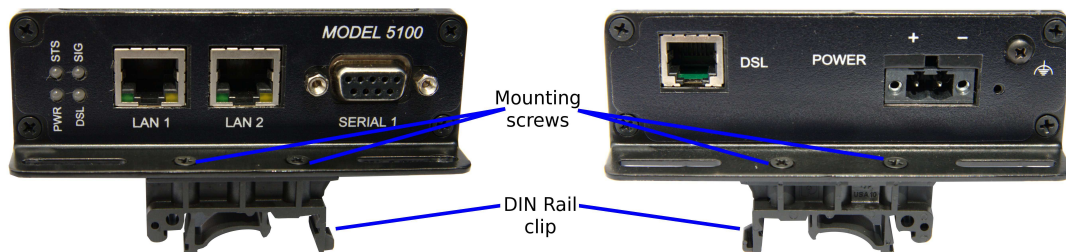

Figure 8: DIN Rail mounting.

5.3 ADSL Line

The ADSL line connection is an RJ12 connector located on the rear panel of the unit marked "DSL". Use the supplied cable to connect the modem to an ADSL capable connection.
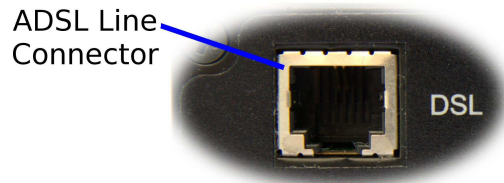

Figure 9: Antenna connected to SMA connector.

5.4 Power Supply

The Series 5000 requires a DC power source in the voltage range of +10VDC to +60VDC. The power connector accepts a screw terminal plug which should be wired as shown in figure 10 and plugged into the power connector on the rear of the unit.
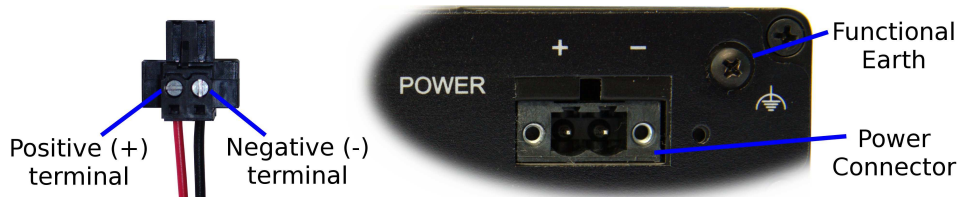

Figure 10: Power plug wiring, Power connector and Functional Earth

The Series 5000 is designed to self protect from permanent damage if the voltage exceeds 60VDC or if reverse polarity is applied. In the case of either event the modem may need to be returned for service. The Series 5000 may be damaged if there is any potential difference between the Functional Earth, RS232 signal ground, power (-) input. Before connecting any wiring, ensure all components are earthed to a common ground point. An external isolator will be required if a positive earth power supply is used.

5.5 Functional Earth

This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the functional earth is connected to earth ground during normal use. Figure 10 shows the location of the Functional earth termination point.

6 Accessing and Using the Web Interface

All configuration of the Series 5000 modem is performed via the web interface. In order to view the web pages a computer with a fixed IP address, on the same sub-net as the Series 5000 Modem/Router, will need to be connected to one of the LAN ports.

- The default IP settings of the Series 5000 Modem / Router are:

  ○ IP Address: 10.10.10.10
  ○ Netmask: 255.255.255.0

- The recommended IP settings for the PC used to configure the Series 5000 Modem / Router:

  ○ IP Address: 10.10.10.20
  ○ Netmask: 255.255.255.0
  ○ Default Gateway: 10.10.10.10
  ○ Primary DNS: 10.10.10.10

⚠ Although it is possible to connect the Series 5000 Modem directly to a Local Area Network (LAN) it is recommend that the network configuration as described in this section be performed prior to doing so.

6.1 Windows PC Network Settings

The following describes how to configure the network settings of a Windows XP PC with the IP settings listed above, so that it can access the Series 5000 Modem/Router.

⚠ This procedure will change the network settings of the Windows PC, if the PC is connected to a network the connection should be removed before performing the changes. To restore the network settings of the PC record the current settings at Step 6 in the following procedure, then when the Series 5000 Modem has been configured following the procedure again and use the recorded values at Step 6.

1. Open the Control Panel by selecting *Start ▷ Control Panel.*

2. Double click the *Network Connections* icon.

3. Double click the Network icon.

4. The *Local Area Connection Status* dialog box will be displayed, as shown on the left of Figure 11, click the *Properties* button.
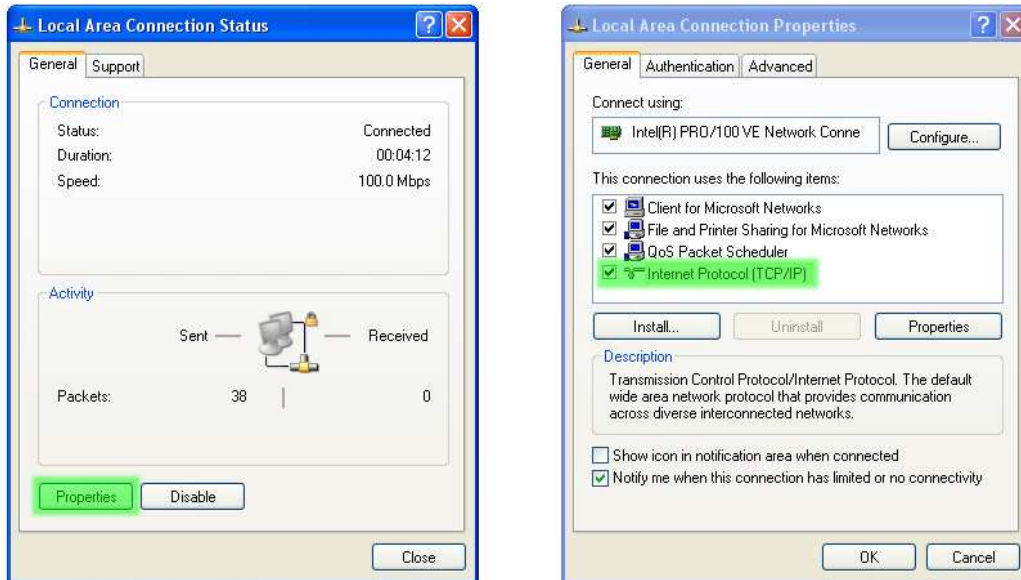
Figure 11: Local Area Connection Status and Properties dialog boxes.

5. The Local Area Connection Properties dialog box, as shown on the right of Figure 11, will be displayed. Click on *Internet Protocol (TCP/IP)* to highlight it and then click the *Properties* button.

6. The Internet Protocol (TCP/IP) Properties dialog box, change the settings to match those shown in Figure 12, and then click "OK"
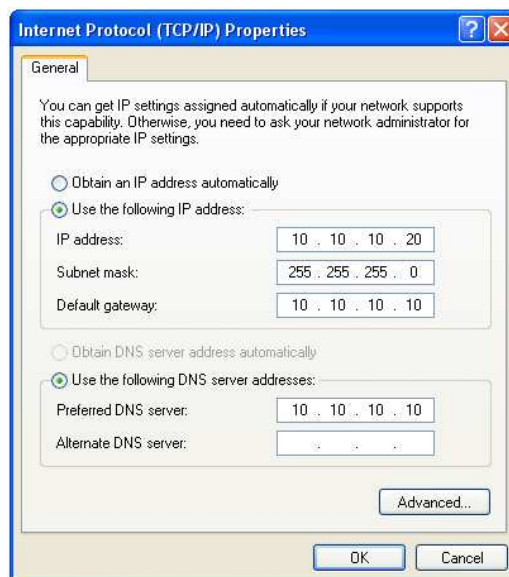

Figure 12: Internet Protocol (TCP/IP) Properties dialog box showing the recommended IP settings.

Note: If a web browser was open prior to making the network changes, then it will need to closed and re-started before attempting to connect to the Series 5000 Modem/Router.

6.2 Accessing the Series 5000 Web Server

- Open a web browser on the PC and browse to 10.10.10.10 (the default Series 5000, IP address) .

- A login box similar to Figure 13 will pop up. If the box fails to display, re-check the cable connections to the unit and the IP address settings of the PC.
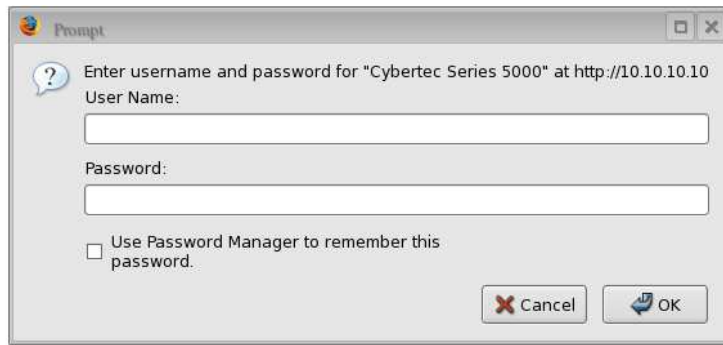
Figure 13: Web login box

- Enter the following login details:

    ○ User Name: admin

    ○ Password: admin

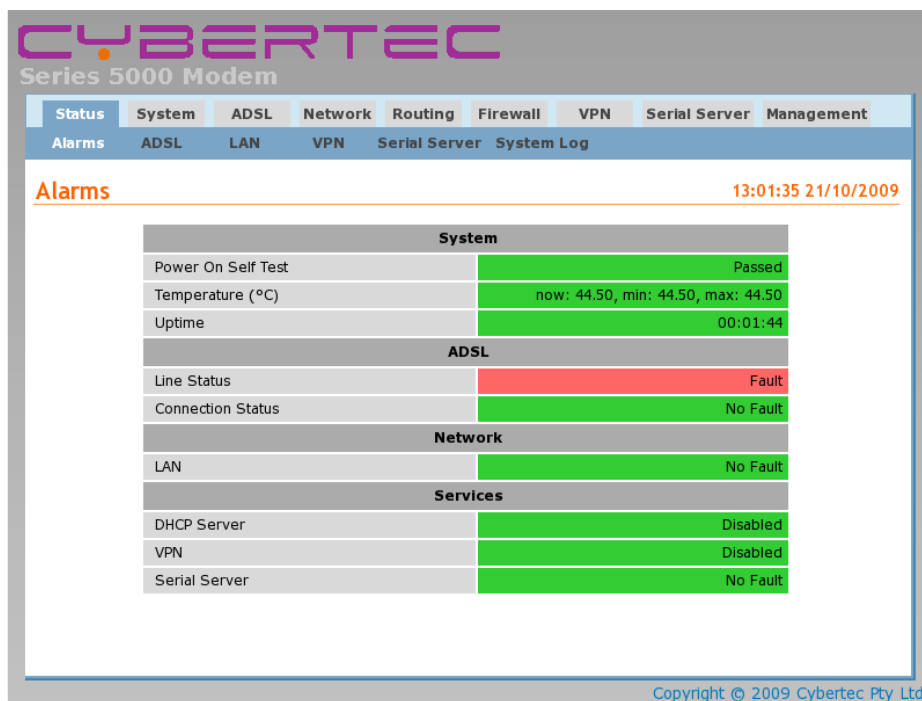- The Status summary page will be displayed, it will be similar to Figure 14.

Figure 14: Status summary

Note: If the unit is not yet configured it is likely that the Line Status and Connection Status will indicate a fault condition.

7 Basic Configuration

The section explains the procedure for configuring the Series 5000 to establish an ADSL connection. For details on more advanced functionality configuration refer to the Series 5000 User Manual.

7.1 Configure the ADSL interface

To access the configuration page for the ADSL interface, click on the *ADSL* tab of the main menu. The ADSL Line configuration page will be displayed as shown in Figure 15.

Figure 15: ADSL Line configuration.

7.1.1 ADSL Line Configuration

The "ADSL Line Configuration" section contains the settings for the operational mode of the modem. The settings will depend on the service provider, in general the default settings are adequate.

7.1.2 Adding an ADSL Connection

To access the ADSL connection settings click on the "Connection" tab. The screen shown in Figure 16 will be displayed. The page shows a summary of the ADSL connections. The Series 5000 allows multiple ADSL connections to be configured although for most applications only one connection is required.

Figure 16: ADSL connection summary.

To add an ADSL connection click the "Add new profile" button, the first of 3 configuration pages will be displayed. The values required will depend on the service provider.

The first page is for general and ATM settings and is shown in Figure 17. The label is used to described the connection and is for reference only. The Enabled checkbox should be checked to enable the connection. The Virtual Path Identify (VPI), Virtual Circuit Identifier (VCI) values and the service category type are service provider dependent. The default values will work with most Australian service providers. Once the values have been entered click Next.

Figure 17: New connection - General and ATM settings

The second page is for the connection settings and is shown in Figure 18. The connection type and encapsulation will be provided by the service provider. Usually the connection type is PPP over Ethernet (PPPoE) or PPP over ATM (PPPoA) and the encapsulation is LLC. Click Next to continue.

Figure 18: New connection - Connection settings

The third pages for the Point to Point Protocol (PPP) settings and is shown in Figure 19. The username and password will be provided by the service provider when the account is established. In order to enter a password click the check-box marked New, the password can now be entered in the text field. The password is visible as it is being typed so that it can be checked for errors prior to being set. Once set the password will no longer be visible. The default values are usually adequate for the other settings.

Figure 19: New connection - PPP settings

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To complete the connection click Submit. The ADSL connection page will again be displayed with the new connection listed as shown in Figure 20.

Figure 20: Connection summary with new connection shown

7.1.3   Connection Status

To check the status of the connection select "Status" from the top level menu and then select "ADSL" from the second level menu. The ADSL status page will be displayed. The status of the connection will change as the modem connects to the network, when connected the status will indicate "Showtime". To see the value changing the page will need to be refreshed. Once connected the ADSL status page will look similar to that shown in Figure 21.

Figure 21: ADSL Status showing modem in the connected state.

During initialisation the status may be reported as "Error" while the connection is being established. If the error persists check the profile settings have been entered correctly. Refer to Section 7.1.2.

With the ADSL connection established the Status Alarms page should now indicate no faults as shown in Figure 22.

Figure 22: Status Alarms page.

7.2 Configure the LAN interface and DHCP Server

To access the configuration page for the LAN interface and DHCP Server, select Interfaces from the top level menu the LAN interface screen similar to that shown in Figure 23 will be shown.

Figure 23: LAN Interface configuration

7.2.1 Setting the IP Address

If it is desired to change the IP address of the LAN port, follow the steps below:

- Enter the new IP address and netmask in the *Interface Configuration* table.

- Click *Update* to set the changes. Once the changes have been set, the IP address of the Series 1000 Modem will change. Enter the new address in the browser on the PC. It will be necessary to login again, following the procedure described in the previous section.

7.2.2 Enabling DHCP

The DHCP server allows clients on the local network to be automatically allocated IP addresses from the Series 5000. DHCP also provides the clients with network settings such as default route and location of DNS servers.

By default the DHCP server is disabled however it has been configured to serve IP addresses in the range 10.10.10.100 through 10.10.10.200, and the Default and Maximum lease times have been set to 1440 minutes. So if these values are consistent with the network to which the Series 5000 is connected, then the DHCP server can be enabled by setting the Enabled field to 'Yes' and clicking the Update button.

If the standard settings are not applicable for the connected network, then refer to Figure 24 and follow the steps below, to configure the DHCP server:

- Choose a group of available IP addresses on the local network. For example, if the IP address of the Series 5000 is 10.10.10.10 with a netmask of 255.255.255.0, a group chosen could be 10.10.10.100 to 10.10.10.200. This will provide 101 addresses for clients.

- Under the *DHCP Server Configuration* table,

  - Set the *Enabled* option to *Yes*.
  - Enter the first address of the group in the *Start Address* box.
  - Enter the last address of the group in the *End Address* box.
  - Enter a lease time for the Default Lease time.
  - Enter a lease time for the Maximum Lease time.

- Click *Update* to set the changes.

Figure 24: DHCP configuration.

7.3 Configure clients to use the Series 5000

The Series 5000 will act as a gateway for connections destined for the ADSL interface. The default configuration will provide Network Address Translation and firewalling to protect clients on the local network.

To configure clients to use the Series 5000 as their gateway:

- If the clients have a DHCP address allocated by the Series 5000, they will have learned the necessary settings. No further configuration is needed.

- If clients have static IP addresses, set their default route and DNS server to the IP address of the Series 5000.

8   Troubleshooting

The following is a list a potential problems and possible causes. If after the checking through the list a problem persists refer to the Series 5000 User Manual for further information.

8.1   Series 5000 does not start.

- Check the power indicator (Refer to Section 4.2.1) is lit green. If not check the power supply is the correct voltage and the connector is wired correctly. Refer to section 5.4.

- Check the front panel indicators for a fault condition, particularly the Status indicator. Refer to Section 4.2.

8.2   Cannot connect to web pages

- Check the Ethernet cabling between the PC and the Series 5000 and check that the connection LED on the Series 5000 Ethernet port is lit. Refer to Section 4.3.

- Check the IP address settings of the computer have been set correctly. Refer to section 6.

- The IP address of the Series 5000 Modem/Router may have been changed from the default value. If this is the case then:

  ○ Make sure the IP address settings of the computer are correct for the IP address chosen and the correct IP address has been entered in the web browser, or

  ○ If the IP Address of the Series 5000 Modem/Router is not know then a factory reset will reset the IP address to the default value. Refer to section 4.5 for details.

- The password may have been changed from the default, if the new password is not know then a factory reset will set the password to the default. Refer to section 4.5 for details.

8.3   Network Status Fault

Check the ADSL Status page for a list of possible faults.

8.3.1   Network Registration Fault

- Check that the ADSL line has been installed correctly. Refer to Section 5.3.

- Check that the ADSL connection details have been entered correctly. Refer to section 7.1.2.

8.4   Connection Status Fault

8.4.1   Status Disabled

- Check that the Connection State is set to enabled in the connection profile. Refer to Section 7.1.2

- Check the profile settings, Username and password have been set correctly. Refer to section 7.1.2.

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