



Hardware Installation

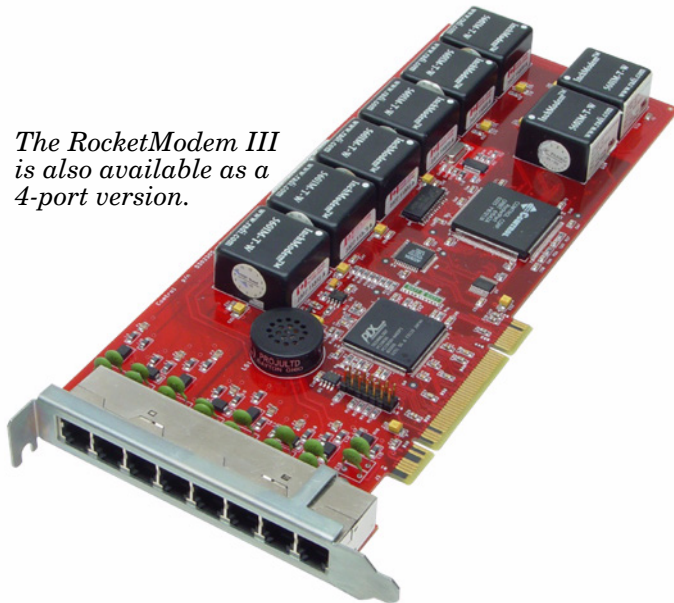
Use this document to install the RocketModem III hardware and locate the software and documentation that you may need to install the device driver. The blue hyperlinks will access the file you select based on the media type.

Note: *If you are reading this file from the CD, the files are retrieved from the CD. If you are reading this file from the web/ftp site, the latest files from the ftp site are retrieved.*

Product Overview

RocketModem III family is a Universal PCI V.90 Data/Fax/Voice multi-modem board, which is Hayes® compatible and supports installation in 3.3V and 5V bus system. The RocketModem III is available with four or eight RJ11 modem ports that can operate at speeds up to 56 Kbps and uses on-board user upgradeable firmware.

The RocketModem III is also available as a 4-port version.



RocketModem III features include:

- Ring Indicator (RI) status is included on all modem ports
- Individual software controlled modem reset capability
- Speaker
- Upgradeable firmware that will support V.92 standard when it is available. Firmware Upgrade utilities will also be available for Linux and Microsoft operating systems.

Before Installing the Hardware

You should locate and unpackage the driver for your operating system before installing the hardware. You may want to also review or print the software installation and configuration document for the operating system.

Locating Software

The following software is available for the RocketModem III. The hyperlinks will take you to the root of the directory (CD or ftp site) that contains the software. Optionally, you can locate all software using <http://support.comtrol.com/download.asp>.

- [Diagnostic](#)

Note: For information about creating a bootable diagnostic diskette, see [Using the Diagnostics](#) on Page 6.

- **Firmware Upgrade Utility:**

- Linux systems ftp://ftp.comtrol.com/RModem/Firmware_RM3/Install_Util/Linux
- Microsoft systems ftp://ftp.comtrol.com/RModem/Firmware_RM3/Install_Util/Microsoft

Note: If these hyperlinks return with an error message, that means that a firmware upgrade for V.92 has not been released at this time.

- **Linux:**

- [Device driver](#)
- [LCOM Utility](#)

- **Windows XP:**

- [Device driver](#)
- [Test Utilities](#)

- **Windows 2000:**

- [Device driver](#)
- [Test Utilities](#)

- **Windows NT:**

- [Device driver](#) with utilities

Locating Documentation

The following documents are available for the RocketModem III. The hyperlinks will open the selected document. Optionally, you can locate all RocketModem III documentation using <http://support.comtrol.com/download.asp>.

- [AT Command Set](#)

- **Linux:**

- [Installation document](#)
- [Using MiniCom](#)

- **Windows XP:**

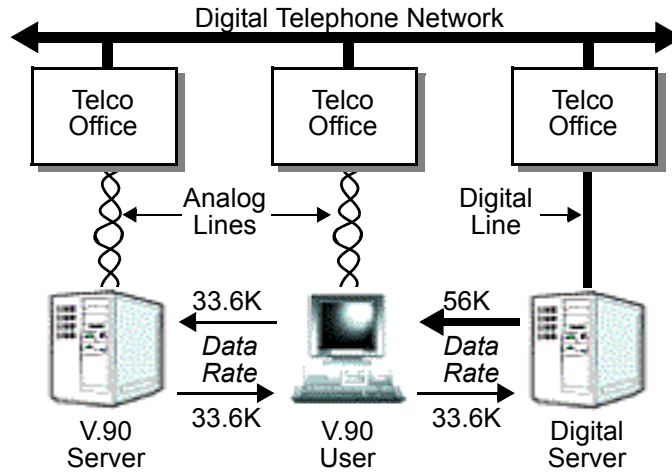
- [Installation document](#)
- [RRAS Overview](#)

- **Windows 2000:** [Installation document](#)

- **Windows NT:** [Installation document](#)

Utilizing V.90 Technology

All V.90 modems are analog line devices. The following figure shows when you can and cannot achieve 56 Kbps.



- V.90 modems can *receive* data at rates up to 56 Kbps, provided the data is being transmitted by a digital modem on a digital (e.g., T1 or ISDN) line.
- V.90 modems can *send* data over analog (twisted pair) phone lines at a maximum rate of 33.6 Kbps—even if communicating with other V.90 modems.
- The actual data rate achieved depends on the age and condition of the analog phone lines, and may be lower than 33.6 Kbps.

Installing the RocketModem III

Use the following procedures to install a single RocketModem III.

European Installations: Before Hardware Installation



Caution

Before installing this board, ensure that the power drawn by this board, together with the host and any auxiliary boards drawing power from the host, is within the rating of the host power supply. Equipment must be installed such that, with the exception of connections to the host, the clearance and creepage distances shown in the following table are maintained between the board and other assemblies that use or generate the voltages shown in the table. The larger distances shown in (brackets) apply where the local environment within the host is subject to conductive pollution or dry non-conductive pollution which could become conductive due to condensation (Pollution Degree 3 environments). Failure to maintain these minimum distances would invalidate the approval.

Note: Obtain advice from a telecommunications safety engineer for a host or other expansion boards fitted in the host using or generating voltages greater than 300 V (rms or dc).

Minimum Clearance	Creepage	Voltage
2.0 mm	2.4 (3.8) mm	Up to 50 Vrms or Vdc
2.6 mm	3.0 (4.8) mm	Up to 125 Vrms or Vdc
4.0 mm	5.0 (8.0) mm	Up to 250 Vrms or Vdc
4.0 mm	6.4 (10.0) mm	Up to 300 Vrms or Vdc

Safety Notices

Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. Avoid contact with electrical current by following these guidelines:

- Use tools with insulated handles.
- Do not place telephone wiring or connections in any conduit, outlet or junction box containing electrical wiring.

Note: *Do not work on your telephone wiring at all if you wear a pacemaker. Telephone lines carry electrical current.*

- Telephone wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts.
- Before working with existing inside wiring, check all electrical outlets for a square telephone dial light transformer and unplug it from the electrical outlet. Failure to unplug all telephone transformers can cause electrical shock.
- Do not place a jack where it would allow a person to use the telephone while in a bathtub, shower, swimming pool, or similar hazardous location.
- Protectors and grounding wire placed by the service provider must not be connected to, removed, or modified by the customer.



Do not touch telephone wiring during lightning!

Installing the Hardware

Use this procedure to install the RocketModem III.

1. Extract the appropriate driver for your operating system and if desired, print the installation document. See [Before Installing the Hardware](#) on Page 2, if you need the driver and documentation.
2. Review the information discussed in [Safety Notices](#) on Page 4 and [FCC Notices](#) on Page 8.
3. Turn your computer off and remove the system unit cover.

Note: *For best results we recommend installing RocketModem III boards one at a time, to simplify the configuration process.*

4. Select an available Universal PCI slot and remove the slot cover.
5. Insert the RocketModem III in the expansion slot making sure that it is seated securely.

Note: *The RocketModem III is a full length card. Do not remove the support bracket during installation. Deformation of the card due to bracket removal is not covered by the warranty.*

6. Re-install the expansion slot cover screw.

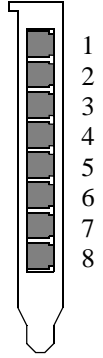
Note: *When powered up, the RocketModem III generates significant heat. After you install and configure the RocketModem III, make sure the system cover is closed and the ventilation fan is unobstructed. If you install more than one RocketModem III, you may want to add an additional internal cooling fan.*

7. Connect standard RJ11 (telephone) cables between the RocketModem III ports and the phone line jacks. See [Modem Cables](#) on Page 10 if you need information about the RJ11 pinouts.

The modem ports on the RocketModem III mounting bracket are numbered as shown in the illustration at right. The port on the “top” edge of the board is modem Line 1, and the port at the “bottom” edge of the board, nearest the bus connector, is Line 8.

8. Power up the computer, and install and configure the device driver for your operating system using the software installation and configuration document for your operating system ([Locating Documentation](#) on Page 2).

After you have successfully installed one RocketModem III, you can install additional RocketModem III boards by repeating this process.



Using RocketModem III Features

The following subsections discuss using:

- The speaker
- Caller ID
- Voice mode
- Firmware V.92 upgrade

Note: See the software installation documentation for your operating system to reset modems.

Using the Speaker

The RocketModem III includes a speaker, which enables you to listen to the call in progress and helps you determine the state of the phone line and the modem. This speaker is shared by all modems on the board and can be controlled for individual modems by use of AT commands.

The following table lists some of the more commonly used speaker-related AT commands. For a complete list, see the [AT Commands Reference Manual](#)¹.

AT Command	Usage
L	<p>ATL(0, 1, 2, 3). Enter the ATLn command to set the modem speaker volume, where 0 is the lowest level and 3 is the highest level.</p> <p>This value is written to S22 bits 0 and 1.</p>
M	<p>ATM(0, 1, 2, 3). Enter the ATMn command to set the modem speaker mode. This value is written to S22 bits 2 and 3. Valid values are:</p> <ul style="list-style-type: none"> • M0 - Speaker always off • M1 - Speaker on when making call but off when receiving carrier • M2 - Speaker always on • M3 - Speaker off when making call but on when answering
&V	Enter AT&V to display the contents of the S -Registers and check the state of the L and M registers.

¹. See the *Conexant AT Commands for SmartSCM, SmartACF, and SmartACFL Modems Reference Manual* (document number: 100722A).

Using Caller ID	<p>The RocketModem III supports the use of Caller ID services through use of the +VCID and +VRID commands.</p> <p>To enable formatted caller ID, use <code>at+ycid=1</code>. Detailed information, see Page 3-2 of the <i>AT Commands Reference Manual</i>¹.</p> <p>To enable formatted retrieval of the last caller information, use <code>at+yrid=0</code>. Detailed information, see Page 3-3 of the <i>AT Commands Reference Manual</i>¹.</p> <p>Additional information for these commands can also be located in Table 6-1: Voice Commands and Table 6-6: Events Detectable in the Voice Mode per V.253 of the <i>AT Commands Reference Manual</i>¹.</p>
Using Voice Mode	<p>After being put into voice mode, characters entered from the telephone set are passed on the application. Enable voice mode using this command: <code>at+fclass=8</code>.</p>
V.92 Firmware Upgrades	<p>Use the URLs listed Locating Software on Page 2 to locate the Firmware Upgrade Utility for your operating system.</p>
Resetting the Modems	<p>See the software installation document (Locating Documentation on Page 2) for your operating system to reset a modem port or ports.</p>

Using the Diagnostics

The diagnostic file and an application that runs on Microsoft operating systems is used to create a bootable diskette. Both files are available on the CD shipped with the RocketModem III. The diagnostic can be built using the CD menu system or you can execute [RModem/Diag/Rawrite.exe](#) directly from the Control CD.

Note: *The application requires you to enter the disk image source file name. The source file name is [1800055X.i](#); where **X** represents the revision letter of the diagnostic.*

Running the Diagnostics

After creating a bootable diskette, use the following procedure to run the hardware diagnostics:

1. If the machine is on, power down the machine.
2. Insert the diagnostic diskette you created in the floppy drive and power up the machine.
3. When the title screen displays, press any key to start the diagnostic.
4. Press any key to continue at the **Please Note** screen.
5. At the RocketModem **ISA TYPE SELECTION** screen, select the letter that corresponds to any installed RocketModem/ISA boards or select **C** if there are no RocketModem/ISA boards installed, and **Enter**.
6. If the list of installed boards is correct, press **Y** and **Enter**. If the information is not correct, press **N** and **Enter** to restart the diagnostic.

Note: *The diagnostic resets and re-initializes all modems. If your model uses downloadable firmware, the diagnostic also queries the firmware load status. If the firmware has not been loaded, it is downloaded automatically. If the firmware has been loaded, you are asked to select **Y** to reload the firmware or **N** to continue without reloading the firmware.*

7. After initialization completes, an option box displays at the bottom of the screen:
 - **D** to run the Diagnostic
 - **T** for Terminal Mode at @ 9600 bits/sec

- M for Terminal Mode at @ maximum bits/sec
 - Q to QUIT
8. Select **D** to test the serial I/O, IRQ and telephone type. If you have more than one board installed, the diagnostic repeats until all boards have been tested. Progress messages are displayed on the left bottom of the screen.
Note: See [Terminal Mode](#) on Page 7 for information about using the *T* and *M* options.
 9. When prompted by the diagnostic, press any key to continue.
 10. After reviewing the *TEST SUMMARY*, press any key to continue. The diagnostic resets all modems and re-initializes all RocketModem boards.
 11. To run additional tests, press **Y** and **Enter** to restart the diagnostic at [Step 4](#) or **N** and **Enter** to quit.
 12. If you select **N**, remove the diagnostic diskette from the drive, then press the space bar or **Enter** key to boot the system.
Note: Do **NOT** use the **CTRL-ALT-DEL** reboot command, may result in CMOS errors on some systems.

Terminal Mode

If you select either the **T** or **M** Terminal Mode option while running the diagnostic, the diagnostic starts a simple terminal emulation program.

- The **T** option selects terminal mode at 9600 baud.
- The **M** option selects terminal mode at the maximum baud rate supported by your RocketModem model.

If necessary, use the previous discussion to start the diagnostic ([Steps 1](#) through [7](#)). If there is more than one RocketModem installed, you are asked to select a board.

1. When the **Modem Terminal Menu** appears, select the number and press **Enter** that corresponds to the port you want to test with AT commands or select one of the following (and **Enter**):
 - **H** for help with AT commands
 - **R** to reset a single modem
 - **T** to reset all modems on the selected board
 - **X** to exit
2. Type AT commands to communicate with the modem.
3. When you are done, press **Esc** to return to [Step 1](#).

Testing Two Modem Ports

You can use this procedure to test two modem ports. This example requires that phone lines be connected to both Ports 1 and 2.

1. Select **Port 1**.
2. Enter **AT&F0** to initialize the modem to factory default parameters.
3. Enter **ATS0=1** to direct the modem to answer the phone on the first ring.
4. Press **Esc** to return to the port menu.
5. Select **Port 2**.
6. Enter **AT&F0** to initialize the second modem.
7. Enter **ATDxxx xxxx** (where *xxx xxxx* is the phone number of the line connected to the first modem).
Watch and wait. The Port 2 modem should dial the Port 1 modem and you should eventually see the **CONNECT** message.
8. Press **Esc**.

9. Select **Port 1**. You should see RING and CONNECT messages.
10. Any keys you press while looking at Port 1 display when you look at Port 2. Likewise, any keys you press while looking at Port 2 display when you return to the Port 1 display.
11. To exit, on either of the ports enter the escape sequence **+++**. This enables you to enter **ATH** to hang up, or any other valid AT command string.
If you do not hang up, you can return to the still-active connection by entering **ATO**.
12. To exit terminal mode and return to the port menu, press **Esc**.

FCC Notices

Radio Frequency Interference (RFI) (FCC 15.105)

This board has been tested and found to comply with the limits for Class A digital devices pursuant to Part 15 of the Federal Communications Commission rules.

The RocketModem III generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this board, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Labeling Requirements (FCC 15.19)

The RocketModem III complies with part 15 of FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Modifications (FCC 15.21)

Changes or modifications to this equipment not expressly approved by Comtrol Corporation may void the user's authority to operate this equipment.

Cables (FCC 15.27)

This equipment is certified for Class A operation when used with unshielded cables.

FCC Part 68 Notice

1. This equipment complies with Part 68 of FCC rules. On the bottom panel of the unit is a label containing the FCC registration number, ringer equivalence number, and the USOC jack code.
2. The RocketModem III uses FCC compliant modular plugs, it is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is FCC Part 68 compliant.
3. If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But, if advance notice is not practical, the telephone

company will notify you as soon as possible. Also you will be advised of your right to file a complaint with the FCC, if you believe it is necessary.

4. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications in order to maintain uninterrupted service.
5. If the equipment is causing harm to the network, the telephone company may request you to remove the equipment from the network until the problem is resolved. If so, contact Control Corporation at 651-631-7654.
6. No repairs are to be made by you. Repairs are to be made only by Control or its licensees. Unauthorized repairs void the warranty and the registration.
7. This equipment may not be used for public coin phone service provided by the Telephone Company. Connection to Party Line Service is subject to state tariffs. (Contact the state public utility commission, public service commission, or corporation commission for information.)
8. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, an identification of the business or other entity, or other individual sending the message, and the telephone number of the sending machine or of such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.) In order to program this information into your fax software, you should refer to the manual of the Fax software being used.

RocketModem III - Canada

The RocketModem III connects directly to off-premises Common Carrier facilities using the standard two-wire telephone connection. In some cases, the building's inside wiring associated with a single line individual server may be extended by means of a certified connector assembly (telephone extension card).

NOTICE: *The Industry Canada label identifies certified equipment. This certification means 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 the user to this equipment, or equipment malfunctions, may give the telecommunications 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.

Users should not attempt to make such connections themselves, but should contact the appropriate electric 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 on 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.

This digital apparatus meets the Class A limits for radio noise for digital apparatus set out in the interference-causing equipment standard entitled: "Digital Apparatus," ICES-003 of Industry Canada.

When connecting the RocketModem III to the telephone service, avoid contact with the telecommunications lead wire. Grasp the insulated part of the jack, and do not contact the back of the circuit board. Telephone wiring can carry dangerous voltages from electrical faults or lightning.

External Wiring

Any external communications wiring you may install needs to be constructed to all relevant electrical codes. In the United States this is the National Electrical Code Article 800. Contact a licensed electrician for details.

Canada - Return Center

In Canada, contact the following Return Center:

Gandacar Consulting, Ltd
189 Lake Avenue East
Carlton Place, Ontario
Canada K7C 1J7 Phone: **800-563-5102**

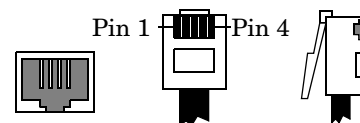
Hardware Specifications

Modem Cables

RocketModem III ports use standard telephone-type unshielded twisted-pair cables with RJ11 modular connectors. These can be purchased anywhere commercial telephone products are sold.

If you choose to build your own cables, use the following information. When building cables, use Category 3 (or better) unshielded twisted-pair wiring.

The connector pinouts are as shown below:



RJ11 Pins	Signals
1 and 4	Not used
2	Ring
3	Tip

Environmental Conditions

This table illustrates RocketModem III environmental conditions:

Environmental Conditions	Value
Air temperature: System on System off	0 to 45°C -20 to 85°C
Altitude:	0 to 10,000 feet
Humidity (non-condensing): System on System off	8% to 80% 20% to 80%
Relative humidity (non-condensing:)	10% to 95%

General Information

The following table illustrates RocketModem III specifications.

	Description	Specification
Modem Characteristics	Supported standards	V.90, K56Plus, V.34, V.32terbo, V.32bis, V.32, V.22bis, V.23, V.21, Bell 212A, Bell 103
	Error correction	V.42, MNP2-4, MNP-10
	Data compression	V.90, V.42bis, MNP-5
	Fax group	Group 3
	Fax class	Class 1.0 and Class 2
	Reset	Software controlled
	Baud rate	300 to 56 Kbps, 14.4kbps fax
	Power consumption regular per modem	390 to 500 MW
	Power consumption Sleep Mode per modem	100 to 110 MW
	Transmit/Receive level	10 (Tx), 43 (Rx) Dbm
RocketModem III Specifics	Bus interface (meets Universal PCI 2.1 specification or higher)	Universal PCI
	Board dimensions (including bracket)	13.3" by 4.2" (w x h)
	Boards per system	4
	Current consumption: +3.3V +5V	1.29 A maximum 5.04 mA maximum
	Device driver control: Data bits Parity Stop bits	7 or 8 Odd, Even, None 1 or 2
	Dielectric withstanding voltage	1650 VRMS
	DTE speed	Up to 115,200 bps
	Heat output: 4-Port 8-Port	8.9 BTU/hr 14.54 BTU/hr
	Low Power Sleep Mode	Yes
	Mean time between failures: 4-Port 8-Port	22.7 years 13.3 years
	Modems per board	4 or 8
	Modems per system	4 to 32
	Power consumption (board): 4-Port 8-Port	2.6 W 4.26 W
	Telco connector	RJ11
	Tip/Ring current (continuous)	0 - 120 mA
	Voltage requirement 3.3V or 5V system	3.15 - 3.45 VDC
	Weight (board only): 4-Port 8-Port	8 oz 11 oz

Electromagnetic Compliance

This table lists electromagnetic compliance certifications.

Electromagnetic Compliances	Status
Emission: Canadian EMC requirements ICES-003: 1997 CISPR-22: 1997 European Standard EN55022: 1998 Amendment A1: 2000 IEC 1000-3-2/EN61000-3-2: Harmonic IEC 1000-3-3/EN61000-3-3: Flicker FCC Part15 Subpart B: Class A limit FCC Part 68 Certification European TBR21 Compliant	Yes
Immunity: EN55024: 1998 IEC 1000-4-2: EN61000-4-2: 1995 ESD IEC 1000-4-3: EN61000-4-3: 1996 RF IEC 1000-4-4: EN61000-4-4: 1994 Fast Transient IEC 1000-4-5: EN61000-4-5: 1995 Surge IEC 1000-4-6: EN61000-4-6: 1996 Conducted disturbance IEC 1000-4-8: EN61000-4-8: 1994 Magnetic field IEC 1000-4-11: EN61000-4-11: 1994 Dips and Voltage Variations	Yes
Safety: EN60950; UL & CUL recognized.	Yes

Product Support

Before you call Technical Support you should review the following subsection.

Troubleshooting Checklist

You may want to review the following troubleshooting checklist before contacting Technical Support.

- Verify that the cabling is correct, see [Modem Cables](#) on Page 10.
- Run the bootable diagnostic, see [Using the Diagnostics](#) on Page 6.
- Check to see if there is a firmware upgrade available, see [V.92 Firmware Upgrades](#) on Page 6.
- Verify that you are addressing the port correctly. In many applications, device names above COM9 require the prefix \\.\ to be recognized. For example, to reference COM20, use \\.\COM20 as the file or port name.
- Check the ftp site to see if there is a more current driver for your operating system than shipped on the CD (see [Locating Software](#) on Page 2).

Contacting Technical Support

Control has a staff of technical support specialists available to help you. If you need technical support, contact Control using one of the following methods.

Contact Method	Corporate Headquarters	Control Europe
FAQ/Online	http://support.comtrol.com/support.asp	
Downloads	http://support.comtrol.com/download.asp	
Email	support@comtrol.com	support@comtrol.co.uk
Web site	http://www.comtrol.com	http://www.comtrol.co.uk
Fax	(763) 494-4199	+44 (0) 1 869-323-211
Phone	(763) 494-4100	+44 (0) 1 869-323-220

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First Edition, August 14, 2003

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Document Number: 2000302 Rev. A