DSL905E Series

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Version 1.0

Disclaimer Statement

Safety Guidelines

This product is for use only in UL Listed computers.

Adhere to the following safety guidelines when using your unit to reduce the risk of fire, electric shock and injury.

(!) Understand all instructions in the manual. Follow all instruction labels found on the unit.

(!) Except for the power adapter supplied, the unit should not be connected to other adapters/power supplies.

(!) Never spill liquid of any kind on the unit.

(!) Do not place the unit on an unstable stand or table. The unit may drop and become damaged.

(!) Do not expose the unit to direct sunlight.

(!) Do not put any hot devices close to the unit as it may degrade or cause damage to it.

(!) Do not put any heavy object on top of the unit

(!) Do not use liquid cleaners or aerosol cleaners. Use a soft, dry cloth for cleaning.

Contents

Chapter...1

Introducing DSL905E

This section gives a brief introduction of DSL905E features and its
specifications.

Congratulations on your purchase of DSL905E !

ADSL, which stands for **Asymmetric Digital Subscriber Line**, is the latest communication technology that offers faster and uninterrupted Internet access.

DSL905E is an embedded solution that is OS independent. It can be connected to any computer with an Ethernet/Fast Ethernet card or to a Hub/Switch. It has an **Ethernet connection** that allows direct interface to any existing IEEE 802.3 LAN network, providing instant broadband Internet access to LAN networks with minimum hassle.

To ensure the broadest customer reach, DSL905E features multiple data encapsulation formats for DSL transport over ATM PVCs, including the widely supported ADSL protocols **RFC 1483 (MPoA)**, **RFC 1577 (IPoA)** and **RFC 2364 (PPPoA)**.

It supports **multimode** - fully compliant with ANSI T1.143 Issue 2, ITU-T G.992.1 (G.dmt) and G.992.2 (G.Lite) featuring Discrete Multi-tone (DMT) line encoding used by major ADSL manufacturers, further guarantees interoperability with network providers worldwide.

1.1 Documentation

DSL905E Series User Manual **(READ THIS MANUAL FIRST!)**

This user manual is a printed guide that comes with your ADSL package. **Please refer to this manual for setting up and connecting your router.** It also contains the sections on **Frequently Asked Questions** and **Troubleshooting Guide**.

DSL Router Commander Software Manual [1]

The software manual is a softcopy guide that contains information on **DSL Router Commander**, a User Interface (UI) that provides a simple way of configuring your router. A **Glossary** section is also included to describe the terms used in the manual.

For queries or problems encountered, you may refer to the **Frequently Asked Questions** and **Troubleshooting Guide** found in the **User Manual**.

DSL905E Series Technical Manual [1]

The technical manual is a softcopy guide that contains **console commands** and **advanced router configurations** that are mostly intended for experienced users.

For queries or problems encountered, you may refer to the **Frequently Asked Questions** and **Troubleshooting Guide** found in the **User Manual**.

ATMOS Console Commands Reference Manual [1]

The reference manual is a softcopy guide that contains the details of **console commands and its functions**. For any advance configurations, you may refer to it for their descriptions.

1.2 Manuals/UI/Firmware Updates

To ensure that you have the best of the product, continuous efforts are made to improve our software. Our manuals, User Interface (UI) and firmware are being updated as and when required. To make sure that you do not miss out any of our new updates, please visit **http://www.aztech.com/support.htm** for downloads.

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[1] *These manuals are found on your **DSL905E Series CD-ROM** that comes with your ADSL package.*

1.3　Minimum System Requirements

- Pentium® MMX 233MHz (or above) with Ethernet card (installed with TCP/IP Protocol)

- A Serial Port (DSUB-9)

- A CD-ROM Drive

- For Single PC Connection

  - Cross UTP CAT-5 Ethernet cable (direct connection to the router's 10 Base-T Jack)

  For more than 1 PC connections
  Expand using *Ethernet Hub* or *Switch*

  - To connect to the **MDI port** of your Ethernet Hub/Switch, please use **Cross UTP CAT-5 Ethernet cable**.
  - To connect to the **MDIX port** of your Ethernet Hub/Switch, please use **Straight UTP CAT-5 Ethernet cable**.

1.4　Network Connections

1.4.1　Single PC Configuration

1.4.2　More than 1 PC Connections
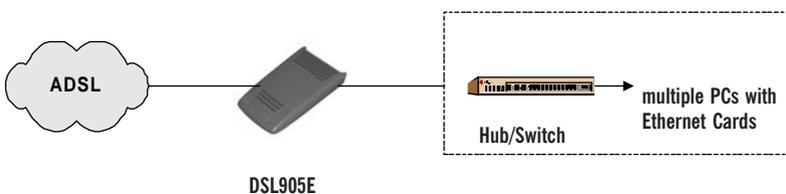
Chapter...2

Before You Begin

This chapter contains information that you need to know before setting up DSL905E. It is important that you go through them.

2.1   Package

Ensure that you have the following items in your router package. For any missing items, please contact your dealer immediately.

DSL905E

DSL905E Series CD-ROM

DSL905E Series User Manual

Power adapter (DC 5V)

Straight CAT-5 UTP Ethernet cable (RJ-45)

Power cable

2 Telephone cable (RJ-11)

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2   *The telephone extension cable used for this router is a UL Listed Communication Circuit Accessory, minimum 26AWG.*

2.2   Overview for DSL905E

2.2.1   Front View

① **Power LED**

Lights up when Power switch (at the rear) is pressed ON.

② **Ethernet Link**

Lights up when the Ethernet cable (from your router to Ethernet Card) is connected.

③ **Ethernet ACT**

Ethernet Activity: Lights up when the Ethernet is transmitting/receiving data.

④ **ADSL Receive LED**

Lights up when the ADSL Line is receiving data.

⑤ **ADSL Transmit LED**

Lights up when the ADSL Line is transmitting data.

⑥ **ADSL Link LED**

Lights up when the ADSL link (from your router to telephone wall socket) is connected.

2.2.2 Rear View
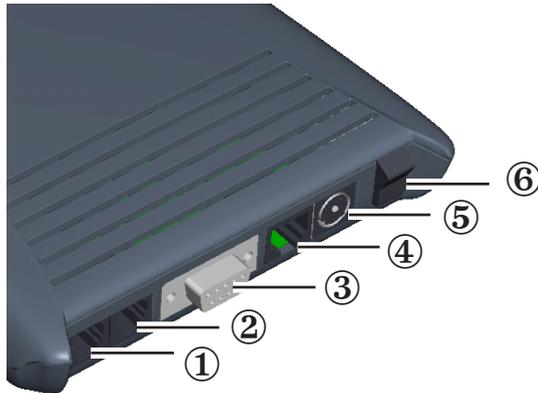
① **TEL**

Telephone jack (RJ-11) to connect to the Telephone Handset.

② **LINE**

Telephone jack (RJ-11) to connect to the telephone wall socket (ADSL Line).

③ **CONSOLE**

9-pin serial port for local network management.

④ **10 BASE-T**

10 Base-T Ethernet jack (RJ-45) to connect to your Ethernet card or Hub/Switch.

⑤ **DC5V**

To connect to the Power Adapter that comes with your package.

⑥ **Switch**

To power on or off the router.
O - indicates OFF position
I - indicates ON position

Chapter...3 ————————

Connecting DSL905E

This chapter contains information on the hardware setup of DSL905E.

Power off your computer or/and any connected devices before connecting your router !

Please note the Ethernet cable types that are to be used for connections.
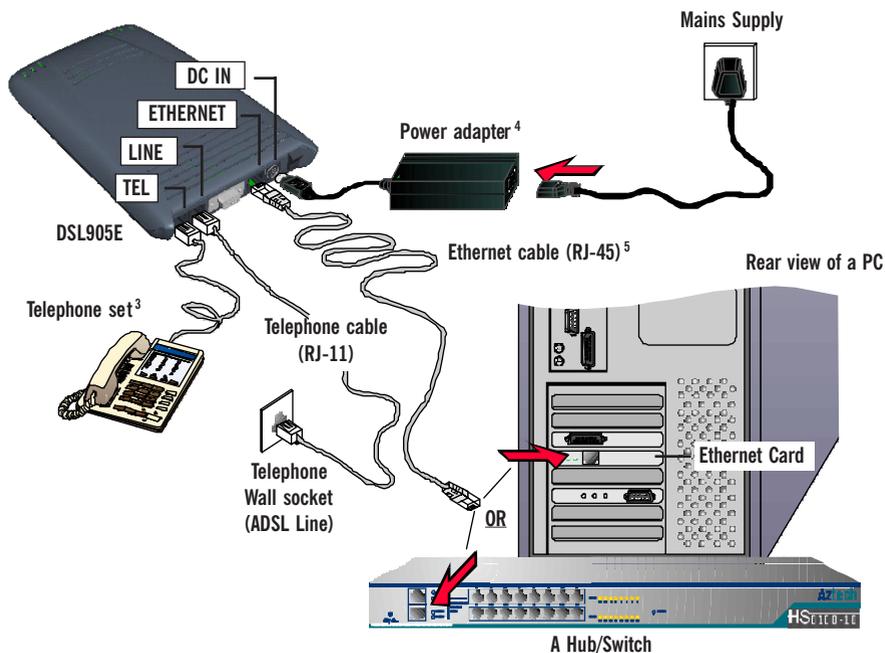
Figure 3-1. DSL905E connections

Carry out your connections as illustrated above.

For single PC connection, connect your Ethernet cable from your router to the Ethernet card on a PC.

For multiple PCs connections, connect your Ethernet cable from your router to a Hub/ Switch. You may then connect your PCs (with Ethernet cards installed) to the Hub/Switch. The number of PCs supported is dependent on the number of ports available in your Hub/ Switch.

Please proceed to the next section to verify the connections.

3   *This optional connection provides easy access to your Telephone set while working near your router.*

4   *Power off your Power Adaptor when the unit is not in use.*

5   *To connect direct to an **Ethernet card**, please use a **Cross** CAT-5 UTP Ethernet cable. To connect to the **MDI port** of your Hub/Switch, please use **Cross** CAT-5 UTP Ethernet cable. If not, you may connect to the **MDIX port** of your Hub/Switch using a **Straight** CAT-5 UTP Ethernet cable.*

3.1 Verifying the Setup Connections

This is to verify the connections you have carried out on your router. Verifications are based on the activity of the corresponding LED.

i)   Power on the Mains Supply and the Power Switch of your router.
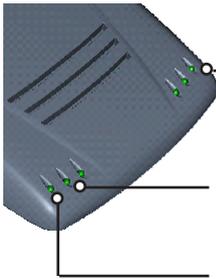
ADSL Link LED

You should see this LED blinks at the initial stage. When the ADSL link is established, the LED will remain lit up.

Ethernet Link LED

You should see this LED lights up.

Power LED

You should see this LED lights up.

If the **LED(s)** does not light up, check that:

a)   the **Mains Supply** is powered on and the **Power switch** on DSL905E is at '**I**' position.

b)   the connections are carried out as described in **Figure 3-1. DSL905E Connections.**

ii)   If you have connected a **Telephone set** to your router, pick up the handset of the Telephone. You should hear the normal dial-tone.

If you do not hear the normal dial-tone of a telephone, check that your telephone cable connection is connected as illustrated in **Figure 3-1. DSL905E Connections**. If your connection is correct, it may be due to a faulty phone cable that you are using. Replace the phone cable.

Upon successful verifications, proceed to the next chapter to configure your Ethernet Card.

Chapter...4

Configuring Your Ethernet Card

You need to configure the Ethernet Card on your PC in order to run DSL Router Commander[6] from your PC.

1. The screen shots and screens information illustrated in this manual serve only as a guide. The exact information you see on your system may vary, depending on your system configurations. For any dissimilarities, follow closely to the instructions as prompted on your PC screen.

2. All IP addresses and Subnet Mask indicated in this manual serve only as examples for your better understanding. You are required to replace these values with those given by your ISP / System Administrator.

6   DSL Router Commander is a user-friendly software that allows you to set, view and modify your router configurations. For details, you may refer to the **DSL Router Commander Software Manual**.

i)   Ensure that your router is powered on.

ii)   From your Windows desktop, right-click on the **Network Neighborhood** icon. Select **Properties**.
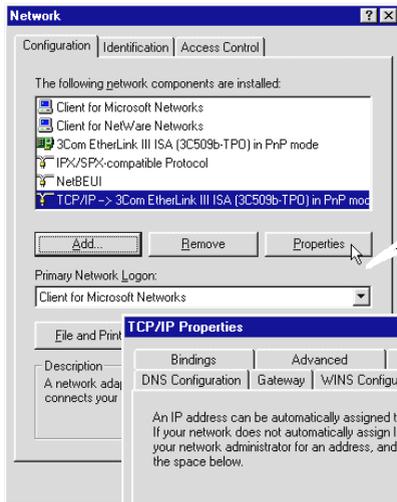
iii)   From the **Configuration** tab, select **TCP/IP-> 3Com EtherLink III ISA [3C509b-TPO] in PnP mode**[7] and click **Properties**.

(If you do not see a TCP/IP networking protocol, re-install your Ethernet card.)
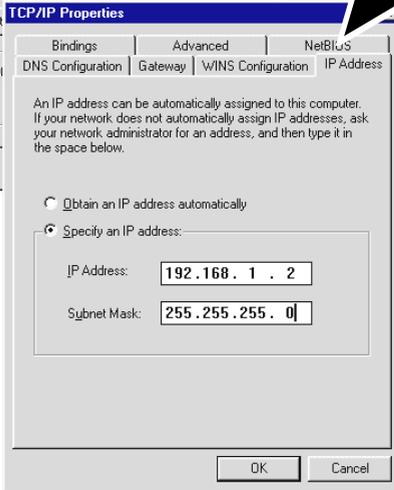
iv)   Select the **IP Address** tab.

Select the option '**Specify an IP address**'.

Enter the **IP Address** and **Subnet Mask** as given by your System Administrator. Click **OK** to save the settings.

When prompted to restart, click **Yes**.

You may now proceed to the next chapter to run the DSLTEST for verifying the setups and links.

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7   *This guide uses **3Com EtherLink III ISA** Ethernet Card as an example. Select the Ethernet Card that is listed in your system.*

Chapter...5

Running DSLTEST

DSLTEST will check both the Ethernet Card connection and configuration, as well as the ADSL line connection.

If the first test failed, the next test will be skipped. Proceed to fix the problem first before running DSLTEST again.

i)   From your DSL905E Series CD-ROM, navigate to **\Tools\DSLTEST**. Double-click on

the file **dsltest.exe** **(DSLTEST)**.

ii)   Click **Test**. The test will commence.
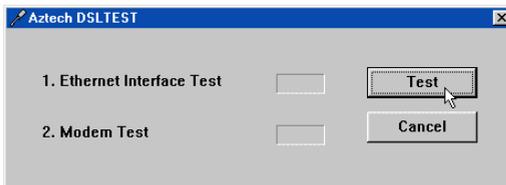
Result	Description
PASS	The test is successful.
FAIL	You will be prompted on the error. Click OK, fix the error and click Test again.
SKIP	The test is not carried out as the previous test has failed.

Ethernet Interface Test:

This will test whether your Ethernet Card is installed and configured properly. Error messages will be prompted to highlight the area of the failure, if any. (You may refer to the **Troubleshooting Guide** for details on the error messages.)

Modem Test:

This is to test the ADSL line connection. This test corresponds to the **ADSL Link LED**. The lighting up of LED and passing of the Modem Test both show successful physical ADSL link. (You may refer to the **Troubleshooting Guide** for details on the error messages.)

Appendix…A

Frequently Asked Questions

This section provides answers to the commonly asked questions on your router.

Why is Asymmetric Digital Subscriber Line (ADSL) called Asymmetric ?

It is called asymmetric because more bandwidth is reserved for receiving data than for sending data. This is useful because many users of the Internet receive much more data than they send.

What are the benefits of ADSL over analog modems ?

Besides the high-speed advantage, ADSL connection is always on. There is no longer a need to log on and off, no more busy signals and no more waiting for the connection to established - it is always there. On top of these, you can use the phone even when the data connection is on. You do not need to switch between surfing the Net and talking over the phone.

Will my router constantly connect near the maximum speed ?

At ADSL speeds, the limitations depend on the performance or load of the Internet Service Provider that you are trying to reach, as well as the line condition specific to your location.

Can I use my router during thunderstorm ?

ADSL routers can be damaged by thunderstorms. Our product warranty does not apply to damage caused by lightning. If your area is frequent in thunderstorms, you are advised to use a surge protector. Certain surge protectors have been reported to reduce download speed, so you are advised to test your speed before and after installation to make sure that it adds no problems to your line.

Do I need to install additional telephone lines in order to use ADSL?

No, you do not need to do so. ADSL and standard voice telephones operate at a different set of frequencies. The difference in frequencies allows both IP (Internet) traffic and voice traffic to co-exist on a same physical phone line.

Will my old PC be fast enough for ADSL?

Yes. But if you start to use the ADSL line to view video-on-demand or other memory and processor hungry functions, you may well decide that your PC is too slow. However, there are still many interesting sites that can be seen and used by slower PCs.

How can I send/receive fax as well as surfing the Internet at the same time ?

To send/receive fax, you may connect your fax machine to the **TEL** jack of your router (same as the way you connect to the telephone set as illustrated in **Chapter 3 - Connecting DSL905E**).

Do I need to use Micro-Filter when using ADSL ?

Your router has a built-in Micro-Filter at the TEL jack. Thus **no** Micro-Filter is required between your Telephone set and the router.

However, if you are sharing the ADSL line with other telephone line extensions, you will need to have a Micro-Filter connected between the other telephone set and the telephone wall socket connecting to it.

How do I verify the link between my Ethernet Card and router ?

To ensure that the communication link between your Ethernet Card and router has been established, you may run the **DSLTEST** as described in **Chapter 5 - Running DSLTEST**. A **PASS** at the Ethernet Interface Test will mean that the link between your Ethernet Card and router has been established.
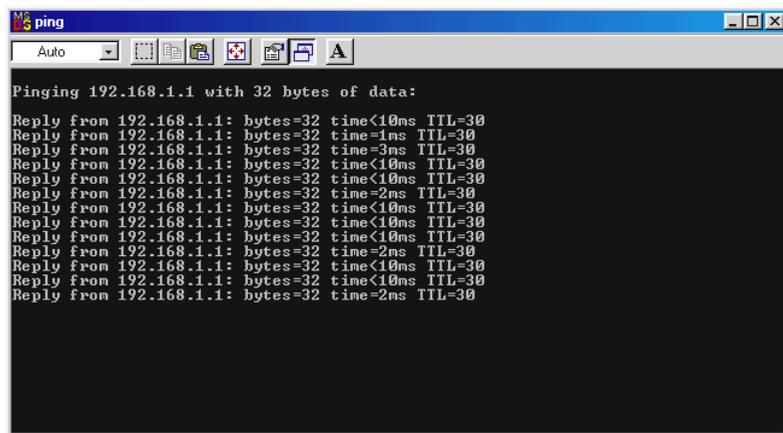
Alternatively, you may ping to your router to verify the link. Carry out the steps as follow:

i)   From your Windows taskbar, click **Start** > **Run**.

ii) In the text box, enter **ping 192.168.1.1 -t** and click **OK**.
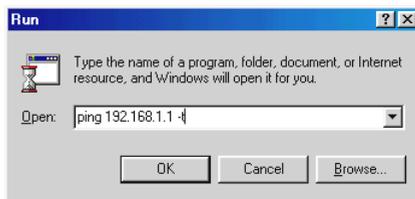
(The factory default IP Address for DSL905E is set at **192.168.1.1**. Replace this address with the one assigned by your System Administrator, if necessary. This IP address should be in the same subnet as your router's IP address.)

iii) You should see strings of text similar to the listings shown below.

```
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time=1ms TTL=30
Reply from 192.168.1.1: bytes=32 time=3ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time=2ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time=2ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time<10ms TTL=30
Reply from 192.168.1.1: bytes=32 time=2ms TTL=30
```

Close the window.

(If you see '**Request timed out**' listing, it means that the link between your Ethernet Card and your router has not been established. Refer to **Appendix B - Troubleshooting Guide**, *'I get 'Request timed out' response when I ping to my router'*.)

I have already configured my router to my desired network configuration. But how do I know if the link between my router and the Internet has been established ?

i)   From your Windows taskbar, click **Start** > **Run**.

ii) Ping to any http address, example, **www.aztech.com** as illustrated below:

iii) If the link between your router and the Internet has been established, you will see strings of text similar to the listings shown below.

Close the window.

Appendix...B
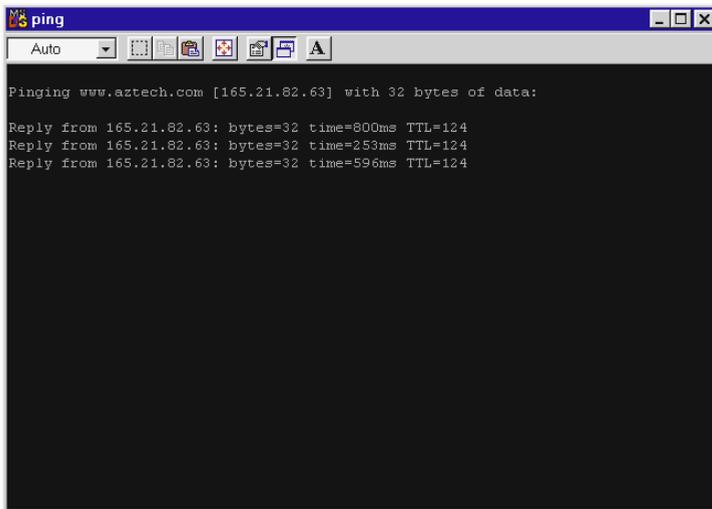
Troubleshooting Guide

This section provides a step-by-step solutions to problems that you may encounter when setting up or using your router.

I am not getting any connection. My router's Power LED lights up, but the ADSL Link LED keeps blinking instead of remaining lit up.

Power off your router and check the following:

i)   Ensure that the Power adapter is tightly fitted into the **DC IN** of your router.

ii) Check that the Telephone cable (RJ-11) is connected to **LINE** jack on your router and not to the **TEL** jack.

iii) Power on your router.

If the problem still persist, please check with your Internet Service Provider.

I am getting poor ADSL speed performance from my router.

i)   Ensure that the **ADSL line** is at least 10cm away from the **Power adapter**. (see the following page for illustration.)

ii) Place your router away from devices or appliances such as monitors, exposed computer systems (with chassis covers removed) or another router which exhibit magnetic fields that may cause interferences to your router line.

iii) Ensure that **Micro-Filters** are used for phone sockets that are sharing the same ADSL line.

If your router speed or performance is still unsatisfactory, please contact your Internet Service Provider.
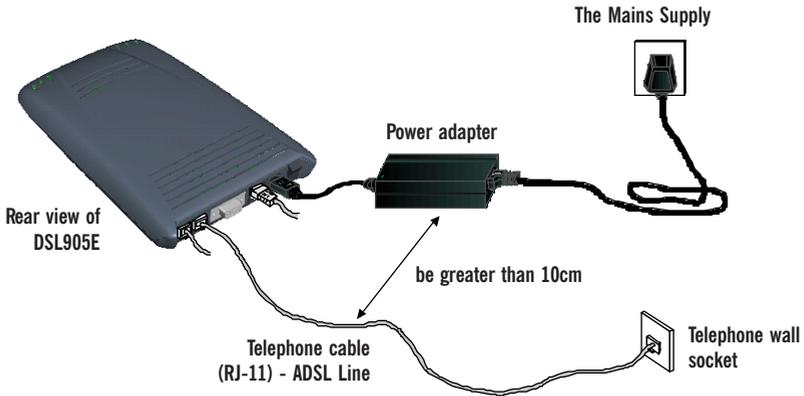
Figure B-1. Distance between DSL905E and Power adapter

I get 'Request timed out' response when I ping to my router.

Check that you have entered the correct IP Address for your Ethernet Card as specified by your System Administrator (see **Chapter 4 - Setting Up Your Ethernet Card**). It should be in the same subnet as your router's IP address.

Restart your system for the IP Address to take effect and try to ping again.
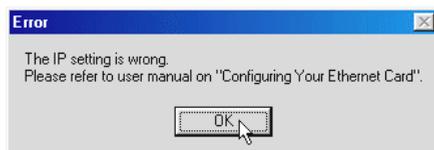
I am prompted with the error message 'Network adapter not found' when running the DSLTEST.

Your Network Card could be faulty. Click **OK**. Replace your Network Card and try running the DSLTEST again.

I am prompted with the error message 'The IP setting is wrong. Please refer to user manual on Configuring Your Ethernet Card' when running the DSLTEST.

Click **OK**. Check that you have entered the correct IP Address for your Ethernet Card as specified by your System Administrator (see **Chapter 4 - Setting Up Your Ethernet Card**). It should be in the same subnet as your router.

Restart your system for the IP Address to take effect. Try running the DSLTEST again.

I am prompted with the following error message when running the DSLTEST.
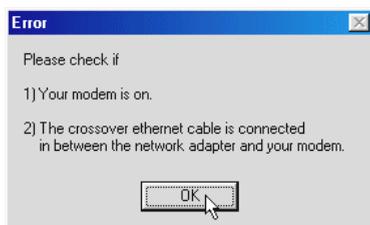
Follow the error message instructions. Check that you have powered on your router. Ensure that you have used the correct Ethernet cable for the connection between your router and Ethernet Card (see **Chapter 3 - Connecting DSL905E**).

Click **OK** and try running the DSLTEST again.

I am prompted with the error message 'Please plug in the line and try it again' when running the DSLTEST.

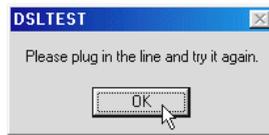Click **OK**. Make sure that you have connected the telephone cable (RJ-11) from the **LINE jack,** and not the **TEL jack** on your router to your telephone wall socket.

Try running the DSLTEST again. If it still fails, it could be that you are having a faulty phone cable. Replace the phone cable and try again.

I am prompted with 'Bad configuration file, please review**' error message after entering `config confirm` command.** (You may experience this when you are configuring your DHCP. See the section on **Configuring DHCP Server** on your **Technical Manual**.)

The error message is prompted when system detected some errors in commands that you have entered. To review the commands, type `config`. An example of the listing is as shown.

Go through the commands to locate the error(s).

To correct the error(s), you may type either `config delete` to remove the last entered command line or `config flush` to remove ALL entered command lines. Re-enter the correct commands.

Complete the configuration settings with `home`, `config save` and `dhcpserver reset`.

The following error message was prompted when I tried to log in to DSL Router Commander.


```
Possible Errors                          [x]

   1. Please check that the DSL Modem is On

   2. Check that the Ethernet cable is connected properly
   between the Network Card and the DSL Modem

   3. Please check that the IP address of network card
   belongs to the  same subnet of the  DSL Modem

                  [   OK   ]
```

This happens when system is not able to detect a link between your Ethernet card and your router. Go through the listed possible errors at the above prompt before logging in again. (For **point 3**, you may refer to **Chapter 4 - Configuring Your Ethernet Card** to verify the IP address of your Ethernet Card.)

Appendix...C

Technical Specifications

This section contains the specifications for DSL905E.

C.1   Main Features

C.1.1   ADSL/ATM Support

- Controller-based External ADSL Modem
- ANSI T1.413 issue 2, ITU-T G.992.1 (G.dmt) and G.992.2 (G.lite) compliant
- Using Discrete Multi-Tone (DMT) line encoding scheme
- Full Rate transmission at up to 8 Mbps downstream and 1Mbps upstream
- G.lite transmission at up to 1.5 Mbps downstream and 512 Kbps upstream
- Rate Adaptive modem at 32 Kbps steps
- ATM Layer with Traffic shaping (UBR/CBR/VBR-nrt/VBR-rt)
- AAL ATM Attributes - AAL5
- VPI Range (0-4095) and VCI range (1-65535)
- Multiple PVC up to 8 support
- UNI 3.0, 3.1 and UNI 4.0 ATM Signaling (support for SVCS)
- Spectral compatibility with POTS
- F4/F5 OAM Send and Receive/Loopback supported
- Trellis Coding support
- Built in POTS splitter

C.1.2   Encapsulation Support

- RFC1483 Bridged and Routed for both LLC/VC Mux
- RFC1577 Classical IP Supported
- RFC2364 PPPoA protocol stack support
- RFC2516 PPPoE Relay support
- RFC2516 PPPoE Client support
- Transparent Bridge Support
- Spanning Tree Support [DSL905E(R2) only]

C.1.3   Network Support

- Static IP, RIP1 and RIP2 routing support
- TCP/UDP Application Support
- Network Address Translation (NAT)
- Port Address Translation (PAT)
- NAT Application Level Gateway for FTP and Gaming Applications
- DHCP Server
- DHCP Client and Relay Agent [DSL905E(R2) only]
- DNS Relay Agent
- PPTP Access Concentrator Support [DSL905E(R2) only]
- L2TP Access Concentrator Support [DSL905E(R2) only]

C.1.4   Management Support

- TFTP Software update support
- Local management via Serial (RS-232) Console
- Remote management through Telnet
- DSL Router Commander GUI for configuration assistance
- SNMP support for management functionality
- Flash ROM upgradable for future feature enhancement
- Web based Management (Firmware Upgrade) [DSL905E(R2) only]

C.1.5   Security Support

- PAP/CHAP for Password Authentication Support
- NAT for basic Firewall support
- MAC address Filtering
- Packet Filtering support (Firmware Upgrade) [DSL905E(R2) only]

C.2 Platform Support

OS Independent **(supports any platform with an ethernet card installed)**

C.3 External Connectors

- 1 x RJ-11 Telephone socket for ADSL line
- 1 x RJ-11 Telephone socket for Telephone Handset
- 1 x RJ-45 for 10Base-T Ethernet
- 1 x DC Power Jack
- 1 x On/Off Power Switch
- 9-pin Serial Port for local management

C.4 Built-In Pots Splitter

Used for separation of the ADSL and Telephone signals, preventing mutual interference.

Micro-filter is a passive device. In the event of power failure on any active components, there will be no disruption to the telephone service.

- Line Side differential input blocking impedance
    - At 20 kHz   >2k
    - At 30 kHz   >3k
    - From 5 MHz to 10 MHz   >4k
    - From 10 MHz to 400MHz   >2k
    - 1 kHz insertion loss between 600 Ohm resistive at < 0.7
    - 1 kHz/2.8kHz slope between 600 Ohm resistive at < 0.8
    - DC resistance in Ohms
        - Tip to Tip, and Ring to Ring   < 50
        - Tip to Ring   >10M
    - Longitudinal Balance per IEEE Method
        - From 200 – 1 kHz   > 58dB
        - From 1 kHz – 3 kHz   > 53dB
    - Envelope Delay   300 Hz – 2800 Hz is < 100 ms

C.5   LED Indicators

- 1 x Power LED
- 1 x Ethernet Link Status LED
- 1 x Ethernet Activity LED
- 1 x ADSL Receive LED
- 1 x ADSL Transmit LED
- 1 x ADSL Link Status LED

C.6   Environmental

C.6.1   Temperature

Operating   : 10º to 45º Celsius (50º to 113º Fahrenheit)
Non-Operating   : -25º to 70º Celsius (-13º to 158º Fahrenheit)

C.6.2   Humidity

Operating   : 30% to 80% Relative Humidity (Non-Condensing)
Non-Operating   : 10% to 95% Relative Humidity (Non-Condensing)

C.7   System Requirements

Pentium MMX 233MHz (or above) with Ethernet card

The product specifications herein are subject to change without prior notification.