

RocketModem™ ISA V.34

Hardware Installation Card

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 includes:

- Four or eight RJ11 modem ports.
- Bootable diagnostic tests on the CD.
- Individual software controlled modem reset capability.

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

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
Reset	Software controlled

Note: If the Control 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 has a DIP switch that is used to set the I/O address. The factory default value 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).
- You are 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 off your computer and remove the system unit cover.
3. Select an available ISA or EISA slot and remove the slot cover. For EISA installation, see the *Installing a RocketModem on an EISA Bus* section.

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

4. Write down the Rocket Modem serial number.

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 into the expansion slot. Make sure that it is seated securely.
6. Reinstall the expansion slot cover screw.
Note: After you install and configure the RocketModem, make sure the system cover is closed and the ventilation fan is unobstructed. The RocketModem generates a significant amount of heat. If you install more than one RocketModem, you may want to add an additional internal fan.
7. Connect standard RJ11 (telephone) cables between the RocketModem ports and the phone line jacks.
8. Turn on the computer and run the **Diagnostics** program to verify that the RocketModem is installed and working correctly. For instructions, see the *Troubleshooting and Running Diagnostics* section.
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. You can find these in the \EISACFG directory on the CD. The EISAREAD.TXT file contains information on using the EISACFG files.

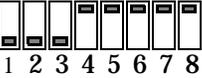
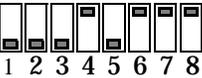
Setting I/O Address DIP Switches

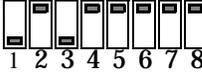
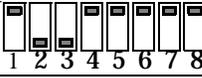
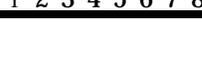
This RocketModem (and the ISA-bus RocketPort series) use I/O address ranges at 40h (hex) intervals above the base I/O range. If you are mixing RocketModem and RocketPort ISA cards, you treat the cards the same for the purpose of setting the I/O switch.

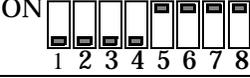
The first card requires a 68-byte I/O address range. Subsequent cards use a 64-byte range. Most peripherals use I/O address ranges between 0 and 3FF hex. If you have peripherals installed above 400h, you may experience an I/O conflict and will need to reset the DIP to an available address for your system.

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	1 2 3 4 5 6 7 8
2nd RocketModem or RocketPort	ON 
SECOND	1 2 3 4 5 6 7 8

RocketModem or RocketPort #1	DIP Switch Settings (I/O Address Range)
100 – 143 hex	ON 
140 – 183 hex	ON 
180 – 1C3 hex (Default)	ON 
200 – 243 hex	ON 
240 – 283 hex	ON 
280 – 2C3 hex	ON 
300 – 343 hex	ON 
340 – 383 hex	ON 

RocketModem or RocketPort #1	DIP Switch Settings (I/O Address Range) (Continued)
380 – 3C3 hex	ON 

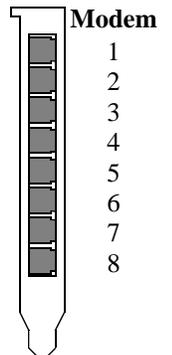
- If you are installing one RocketModem, set the DIP switch as shown in this table.
- If you are installing two RocketModem cards, follow Step 1 for the first card, then set the DIP switches on the second card to be the same as the switches on the first card, **except that switch 5 is off**.
- If you are installing three RocketModem cards, follow Steps 1 and 2 for the first and second card, then set the DIP switches on the third card to be the same as the switches on the first card, **except that switch 6 is off**.
- If you are 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 to be the same as the switches on the first card, **except that switches 5 and 6 are off**.

Port Identification

Control numbers the modem ports on the RocketModem mounting bracket as shown in the illustration on the 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.

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 ports 5 through 8 are blocked with blank plugs.

You cannot upgrade the four-modem model to an eight-modem model.



Troubleshooting and Running Diagnostics

The first step to troubleshooting a problem is to determine that your RocketPort is functioning properly. To do so, you can make a bootable diskette.

You need two files to make a bootable floppy diagnostic diskette:

- The Rawrite utility that makes a bootable diagnostics diskette.
- The diskette image file (*.i).

You can find both files on the Control Software and Documentation CD, or you can download them from the ftp site.

How to Make Bootable Diagnostic Diskettes

To run the diagnostics, you need to make a bootable diagnostics diskette using a High-Density (HD), 1.44MB diskette and using the appropriate directions for your operating system. Contained in each **Diag** directory are the following files:

- Diskette image file (*.i)
- **Rawrite.exe**
- **Rawrite3.doc**

Windows Environment

To make a bootable diagnostics diskette:

1. Obtain a formatted 1.44MB diskette.
2. Go to the appropriate **Diag** directory for your hardware type and double-click on **Rawrite.exe**.
Note: You can quit Rawrite at any time by typing ^C or CTRL-Break.
3. Enter the disk image source file name. For example, 150xxxxY.i, where xxxx are numbers and Y is an alpha-character.
4. Enter the target diskette drive. For example, **a**.
5. Insert the formatted diskette into the target drive and press the ENTER key.

*Note: For more information about **Rawrite.exe**, refer to the **rawrite3.doc** document in the appropriate **Diag** directory.*

DOS Environment

To make a bootable diagnostics diskette:

1. Obtain a formatted 1.44MB diskette.
Note: To format a diskette in drive: a, type at the DOS prompt: format a:.
2. At the DOS prompt, enter the appropriate directory from the CD. For example,
d<drive letter>:\<appropriate path>
3. To start **Rawrite**, type
<drive>\rawrite
4. Enter the disk image source file name. For example,
150xxxxY.i
where xxxx are numbers and Y is an alpha-character.
5. Enter the target diskette. For example, **a**
6. Insert the formatted diskette into the target drive and press the **Enter** key.

*Note: For more information about **Rawrite.exe**, refer to the **rawrite3.doc** document in the appropriate **Diag** directory.*

UNIX Environment

To make a bootable diagnostics diskette, use the **dd** command to copy the diskette image file out to a floppy drive. For example,

```
dd if=<current path>/<diskette image file>of=/dev/rfd0135ds18 (primary 3.5" drive)
dd if=<current path>/<diskette image file>of=/
```

dev/rfd1135ds18 (secondary 3.5" drive)

For more information about **dd**, please refer to your operating system's **man** pages.

Diagnostics Overview

After you make a bootable diagnostic diskette, you can use the diagnostic program to:

- Confirm that the hardware is functioning.
- Determine resolutions to conflicts during installation.
- Provide you with the ability to stress test the cards.

For example, you may want to run the diagnostics overnight to evaluate a possible problem. You still need loopback plugs for each port that you want to stress test. If you need additional loopback plugs, you can use the appropriate Building Loopback Plugs section in this document to build additional loopback plugs.

Using the Diagnostics

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

The diagnostic program is an operating system-independent program that you can find on the *Control Software and Documentation CD*, or you can download them from the ftp site. You must boot the system from the diagnostic diskette in order to run the diagnostic program.

Follow these steps:

1. Insert the **Diagnostics** diskette into the floppy drive.
2. Turn on the computer. The diagnostic program starts automatically on boot-up.
The diagnostic title screen appears. Note the release number and date. You may need this information if you contact Control technical support.
3. Press any key to continue.
If you do not have any RocketModem *i* or RocketModemII cards installed, a message screen appears notifying you that you must configure the ISA cards for the diagnostic to run.
4. Press any key to continue.
A list of ISA-bus RocketModem models appears.
5. Select the letter that corresponds to the model that you have 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) appears:
 - a. Select the letter for the I/O address that you used when installing the card. A list of valid IRQ interrupts appears.
 - b. Select the letter for the IRQ that 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 the 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 appears.

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 appears 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 the *Terminal Mode* section.) 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 the 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: You use the Terminal Mode option to test modems by dialing out using AT commands. For an example of how to use this option, see the **Terminal Mode** section.

Troubleshooting

If an ISA-bus modem card fails to initialize, check to make sure that you have selected the correct I/O address and IRQ. If that does not solve the problem, try removing the card and reseating it into 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 a terminal mode at 9600 baud, while the M option selects a

terminal mode at the maximum baud rate supported by your RocketModem model.

1. If there are more than one RocketModems installed, you are asked to select a card. Select a card.
2. A numbered menu listing the ports on the selected card appears. 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 appears.
4. Type AT commands to communicate with the modem.
5. When you are done, press the Esc key to return to Step 2.

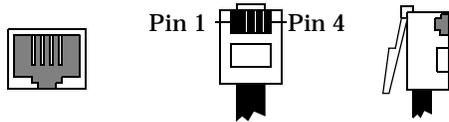
For example, follow these steps to test two modem ports. This example requires that you connect phone lines to both Ports 1 and 2.

1. Select **Port 1**.
2. Enter **AT&F0** to initialize the modem to the factory default parameters.
3. Enter **ATS0=1** to direct the modem to answer the phone on the first ring.
4. Press the Esc key to return to the port menu.
5. Select **Port 2**.
6. Enter **AT&F0** to initialize the second modem.
7. Enter **ATDTxxx 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 the Esc key.
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 the Esc key.

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 following table shows the connector pinouts:

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
Safety: UL Listed	Yes

Technical Support

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

Corporate Headquarters:

- email: support@control.com
- FAX: (763) 494-4199
- Phone: (763) 494-4100
- FTP Site: <ftp://ftp.control.com>
- Web Site: <http://www.control.com>

Control Europe:

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

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

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