Product Overview

The RocketModem multimodem card is Hayes® compatible and contains four or eight RJ11 modem ports, depending on the model, that can operate at speeds up to 33.6 Kbps.

RocketModem features for this model include:

- Four or eight RJ11 modem ports
- Bootable diagnostic tests on diskette

Note: *See the* Software Installation and Configuration Guide *for information about installing software, the AT command set.*

Characteristic	RocketModem Support
Supported standards	V.34, V.32*turbo*, V.32*bis*, V.32, V.22*bis*
Error correction	V.42, MNP2-4, MNP10
Data compression	V.42*bis*, MNP5
Fax group	Group 3
Fax class	Class 1.0 and Class 2

Note: *If the Comtrol* RocketModem *is not among the modem models listed in your software applications modem list, you can select SupraFAXModem 288(336) for fax emulation and Zoom Telephonics Zoom V.34X for modem emulation.*

Installing the RocketModem

This RocketModem card features a DIP switch that is used to set the I/O address. The factory default is 180 (hexadecimal).

You will need to change the DIP switch setting on the card, if:

- Existing peripherals in the system overlap or use the default I/O value (180h).
- Installing more than one RocketModem ISA. You *must* change the DIP switch setting on the second and subsequent cards.

To install a single RocketModem, follow these steps:

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

1. Determine if you need to change the DIP switches from the default value of 180h. To reset the DIP switch, see the *Setting I/O Address DIP Switches* section.
2. Turn your computer off and remove the system unit cover.
3. Select an available ISA or EISA slot and remove the slot cover. For EISA installation, see *Installing a RocketModem on an EISA Bus* below.

Note: *The RocketModem ISA requires a full-length ISA or EISA slot.*

4. Write down the serial number of the RocketModem.

Card	Model Number*	Serial Number*	I/O Address
1			
2			
3			
4			

* *The tag is located on the back (non-chip) of the card.*

5. Insert the RocketModem in the expansion slot. Make sure it is seated securely.
6. Reinstall the expansion slot cover screw.

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

7. Connect standard RJ11 (telephone) cables between the RocketModem ports and the phone line jacks.
8. Power up the computer and run the **Diagnostics** program to verify that the RocketModem is installed and working correctly. For instructions, see the *Using the Diagnostics* discussion in this card.
9. After the RocketModem has successfully passed diagnostics, install and configure the device driver for your operating system, using the *RocketModem Software Installation and Configuration Guide* or the **README** file released with the driver.

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

Installing a RocketModem on an EISA Bus

If you are installing a RocketModem in a computer with an EISA bus, you may need to use the EISA configuration files. These can be found in the **\EISACFG** directory on the Diagnostic diskette. The **EISAREAD.TXT** file contains information on using the EISACFG files.
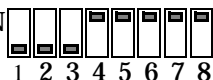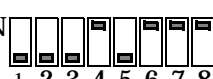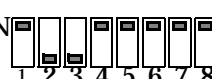
Setting I/O Address DIP Switches
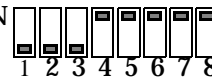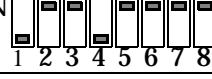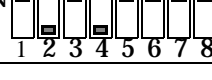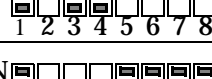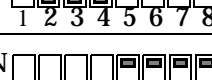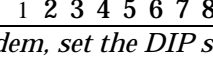
This RocketModem (and the ISA-bus RocketPort series) use I/O address ranges at 400h (hex) intervals above the base I/O range. If you are mixing RocketModem and RocketPort ISA cards, they are treated the same for the purpose of setting the I/O switch.

The first card requires a 68-byte I/O address range. Subsequent cards use a 64-byte range. Most peripherals use I/O address ranges between 0 and 3FF hex. If you have peripherals installed above 400h, you may experience an I/O conflict and will need to reset the DIP to an available address for your system.

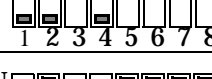The first card installed determines the switch settings for subsequent cards. For example, if you are installing two cards and using the default I/O address range, you would set the DIP switches on the cards as follows:

Example DIP Switch Settings

1st RocketModem or RocketPort 180(hex)	ON / FIRST — switches 1 2 3 4 5 6 7 8
2nd RocketModem or RocketPort	ON / SECOND — switches 1 2 3 4 5 6 7 8

| RocketModem or RocketPort #1	DIP Switch Settings (I/O Address Range)
100 – 143 hex	ON — 1 2 3 4 5 6 7 8
140 – 183 hex	ON — 1 2 3 4 5 6 7 8
180 – 1C3 hex (Default)	ON — 1 2 3 4 5 6 7 8
200 – 243 hex	ON — 1 2 3 4 5 6 7 8
240 – 283 hex	ON — 1 2 3 4 5 6 7 8
280 – 2C3 hex	ON — 1 2 3 4 5 6 7 8
300 – 343 hex	ON — 1 2 3 4 5 6 7 8
340 – 383 hex	ON — 1 2 3 4 5 6 7 8
380 – 3C3 hex	ON — 1 2 3 4 5 6 7 8

1. *If installing one RocketModem, set the DIP switch as shown in this table.*

2. *If installing two RocketModem cards, follow Step 1 for the first card, then set the DIP switches on the second card the same as the switches on the first card, **except Switch 5 off**.*

3. *If installing three RocketModem cards, follow Steps 1 and 2 for the first and second card, then set the DIP switches on the third card the same as the switches on the first card, **except Switch 6 off**.*

4. *If installing four RocketModem cards, follow Steps 1 through 3 for the first, second, and third cards, then set the DIP switches on the fourth card the same as the switches on the first card, **except Switches 5 and 6 off**.*

Port Identification

The modem ports on the RocketModem mounting bracket are numbered as shown in the illustration at right. The port on the "top" edge of the card is modem Line 1, and the port at the "bottom" edge of the card, nearest the bus connector, is Line 8.
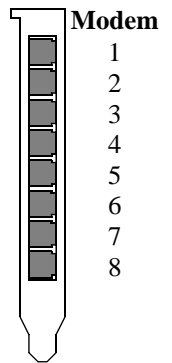
Modem
1
2
3
4
5
6
7
8

A four-modem version of the RocketModem card is also available. The four-modem version uses the same mounting bracket and connector block as the eight-modem version, but Jacks 5 through 8 are blocked with blank plugs.

The four-modem model is not user-upgradeable to an eight-modem model.

Using the Diagnostics

After you have installed one or more RocketModem cards in your computer, use the diagnostic program **RCKTMDM.EXE** to establish that the card is working, *before* installing the device driver.

The diagnostic program is an operating system-independent program that is distributed on a bootable diskette. You must boot the system from the diagnostic diskette in order to run the diagnostic program.

Follow these steps:

1. Insert the **Diagnostics** diskette in the floppy drive.
2. Power up the machine. The diagnostic program starts automatically on boot-up.

   If your computer cannot boot from a floppy, boot up into native MS-DOS, then log on to the a: drive and execute **RCKTMDM.EXE**.

   The diagnostic title screen displays. Note the release number and date. You may need this information if you contact Comtrol technical support.
3. Press any key to continue.

   A message about PCI-bus cards displays. If you have one or more PCI-bus RocketModem cards installed, the diagnostic recognizes them automatically and no entry is needed.
4. Press any key to continue.

   A list of ISA-bus RocketModem models displays.
5. Select the letter that corresponds to the model you installed, select **NOT INSTALLED** if you have no RocketModem/ISA cards in the system, or select **X** to exit the diagnostic.

   If you select an ISA-bus model, a list of valid I/O addresses (A through K) displays:
   a. Select the letter for the I/O address you used when installing the card. A list of valid IRQ interrupts displays.
   b. Select the letter for the IRQ you used when installing the card.

   *Note: Some drivers require an IRQ. If this is a new installation, the correct entry will be **I: NO IRQ**.*

   c. The diagnostic program loops back to Step 5.
   d. If you have more than one ISA RocketModem installed, repeat this step until you have entered the information for all cards. When you are done, select **NOT INSTALLED** to exit this loop.

Note: *Only the first card requires that the I/O address entered in Step 5a matches the physical DIP switch setting. For each subsequent card, select any unused I/O address.*

The list of I/O and IRQ parameters you entered displays.

6. If the list is correct, press **Y**. If the information is not correct, press **N** to restart the diagnostic.

   The diagnostic resets and re-initializes all modems.

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 baud
   – M for Terminal Mode at maximum baud
   – Q to QUIT

8. Press **D** to test the serial I/O and IRQ. (The **T** and **M** options are discussed under *Terminal Mode*, below.) The diagnostic tests each RocketModem card's serial I/O, IRQ, and telephone type, and displays the results.

9. Press any key to continue. If you have more than one card installed, the diagnostic repeats until all cards have been tested.

10. Press any key to continue. The diagnostic displays a summary of the test results.

11. Press any key to continue.

    The diagnostic resets all modems and re-initializes all RocketModem boards.

12. Press **Y** to restart the diagnostic at Step 3 (for example, to enter Terminal Mode), or **N** to quit.

    If you select **N**, remove the diagnostic diskette from the drive, then press the space bar or Enter key to boot the system. ***Do not use the CTRL-ALT-DEL reboot command.*** Use of this command may result in CMOS errors on some systems.

Note: *The Terminal Mode option is used to test modems by dialing out using AT commands. For an example of how to use this option, see* **Terminal Mode***, later in this* Installation Card*.*

Troubleshooting

If an ISA-bus modem card fails to initialize, check to make sure you have selected the correct I/O address and IRQ. If that does not solve the problem, try removing the card and reseating it in another slot.

If you have tried any "short cuts" in running the diagnostic, try rebooting your system from the floppy. The diagnostic *WILL NOT WORK* in a "DOS over Windows" session.

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, while the **M** option selects terminal mode at the maximum baud rate supported by your RocketModem model.

1. If there is more than one RocketModem installed, you are asked to select a card. Do so.

2. A numbered menu listing the ports on the selected card displays. You may also press **H** for help with AT commands, **R** to reset a single modem, **T** to reset all modems on the selected board, or **X** to exit.

3. Enter a port number to select a modem. The Terminal Mode screen displays.

4. Type AT commands to communicate with the modem.

5. When you are done, press **Esc** to return to Step 2.

For example, follow these steps 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 **ATD***xxx 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**.

Modem Cables

RocketModem 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.
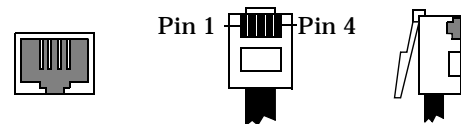
The connector pinouts are as shown below:

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

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.

CAUTION: Do not touch telephone wiring during lightning!

FCC Notices

Radio Frequency Interference (RFI) (FCC 15.105)
This card has been tested and found to comply with the limits for Class B digital devices pursuant to Part 15 of the Federal Communications Commission rules.

The RocketModem generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this card, 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 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 B 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 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 Comtrol Corporation at 651-631-7654.
6. No repairs are to be made by you. Repairs are to be made only by Comtrol 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 - Canada
The RocketModem 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.

CAUTION: *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 B 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 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**

Operating Conditions

This table illustrates RocketModem environmental conditions:

Environmental Conditions	Value

Air temperature:
  System on
  System off
	
	0 to 40°C
	-20 to 85°C

Altitude:	0 to 10,000 feet

Humidity (non-condensing):
  System on
  System off
	
	8% to 80%
	20% to 80%

Hardware Specifications

The following table illustrates hardware specifications:

Description	Specification
Baud rate	300 to 33.6 Kbps
Bus interface	ISA
Card dimensions (meets ISA specifications)	13.5" by 4.2" (w x h)
Cards per system	4

Current consumption (+5V):
  RocketModem 4
  RocketModem 8
	
	1.3A max
	2.2A max

Device driver control:
  Data bits
  Parity
  Stop bits
	
	7 or 8
	Odd, Even, None
	1 or 2

Heat output:
  RocketModem 4
  RocketModem 8
	
	22.2 BTU/hr
	37.5 BTU/hr

DTE speed	Up to 115,200 bps
Interrupt (driver dependent)	None, 3, 4, 5, 9, 10, 11, 12, and 15

Mean time between failures:
  RocketModem 4
  RocketModem 8
	
	18.3 years
	11.6 years

Modems per card	4 or 8
Modems per system	4 to 32

Power consumption:
  RocketModem 4
  RocketModem 8
	
	6.5 W
	11 W

Telco connector	RJ11

Weight (card only):
  RocketModem 4
  RocketModem 8
	
	12.1 oz
	15.8 oz

Electromagnetic Compliance

This table lists electromagnetic compliance certifications:

Electromagnetic Compliance	Status

Emission:
  Canadian EMC requirements
  FCC Class B Certification
	Yes

Electromagnetic Compliance	Status
Safety: UL Listed	Yes
FCC Part 68 Certification	Yes

Technical Support

If you need technical support, contact Comtrol using one of the following methods.

Corporate Headquarters:

- email: **support@comtrol.com**
- FAX: (651) 631-8117
- Phone: (651) 631-7654
- FTP Site: ftp://ftp.comtrol.com
- Web Site: http://www.comtrol.com

Comtrol Europe:

- email: **support@comtrol.co.uk**
- FAX: +44 (0) 1 869-323-211
- Phone: +44 (0) 1 869-323-220
- Web Site: http://www.comtrol.co.uk

Comtrol has a staff of technical support specialists available to help you.

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RocketPort is a registered trademark of Comtrol Corporation.

Other product names mentioned herein may be trademarks and/or registered trademarks of their respective owners.

RocketModem™ ISA V.34

Hardware Installation Card