Global Teleconnect Kit

FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

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Velcro is a registered trademark of Velcro USA Inc.

Duracell is a registered trademark of P.R. Mallory.

CrossTalk is a registered trademark of Digital Communications Associates, Inc.

ProComm is a registered trademark of DATASTORM TECHNOLOGIES, INC.™

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

Contents

1. Introduction

1.1 Overview

The Global Teleconnect Kit gives you the power to connect your portable computer and modem worldwide. This Kit contains essential connectivity tools, plus the most popular international power-plug and telephone adapters. A durable nylon carrying case, with a protective pocket for a PCMCIA modem card and room for additional accessories, is also included.

As you use your new adapters, please keep the following precautions in mind.

- Being able to connect physically to a power outlet is only one consideration when connecting to a foreign power source. **Be sure you know what type of power is present at a wall receptacle before connecting your portable computer.**

- **NEVER** connect any computer or electrical appliance designed to use only AC power to DC power or severe damage will result.

1.2 What's Included

Your Global Teleconnect Kit should contain the following items. If any of these items are missing, please contact your supplier.

Standard Tools and Accessories

- Global Teleconnect Kit Carrying Case

- Phillips Screwdriver

- Flashlight with Magnifier

- Compact Printer Cable, 3-ft. (0.9-m)

- Retractable RJ-11 Cord

- Modem Defender

- 5" RJ-11 Adapter Cord

Phone Coupler II

- High-Speed Modem Coupler
- Nylon Case
- 9-Volt Alkaline Battery
- Merlin® Handset Adapter

International Power Adapters

- GB/Africa/Hong Kong
- Europe/Middle East
- Great Britain
- North/South America
- Australia/New Zealand
- 3-to-1 Power Tap (US)
- 3-to-2 Prong Ground (US)

International Phone Adapters

- French Modular
- German F/N (Universal) Adapter
- Inline Adapter
- UK Inline Adapter (BT-431A Type)
- Line-Switching Adapter
- Modular T-Adapter (US)
- Polarity-Reversing Adapter
- Japan Modem Adapter
- Italy/Turkey Modular Adapter

2. Components

This chapter gives you an in-depth look at the uses for the various components of the Global Teleconnect Kit.

2.1 Standard Tools and Accessories

Component   **Use**

❶ Phillips Screwdriver Attaching or removing computer covers, cable connectors, etc.

❷ Hand-Held Flashlight w/Magnifier   Examining hard-to-see objects.

❸ Compact Printer Cable   Connects the printer to the computer's printer port. The cable is 3 feet (0.9 m) long.

❹ Modem Defender   A telephone-line tester that protects your computer's modem from unsafe telephone lines. See the Modem Defender manual (starting on **page 22**) for more information.

Retractable RJ-11 Cord   Not pictured.
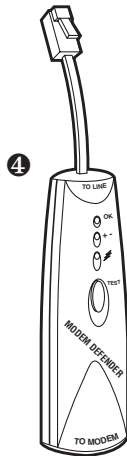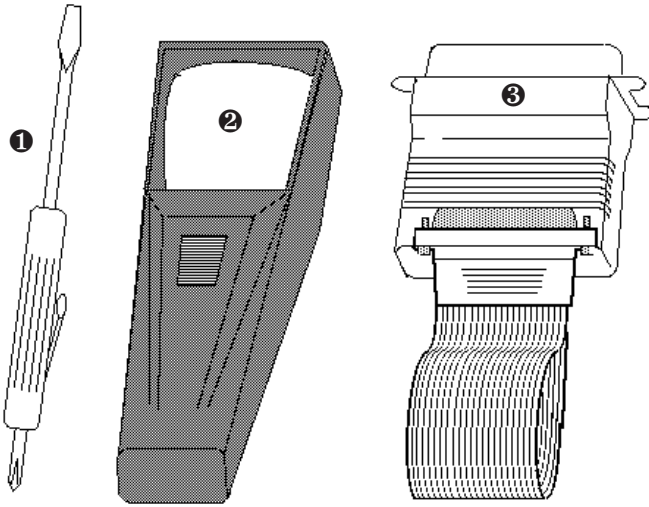
5" RJ-11 Adapter Cord   Not pictured.

Figure 1. Standard Tools and Accessories.

2.2 Carrying Case

The Global Teleconnector Kit carrying case is constructed of heavy-duty nylon. The case, about the size of a shaving kit—approximately 2"H x 10"W x 8"D (2.1 x 25.4 x 20.3 cm)—is specifically designed to accommodate all of the accessories in the Teleconnector Kit, and allows additional room for some of your own favorite tools.
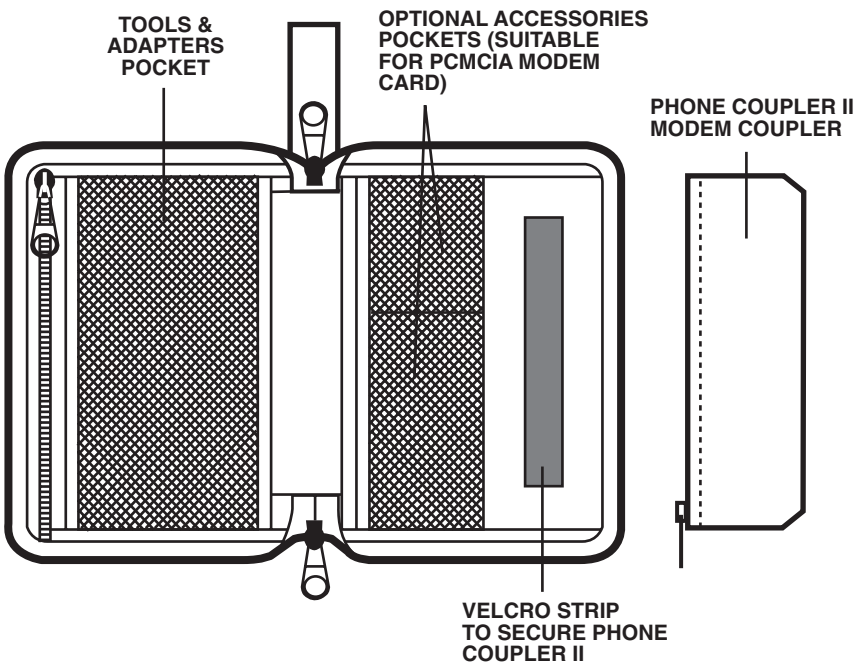
Figure 2. The Global Teleconnect Kit Carrying Case.

2.3 Phone Coupler II

The Phone Coupler II is a high-speed modem coupler. With it, the modem in your portable computer can connect to virtually any wired-in telephone where no direct access is otherwise available to the telephone line (for example, at a pay phone or with most cellular phones). When properly installed and used, the Phone Coupler II supports modem fax or data transmissions at transfer rates up to 14,400 bps. Speed may vary, depending on your type of modem, telephone line conditions, and the type of communications software used. (Transmission type and transfer rate are set by your modem and communications software, not by the Phone Coupler II.)
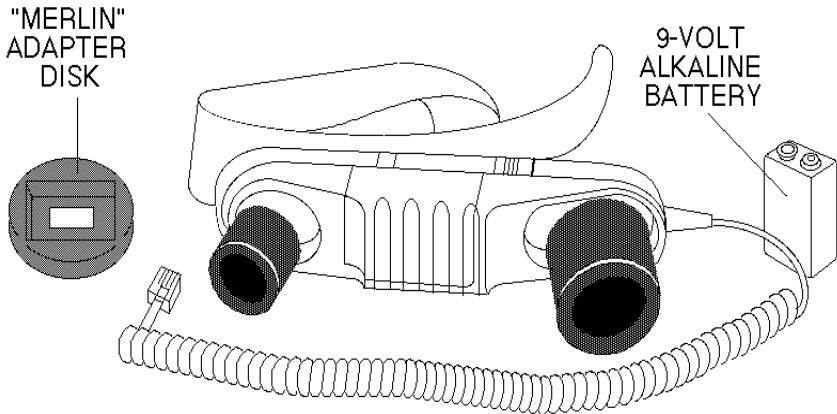
Figure 3. Phone Coupler II.

The Phone Coupler II should fit snugly on the telephone headset (earpiece to small coupler pickup and mouthpiece to large coupler speaker) so that no outside noise will be transmitted. During fax or data transmission, the Coupler converts the output signal from your modem into audible tones, which the handset microphone picks up. Similarly, during fax or data reception, the Coupler converts audible tones from the handset earpiece into signals that the modem understands. For the best transmission and reception results, the Coupler has a three-position slide switch that adjusts to compensate for varying audio levels found on phone systems throughout the world.

The Coupler is powered by a self-contained 9-volt alkaline battery (supplied). The unit comes with its own zippered carrying case, which has a Velcro® strip to attach to the inside of the Global Teleconnector Kit's carrying case. In addition, an AT&T® Merlin handset adapter disk is supplied. This disk adapts the wedge-shaped handset mouthpiece of the Merlin telephones to the Phone Coupler's speaker. For specific information about the Phone Coupler II, refer to pages **32** through **47**.

2.4 International Power Plug Adapters

The various power plug adapters included in your Kit are pictured in this section. Read the information to the right of each illustration to determine which adapter is right for your particular application. Once you've established which adapter you'll be using, **read Section 3.1,** *When Using a Power Adapter*—it contains important safety information.
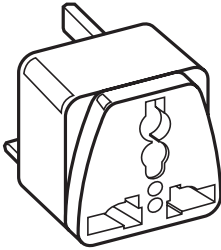
3-to-2 Prong Grounding Adapter
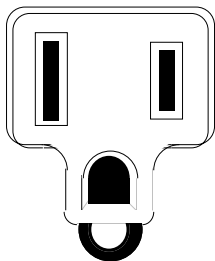
Used to provide a ground connection when connecting to a 2-prong (un-grounded) receptacle.

Caution: The loop at the bottom of this adapter must always be screwed to a *grounded* wall receptacle. Electronic equipment that comes with a 3-prong power plug requires grounding for safety purposes.

GB/Africa/Hong Kong/Singapore Adapter

This adapter accepts 2- or 3-prong power plugs from the US and Europe. It plugs into 3-prong (grounded) power receptacles found in Great Britain, Africa, Hong Kong, Ireland, and Singapore.

Europe/Asia/Middle East/Africa Adapter

This adapter accepts 2-prong power plugs from the US and Great Britain. It plugs into 2-prong power receptacles found in Europe, Asia, the Middle East, parts of Africa, and the Caribbean.
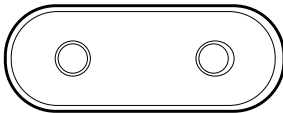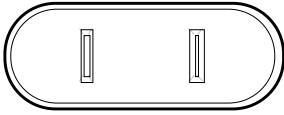
Great Britain (certain areas) Adapter

This adapter accepts 2-prong power plugs from the US and Europe. It plugs into 2-prong power receptacles found in certain areas of Great Britain.

North and South America/Caribbean/Japan Adapter

This adapter accepts polarized 2-prong power plugs from the US and other North- and South-American countries. It plugs into non-polarized 2-bladed power receptacles used in North and South America, the Caribbean, and Japan.

Australia/New Zealand/Fiji/China Adapter
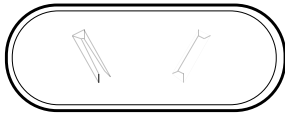
This adapter accepts 2-prong power plugs from the US, Great Britain, and Europe. It plugs into polarized 2-bladed power receptacles used in Australia, New Zealand, Fiji, and China.

3-to-1 Power Tap
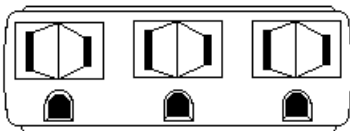
This adapter plugs into a polarized or non-polarized 3-prong (grounded) US power receptacle to provide power to up to three US power cords.

2.5 International Telephone Adapters

The various telephone adapters included in your Kit are pictured on the next page. Study each illustration carefully to determine which adapter is right for your particular application. Once you've established which adapter you'll be using, **read Section 3.2,** *When Using a Telephone Adapter—*it contains important application notes.

Modular Adapters
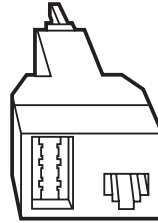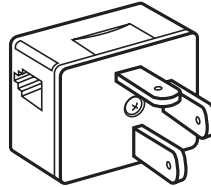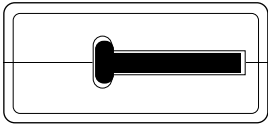
Polarity-Reversing Adapter
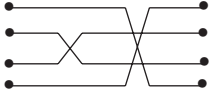
Illustration of the sticker on the side of the adapter. The adapter itself has two RJ-11 connectors.

This adapter accepts a US RJ-11 modular cord plug at both ends and is used to switch the polarity of the two connectors on each line. Used with the Modem Defender, this adapter corrects the reverse-polarity condition indicated by the Yellow warning light on the Modem Defender.

Inline Adapter
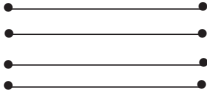
Illustration of the sticker on the side of the adapter. The adapter itself has two RJ-11 connectors.

This adapter accepts a US RJ-11 modular cord plug at each end and connects them together.

Note: This adapter has straight-through wiring between jacks.

Line-Switching Adapter
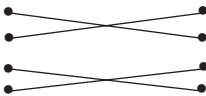
Illustration of the sticker on the side of the adapter. The adapter itself has two RJ-11 connectors.

This adapter accepts a US RJ-11 modular cord plug at both ends and is used to switch between the inner pair of wires to the outer pair of wires. In the UK, the outer pair of wires are some-times used, while the inner pair is not connected.

See Application Note 1 on **page 18** for correct use of this adapter.

US-to-UK Modular Inline Adapter (BT-431A Type)
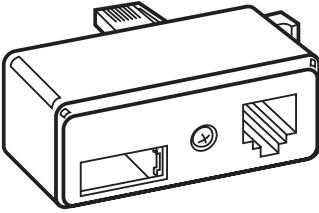
This adapter accepts a US RJ-11 modular cord plug at one end and connects it to a UK BT-431A modular cord plugged into the other end.

Note: This adapter is easily identified by the fact that the 2 modular jacks are different shapes (one is RJ-11, and the other is a BT-431A).

Modular T-Adapter
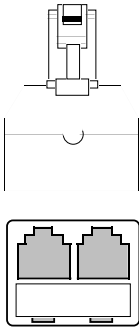
This adapter accepts a US RJ-11 modular receptacle. It provides two jacks so that two US RJ-11 modular cords (telephone and modem) can be connected to the same line simultaneously.

Note: A push lever built into this adapter must be pressed in to release the adapter from the jack it's connected to.

3. Operation

3.1 When Using a Power Adapter

Being able to connect physically to a power outlet is only one consideration when connecting to a foreign power source. **Be sure you know what type of power is present at a wall receptacle before connecting your portable computer or other electrical appliance.**

Most present-day AC adapters and battery chargers for portable computers will set themselves automatically to match the available voltage if it is within a range of 110 to 230 volts, and 50 to 60 Hz. Some require matching the unit's input voltage to the voltage available by setting a 2-position switch. A few work only with a single voltage (for example, 110-120 VAC, 60 Hz). Check your portable computer's owner's manual if you are not sure which voltages are appropriate for your computer. You may need to buy and use a voltage converter (step-down or step-up transformer).

Be aware that in some countries in Eastern Europe and Latin America, voltages can fluctuate widely, and you might even find DC in use. **NEVER connect any computer or electrical appliance designed to use only AC power to DC power or severe damage will result.**

3.2 When Using a Telephone Adapter

The modular telephone adapters supplied in your Global Teleconnect Kit provide an RJ-11 jack into which you can connect your Phone Coupler II's modular line cord plug. Used them with modems that do not have a US standard RJ-11 jack with which to connect.

In most countries it is illegal to directly connect to the telephone lines if your modem has not been approved for use in that country. We don't recommend using our products for such illegal purposes. If you are not sure if your device has the appropriate approvals, we recommend using the Phone Coupler II to make your connections acoustically through the telephone handset. Check the local laws in each country in which you will be traveling to before attempting to directly connect your modem to the telephone systems abroad.

Application Notes

1. If you are using the US-to-UK Modular Interface Adapter (BT-431A Type) whether you are traveling to the UK or coming from the UK to any other country, or,

If you are trying to use the Phone Coupler II with a British modem or portable computer which has an RJ-11 type jack marked LINE or DATA (the one you normally connect to the modular wall jack for telecommunications), then you may have the following problem:

In all phone jacks there are 2 phone lines (Line 1 and Line 2) which are represented by 4 wires (one phone line equals two wires). In the US and virtually all other countries, Line 1 is the active line. In the UK, Line 2 is the active line. In the US the two active wires are connected to the inner two of the four wires. In the UK, they are wired to the two outer wires. If you are traveling to the UK from any other country, you will most likely tap an inactive line (Line 1). If you are traveling from the UK to any other country and have a UK modem or computer then you will also most likely tap a dead line (Line 2). The Line-Switching Adapter cross-connects the inner two wires to the outer two wires in both directions and should be used to correct this problem. Use this adapter if it appears that the line is not active. It may be that the modem is trying to connect using Line 1, which may be a dead line, and the active line is the line you are not connected to.

2. Use the Modular T-Adapter to connect both a modem and a telephone to a US RJ-11 wall jack, as seen in Figure 4.
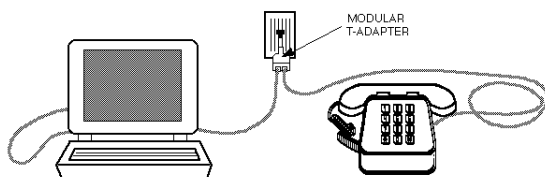
**Figure 4. Connecting a Modem and a
Phone with the Modular T-Adapter.**

3.3 Other Countries the Adapters Work In

The US-to-UK Modular Inline Adapter (BT-431A Type) can also be used in these countries:

Abu Dhabi
Ajman
American Samoa
Andaman &
Nicobar Islands
Andorra
Angola
Anguilla
Antigua and
Barbuda
Argentina
Aruba
Australia
Azores
Bahrain
Bahamas
Bangladesh
Barbados
Belarus
Belgium
Belize
Bolivia
Bosnia-
Herzegovina
Botswana
Brunei
Cambodia
Canada
Canary Islands
Cayman Islands
Celebes

Channel Islands
Chile
China
Ciskei
Columbia
Corsica
Costa Rica
Cuba
Cyprus
Denmark
Dominica
Dominican
Republic
Dubai
Ecuador
Egypt
El Salvador
Eritrea
Falkland Islands
France
Fujairah
Gambia
Germany
Ghana
Gibraltar
Greece
Grenada
Guam
Guatemala
Guernsey
Guinea

Guinea-Bisseau
Guyana
Haiti
Honduras
Hong Kong
Iceland
India
Indonesia
Ireland
Israel
Italy
Jamaica
Japan
Java
Jersey
Jordan
Kalimantan
Kashmir
Kenya
Khmer Republic
South Korea
Kuwait
Laos
Lebanon
Lesotho
Liberia
Libya
Macao
Macedonia
Malawi

Malaysia
Maldives
Malta
Isle of Man
Mauritius
Melilla
Mexico
Micronesia
Montserrat
Mozambique
Myanmar
Nauru
Nepal
Netherlands
New Hebrides
New Zealand
Norway
Oman
Pakistan
Panama
Papau New
Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Puerto Rico
Qatar
Romania
Sabah

Saint Kitts and Nevis
Saint Lucia
Saint Vincent and Grenadines
San Marino
Sao Tome e Principe
Sarawak
Sardinia
Saudi Arabia
Scotland
Seychelles
Sharjah
Sicily

Sierra Leone
Sinai
Singapore
South Africa
Spain
Sri Lanka
Sudan
Sulawesi
Sumatra
Swaziland
Sweden
Syria
Taiwan
Tanzania

Thailand
Tibet
Tokelau
Transkei
Trinidad and Tobago
Turkey
Turks and Caicos Islands
Uganda
United Arab Emirates
United Kingdom
United States of America

Uruguay
Vanuatu
Venda
Vietnam
Virgin Islands (UK)
Virgin Islands (USA)
Wales
Walvis Bay
Yemen
Zaire
Zambia
Zanzibar
Zimbabwe

The French Adapter can also be used in these countries:

Algeria
Benin
Bhutan
Brazil
Burkina Faso
Cameroon
Chad
Channel Islands
Comoro Islands
Congo
Corsica
Côte D'Ivoire
Czech Republic
Djibouti
Egypt
Equatorial

Guinea
France
French Antilles
French Guiana
French Polynesia
Gabon
Gambia
Grenadines
Guadeloupe
Guernsey
Italy
Ivory Coast
Jersey
Kashmir
Leeward Islands
Madagascar

Mali
Martinique
Mauritania
Mauritius
Micronesia
Monaco
Morocco
New Caledonia
Niger
Pakistan
Reunion
Rhodesia
Rwanda
Saint Martin
Saint Pierre and Miquelon

Sardinia
Saudi Arabia
Senegal
Sicily
Sinai
Slovak Republic
Somalia
Syria
Tahiti
Togo
Tunisia
Vietnam
Wallis and Futuna

The Italy/Turkey Adapter can also be used in these countries:

Ethiopia	San Marino	Sicily
Italy	Sardinia	Sudan

The Japan Adapter can also be used in these countries:

Japan	Okinawa	Taiwan

The German Adapter can also be used in these countries:

Austria	Germany	Liechtenstein

Modem Defender

FEDERAL COMMUNICATIONS COMMISSION

PART 68 REQUIREMENTS

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company. This equipment uses RJ-11 jacks. An FCC-compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68-compliant. See installation instructions for details. The REN is useful to determine the quality of devices you may connect to your telephone line and still have all those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area. (NOTE: RENs are associated with loop-start and ground-start ports. Do not use for E&M or digital ports.) If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. No user-serviceable parts are contained in this equipment. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

INDUSTRY CANADA (IC) NOTICE

NOTICE: The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telephone communications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas. Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical-inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.0 REN: N/A. No user-serviceable parts are contained in this equipment. If you experience trouble with this equipment, contact Technical Support at 724-746-5500.

Specifications

Current Detection —   In excess of 132 mA

Current Limiting —   In excess of 145 mA; Surge protection: in
                                    excess if 360V, 1250 amp, 8/20 µsec
                                    between top and ring lines

High-Frequency Filtering —   12 KHz, 16 KHz

Telephone-Line Support —   Virtually any RJ-11 phone line, including
                                    PBX, digital, multi-lines, or single lines

Connectors —   RJ-11

Indicators —   (3) LEDs: Normal, reversed polarity, over
                                    current

Power —   From the telephone line

Size —   1.3"H x 1.4"W x 5"D
                                    (3.3 x 3.6 x 12.7 cm)

Introduction

The Modem Defender is a telephone-line tester that protects your computer's modem from unsafe telephone lines. The Modem Defender detects excess current and reversed polarity in phone jacks. It also indicates the presence of AC current, or digital phone systems.

Two models are available: The Modem Defender and the Modem Defender-I. The Modem Defender-I has the same features as the Modem Defender, but it also includes tax impulse filtering capabilities useful in certain countries (United Kingdom, Germany, Switzerland, Spain, Czechoslovakia, Belgium, and Austria).

When reading this manual, you'll notice that sometimes the instructions will refer to an adapter. Three adapters are included with your Modem Defender: a polarity-reversing adapter, a line-switching adapter, and an inline adapter. Stickers on the side of each adapter will help you identify which adapter you're looking for (see the illustrations on **pages 26** and **27**).
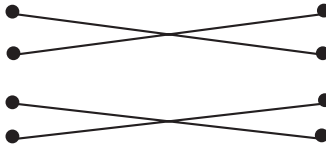
Figure 5. Line-switching adapter.
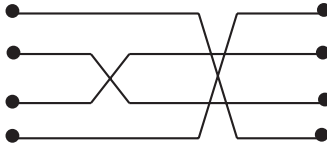
Figure 6. Polarity-reversing adapter.
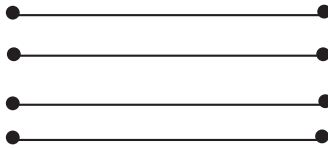
Figure 7. Inline adapter.

Use the inline adapter when you need to connect two male RJ-11 connectors. Turn to **page 28** to find out when to use the polarity-reversing adapter and the line-switching adapter.

Operation

IMPORTANT!
DO NOT connect your modem until you test the line.

Using the Modem Defender/Modem Defender-I to Test an Unknown Line

1. With your modem unplugged from the Modem Defender, insert the Modem Defender's RJ-11 plug into the untested phone line.

2. To test the line, press the Modem Defender's "TEST" button.

3. Using the chart on the next two pages, determine what type of phone line you have tested and what corrective actions to take as a result.

4. If the green LED is lit, you have a safe phone line. You can plug your modem into the back end of the Modem Defender and use your modem as you normally would.

5. If you are having trouble connecting, try dialing out with a standard analog phone (if one is available). A green light on the Modem Defender means that the line is not dangerous, *but it does not guarantee that it is a standard analog phone line.* (It may be a digital PBX line that happens to have the correct voltage and current characteristics to resemble a standard telephone line. Lack of a dial tone while using a standard phone will confirm this.)

Table 1. Test results

Green	Yellow	Red	Meaning
Off	Off	Off	No lights: either a "dead" inactive line, a low-voltage digital system, or an extremely high-current line which has blown the Modem Defender's self-resetting fuse. Wait 30 seconds and test again. If you see a quick flash of one or more lights, and then nothing, this is an extremely dangerous line. Do NOT connect your modem. However, if you get no lights at all, use the line-switching adapter to check the outer pair of wires.
On	Off	Off	Probably a standard phone line; safe to try to connect.
On	On	Off	Probably a standard phone line, but the polarity of the wires is reversed. The modem may function, but the speed will be impaired. Use the polarity-reversing adapter to correct the problem.
Off	On	Off	Polarity of the wires is reversed. Use the polarity-reversing adapter to correct the problem and test again. Absence of a green light may indicate that this is a digital system if the problem is not corrected when the polarity-reversing adapter is used.
Off	On	On	Polarity of the wires is reversed. Use the polarity-reversing adapter to correct the problem and test again. If the polarity-reversing adapter doesn't correct the problem (still no green light) this may be a digital system.
Off	Off	On	Excess current is indicated; this is probably a digital line. *Do not attempt to connect your modem!*

Once you've tested the line and found it to be a standard analog line, your modem, when connected through the Modem Defender, will be protected from power surges in excess of 360 volts and sustained currents greater than 145 mA. The self-resetting fuse in your Modem Defender, which trips with currents in excess of 145 mA, takes approximately 30 seconds to reset. If your connection is suddenly terminated, unplug your modem from the Modem Defender and check the line. A red light means that the fuse has tripped (you experienced a power surge), and you should wait a minute or two before testing the line again.

Using the Modem Defender-I Tax Impulse Filtering Feature

1. With your modem unplugged from the Modem Defender-I, insert the 5-inch RJ-11 cord into the RJ-11 jack in the back of the Modem Defender-I. Connect either end of the line-switching adapter to the other end of the RJ-11 cord. This adapts the outer pair of lines on the Modem Defender-I (called "line 2" in the United States) to the inner pair (line 1) so that your modem can use it. The tax impulse filtered signals on the Modem Defender-I appear on line 2 of the Modem Defender-I, and the unfiltered signal appears on line 1.
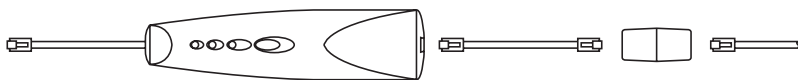
Figure 8. Using the Tax Impulse Filter (Modem Defender-I Only).

2. Use the Modem Defender-I the same way you'd use the Modem Defender, except plug your modem into the line-switching adapter instead of plugging it directly into the Modem Defender-I.

In Germany, Switzerland, Spain, Czechoslovakia, Belgium, and Austria, tax impulses appear on the phone line at regular intervals. These tax impulses can interfere with modem communications if you are not using the Modem Defender-I's tax impulse filtering feature. Using this feature may lower your maximum connect speed with certain high-speed modems; however, you should still be able to connect at 75 to 95% of normal speed.

Using the Modem Defender-I in the United Kingdom

Many phone lines in the United Kingdom use the outer pair of wires (instead of the inner pair) as line 1. To use such lines with your modem, you will have to switch line 1 and line 2 using the line-switching adapter as shown below.
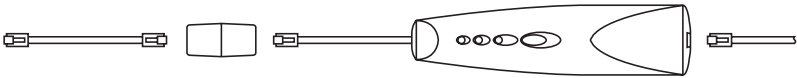
Figure 9. Using the Outer Pair of Wires (for U.K. Users).

Correcting the "Reversed Polarity" (Yellow LED) Condition

When the yellow LED lights while testing a phone line, the inner pair of wires (called "tip" and "ring") may have been reversed. While this will not affect your ability to connect, the maximum connection speed may be impaired by such a line. To correct the reversed polarity, use the polarity-reversing adapter, shown below, and test the line again.
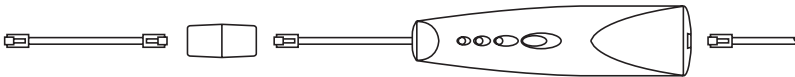
Figure 10. Correcting the Reversed-Polarity Condition (Yellow LED).

Phone Coupler II

Specifications

Supported Telephone Types   Rotary or pushbutton with standard or European handset; carbon granular or electronic microphone

Operation   Full or half-duplex

Data/Fax Rate   Up to 14,400 bps using V.42 bis error correction/data compression

Communication Line   Standard telephone lines (PSTN)

Switches   3-position signal level; allows adjustment for various U.S. and foreign telephones

On/Off Switching   Automatic; power on only during transmission

Connectors   (1) RJ-11 jack to connect to modem

Battery Life   50+ hours of continuous use

Temperature   Operating: 40 to 100°F (4.4 to 37.8°C); Storage: 0 to 150°F (-17.8 to +65.6°C)

Power   9V battery; optional DC adapter for fixed use

Size   7.7"H x 2"W x 2.2"D (19.6 x 5.1 x 5.6 cm)

Weight   0.6 lb. (0.3 kg)

Introduction

Overview

The Phone Coupler II is a high-speed acoustic coupler that connects your modem to virtually any telephone. With it, you can send and receive faxes, transmit data, check your email, or access on-line services from your portable or notebook computer wherever you go.

Using advanced signal-processing technology, the Phone Coupler II can interface with the telephone system when no direct connection is available. Communicate over pay, cellular, hotel, digital/PBX, and international telephones up to 14,400 bps. (The actual speed may vary, depending on the telephone, modem, line conditions, and communications software.)

What's Included

Your Phone Coupler II package should contain the following items. If any of these items are missing, please contact your supplier.

- Phone Coupler II

- 9-Volt alkaline battery

- This user's manual

- Adapter disk (for square handset mouthpiece on AT&T Merlin phones)

The Phone Coupler II

The diagram on the next page (Figure 11) explains the various parts of the Coupler. Refer to this diagram before attempting to use your Phone Coupler II.

Securing Band: Fastens unit to the telephone handset.

RJ-11 Modular Plug: Plug into the LINE jack of the modem.

Microphone: Place against the ear piece of the telephone handset.

Signal Level Switch: Adjusts signal level to suit the telephone line condition and type of telephone you are using. Position 1 (shown) works best for most telephones.

Power Indicator: Light flashes once when the modem want to dial. If the light flashes continuously or not at all, replace the battery.

Speaker: Place against the mouthpiece of the telephone handset.

Figure 11. Parts of the Phone Coupler II.

Operation

Installing or Replacing the Battery

The Phone Coupler II is powered by one 9-volt alkaline battery (Duracell® type MN1604 or equivalent). One 9V battery should provide over 50 hours of continuous use.

To install the battery, slide the battery compartment cover, which is located halfway between the microphone and the speaker. See Figure 12, below.

A spare battery can be stored in the carrying-case pocket.

NOTE

Do not attempt to pry off the compartment cover. This could break the cover, making it difficult to keep the battery snugly in place.
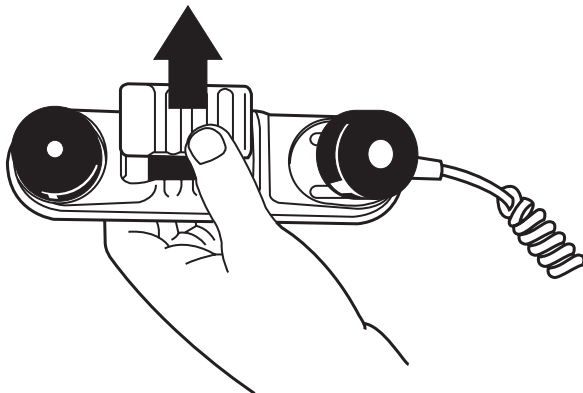
Figure 12. Sliding Open the Battery-Compartment Cover.

Installing the Coupler

1) Plug the Phone Coupler II into your computer's modem jack. Some modems have two jacks, labeled "LINE" and "PHONE"; always use the "LINE" jack. (The "PHONE" jack is used to attach an analog phone to make voice calls.) See Figure 13.
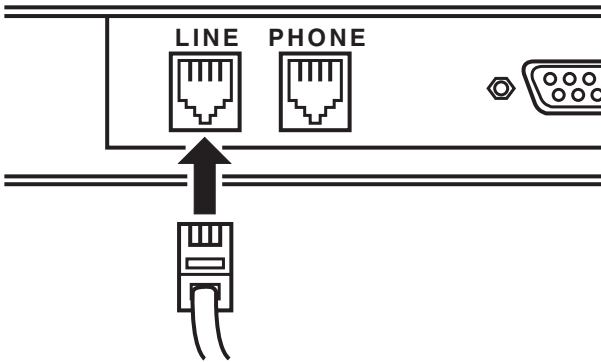
Figure 13. Plugging Into the Computer's LINE Jack.

2) Attach the Phone Coupler II to the telephone handset as shown in Figure 14. Strap the two units together tightly to provide a proper connection. Make sure to note the position of the cords.

The AT&T Merlin phone system uses a handset with a chisel-shaped mouthpiece. The Phone Coupler II includes a round rubber adapter that has a notch on one side for the Merlin handset. The other side is placed over the Phone Coupler II's speaker to allow use of the Merlin handset. See Figure 15.

Figure 14. Securing the Two Units.

Figure 15. Using an Adapter Disk.

3) At this point, your communications software should be loaded and ready to dial. To ensure that you get a new dial tone, depress the phone hook (hang up the phone) for approximately 3 seconds and then release.

NOTE

If your modem fails to communicate or you receive messages such as "no dial tone" or "no carrier," see pages 41 through 43.

Tips for Better Performance

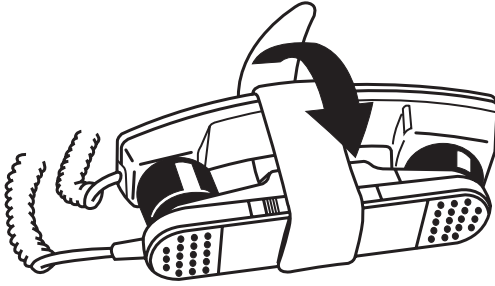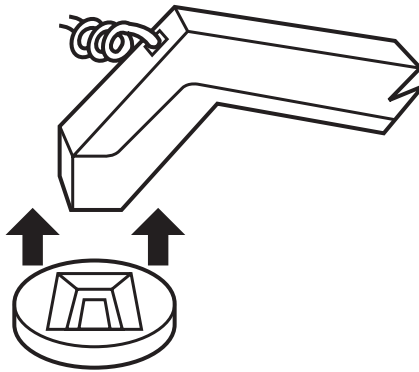*Carbon-Granule Microphones*—Many older phones, pay phones, and rotary dial phones use an old style of microphone made of carbon granules. This microphone can be identified by the round shape of the mouthpiece on the telephone handset. Gently tap any phone handset with a carbon-granule microphone against a hard surface to loosen the granules before connecting the Phone Coupler II. If you're unsure of the microphone type, tap the handset anyway; this will not harm the phone.

Avoid Noise and Vibration—When possible, isolate the Phone Coupler II from noise and vibration (See the diagrams on the next page.) Quiet areas provide for better communications. In general, if the phone you are using is not suitable for a normal conversation because of external noise or poor line conditions, use a different phone. Also, avoid placing the phone near your keyboard or a printer.

Phones with Volume Controls—Pay phones with volume controls are frequently located in airports. If the volume control is set too loud, your modem can become overloaded. Simply avoid using the switch on these pay phones to avoid this problem. The volume control on any office phone should be set to normal level.

High-Speed Modems—If line conditions will not support high data rates and you're having problems establishing a connection, force your modem to connect at a slower rate, such as 2400 or 1200 bps. This is normally done through your communications software.

Error Correction—For the best performance, use modems with error-correction features. They will remove occasional data errors caused by noise or poor line conditions.
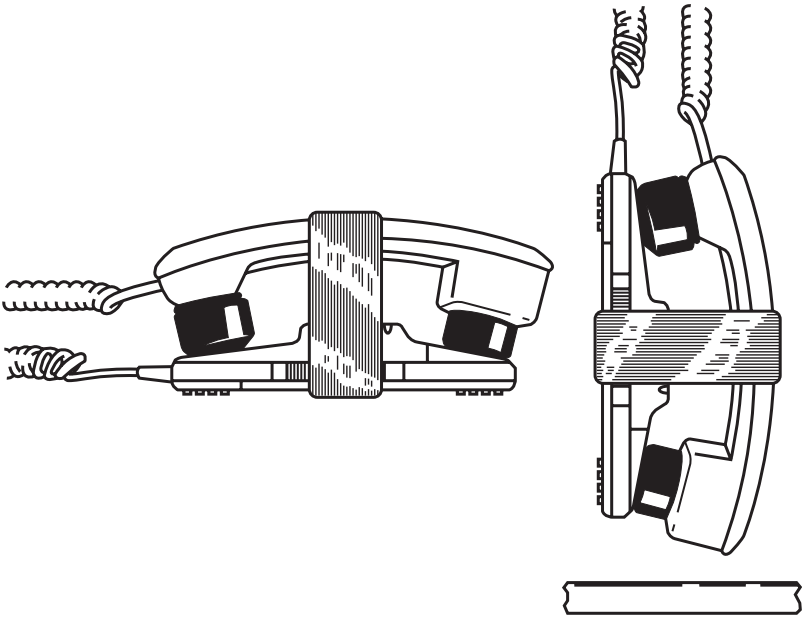
**Figure 16. Positions to Keep the Phone Coupler II
Free From Noise and Vibration.**

Manual Dialing and Modem Configuration

Cellular telephones and some pay, rotary-dial, international and digital or PBX telephone systems will not accept the dialing tones produced by your modem.

If your modem won't dial automatically or you are using one of the phone types listed above, simply follow the procedures below.

1. Look for a manual-dialing feature in your communications software. When you select the manual-dialing feature, your software will lead you through the dialing. Remember to get a new dial tone before dialing.

2. If your software doesn't have a manual-dialing feature, you can still dial for your modem; however, you must give the modem additional information.

• Instruct your modem to ignore dial-tone detection. This feature will most likely be found in your software's modem-setup menu. Go to step 3.

• If your software doesn't have an ignore dial-tone detection feature, you must invoke the "ATX3" command, which will instruct the modem to ignore the dial tone. Look for the box or command line labeled "initialization string/command" or "dialing string/command." Insert "X3" immediately after "AT" in the command line. See the table on the next page for examples. Once you've entered the necessary initialization string or command, save the configuration and restart your communications software to make the changes take effect. Now you are ready to dial manually.

If your software has:	Then change the:	To:
A phone number to dial that includes the characters ATD	phone number	ATX3DT1
A separate dialing prefix and phone number or a dialing prefix that includes the characters ATD	dialing prefix phone number	ATX3DT 1*
A field to enter a modem-initialization string (and the characters AT do not appear in any dialing field described above)	modem-initialization string phone number	add characters X3 to the end of the existing modem-initial-ization string 1*
A separate dialing prefix (without ATD) and phone number with no modem-initialization string	dialing prefix phone number	X3 1*
Only a phone number to dial with no additional prefixes or strings	phone number	X3DT1
Only a phone number to dial with no additional prefixes or strings and letter characters are not accepted	If this is the only situation that describes your software, call for technical support.	

* The phone number should be sent to the single digit "1." This alerts the modem to respond to an answer from the other modem.

3. Set up your communications software so that you need to press just one more key for the modem to begin dialing.

4. Depress the hook switch (hang up the phone) for at least 3 seconds.

5. Release the hook switch and manually dial the phone number using the telephone keypad. Remember to dial 9 for an outside line or 1 for long-distance if required.

6. Immediately after dialing, press the key that instructs your software to

begin dialing. This must be completed before the call is answered on the other end. When the other modem answers, the two computers will exchange the usual tones and establish a connection.

7. If the modems fail to connect, try again (beginning at step 3) with the Phone Coupler II's signal level switch set to a different position. This switch has three positions: 1, 2, and X. The switch is normally left in position 1, which works in most situations. Switch position 2 reduces the Phone Coupler II's sensitivity to the signal coming from the phone line. Switch position X boosts the signal sent to the phone lines. If your modem is not operating properly when the switch is in position 1, it may be necessary to try the other two switch positions before it works.

Troubleshooting

Before proceeding, verify that your modem works properly when directly connected to the phone line (without the Phone Coupler II). Then do the following:

- Check for dead or weak battery by replacing the existing battery.

- Make sure the Phone Coupler II is correctly attached to the telephone handset.

- Verify correct communications software setup.

- Minimize external noise and vibration.

If the Phone Coupler II still does not work, try the next suggestions.

1. By far, the most common connection failures are the result of improper dialing. To determine if the problem is dialing-related, listen to your modem speaker while dialing. If you can hear the telephone line ringing, the other modem answering, and the tones from the other modem, then you have dialed correctly. If not, you may receive messages on your screen such as "no dial tone," "busy," "no carrier," or "voice call detected." These messages indicate a dialing problem. Read **pages 41** through **43** and follow the procedures carefully.

2. If the other modem answers, but the modems fail to connect, likely causes for the problem are:

- **Signal Level Switch Position—**Retry using a different switch position.

- **Poor Telephone Quality or Line Conditions—**Use a different telephone or lower modem speed.

- **External Noise—**Move to a less noisy location.

- **Vibration—**If possible, dangle the Phone Coupler II and handset by their cords.

- **Modem Incompatibility—**Use a lower modem speed.

3. If the Phone Coupler II is malfunctioning, the problem is either a transmit

or receive failure. To determine if the Phone Coupler II needs service, do the following.

a) Using a terminal-emulator program (ProComm®, Crosstalk®, Terminal accessory, etc.), type command "AT" and press the Enter key. The modem should respond with "OK." If it doesn't, you have a communications-software problem. Correct the problem before proceeding.

b) Connect the Phone Coupler II to the telephone handset, get a fresh dial tone, and type "ATM1L2X3DT 1234567890" and press the Enter key.

> **AT** means "attention to the modem."
>
> **M1** turns on the modem speaker.
>
> **L2** sets the modem speaker to medium loudness.
>
> **X3** tells the modem to dial without a dial tone.
>
> **DT** means "dial using tones."
>
> **1234567890** is a dummy phone number.

The Phone Coupler II's power indicator should flash once after the Enter key is pressed. You should then hear a dial tone from the modem speaker, followed by ten tones. If the indicator does not flash or you cannot hear a dial tone, then try another modem, preferably of a different type. If the Phone Coupler II will not work with a different modem, contact Technical Support. Otherwise, see step c.

c) Remove the Phone Coupler II from the telephone handset. Hold the Phone Coupler II speaker (the rubber cup nearest the line cord) 3 or 4 inches away from your ear. Type **AT M0 X3 DT 1234567890** and press the Enter key.

> **M0** (M zero) turns off the modem speaker.

If you can clearly hear the ten tones from the Phone Coupler II speaker, your Coupler is functioning properly and the problem is either with your modem or your software.

If the tones can't be heard, repeat this step using another modem. If the Phone Coupler II still won't produce dialing tones, call Technical Support.

Glossary

AC   Alternating Current. An electric current that
                          reverses its direction periodically at a frequency
                          measured in **Hertz.**

Acoustic   Related to sound; an audible signal.

Baud   The actual number of information-containing
                          transitions transmitted per second, where each
                          transition can be encoded to represent the states of
                          one or several bits. A given baud may be capable of
                          transferring data at several bps rates. See **bps**.

Bit   A single binary digit with a value of 0 or 1. A bit is
                          the smallest element of data used by computer
                          systems.

bps (bits per second) The speed or rate at which data is processed or
                          transferred from one computer to another, not to
                          be confused with **baud**.

**Communications
software**   The computer program that controls your modem.
                          It issues commands for dialing, sending and
                          receiving data, etc.

DC   Direct Current. An electric current that flows in one
                          direction only.

Fax (or facsimile)   A telephone imaging device, or the copy it
                          produces.

Hertz (Hz)   A unit of frequency; same as cycles per second.

Jack   A receptacle connector into which a plug is inserted.

Modem   Contraction for MOdulator/DEModulator. A device
                          that allows digital computers to communicate with
                          each other via normal telephone lines.

Modular line cord   A US standard RJ-11 4-conductor cable with
                         modular plastic clip-type plugs on each end that
                         connect the phone (or modem) jack to the wall jack.

Plug   A cable-end connector that is inserted into a jack.

RJ-11   A standard for US modular clip-type plastic plugs
                         and jacks used to connect telephones and modems
                         to the wall receptacle.

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