

RocketPort[®] 485

Hardware Installation

Introduction

This Hardware Installation document discusses the following information:

- Product overview
- RocketPort terminology
- Before installing the hardware
- [Installing the hardware](#)
- [Supplying power to external devices](#)
- [Interface overview](#)
- Interface connectors and building loopback plugs
 - = [DB9](#)
 - = [DB25](#)
 - = [RJ45](#)
- [Setting ISA DIP switches](#)
- [Hardware specifications](#)
- [FCC notices](#)
- [Troubleshooting and creating diagnostics](#)
- [Contacting Technical Support](#)

Product Overview

The RocketPort 485 series multiport serial card fits into the ISA or EISA slot of a personal computer, and uses a 36 MHz processor specifically designed to process asynchronous serial communications.

The RocketPort 485 series uses Application Specific Integrated Circuits (ASICs) technology to replace most hardware components, including:

- The processor
- Serial controller
- Bus interface logic and other miscellaneous logic

To eliminate memory mapping conflicts, the RocketPort 485 series is I/O mapped.

This *Hardware Installation* document discusses the following RocketPort 485 serial controllers:

Name	Ports	Interface Type
Quadcable*	4	Includes a fanout cable with standard DB25 or DB9 connectors.
8**	8	Requires one 8-port interface box.
Octacable	8	Includes a fanout cable with standard DB25, DB9, or RJ45 connectors.

* *Quadcables have the capability to be 8-port cards with an 8-port interface. Most drivers view the 4-port as an 8-port card.*

** *For interface information, see the [RocketPort Interface Overview](#) discussion later in this Card.*

All RocketPort 485 series interface boxes support RS-232. RocketPort 485 can be configured on Ports 1 and 2 for RS-485 mode and Ports 3 through 8 can be configured to supply +5V ($\pm 2\%$) at 0.5 amps.

Caution *When using the RocketPort 485 with interfaces other than the DB9 box, do not use the power pin option. Using this option with Quad- or Octacable interfaces may produce unacceptable voltage loss under load.*

You can install up to four RocketPort 485 cards in one PC, for a total of 32 additional serial ports, and you can install a combination of PCI-bus and ISA-bus RocketPort cards.

For driver installation, see the [software installation and configuration](#) documentation or the driver **readme** file for your operating system.

RocketPort Terminology

For the purposes of the following discussions, these products are referred to as “RocketPort ISA” cards:

- RocketPort ISA-bus boards (any interface type including 4J, 8J, Quadcable, and Octacable)
- RocketPort 485

These products are referred to as “RocketPort PCI” cards:

- RocketPort PCI-bus boards (any interface type including 4J, Quadcable, and Octacable)
- RocketPort *Plus*
- RocketPort PCI 422

Before Installing the Hardware

Read this subsection:

- If you already have one or more RocketPort ISA cards installed in your system.
- If you plan to install a combination of RocketPort ISA and RocketPort PCI cards at this time.

Installing Both RocketPort ISA and PCI Cards:

You must complete installation of all RocketPort PCI cards before beginning to install any RocketPort ISA cards.

Explanation:

I/O addressing for RocketPort PCI cards is handled automatically by the computer's BIOS when you first power up the computer after installing the cards.

I/O addresses for RocketPort ISA cards are set manually using DIP switches on the card. If you install an ISA card before installing a RocketPort PCI card, the ISA card addressing may interfere with the computer's ability to recognize the RocketPort PCI card which may prevent the PCI card from functioning properly.

Additional Considerations:

If you are mixing RocketPort ISA and PCI cards, set the DIP switches on the ISA cards so that the first ISA card you install is the "first" card for I/O addressing purposes, even if it is physically the second, third, or fourth card that you install. See the *Setting the DIP Switches* discussion for switch information.

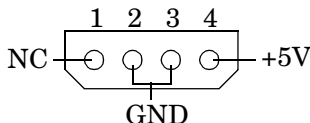
Supplying Power to External Devices

The power connector on the RocketPort 485 card is a standard hard drive-type power connector. You can use this connector to provide voltage to peripheral devices on Ports 3 through 8.

To use the power option, connect the jumpers before installing the card. See the *Installing the RocketPort Hardware* discussion for configuring this feature.

Note: Ports 3 through 8 are equipped with fuses. If an external device draws more than 0.5 amps, the fuse for that port automatically breaks the circuit. The fuse remains in the tripped condition until the short or over current condition is corrected. At this time, the fuse will reset and the circuit will be ready for current to be applied again.

The pinout for this connector is shown below:



Note: Power can be supplied only through DB9 or DB25 connectors. It cannot be supplied through RJ45 connectors.

Installing the RocketPort Hardware

Hardware installation consists of:

- Configuring I/O addresses
- Configuring RS-485 mode usage on Ports 1 and 2
- Installing the card in the system
- Connecting the peripherals

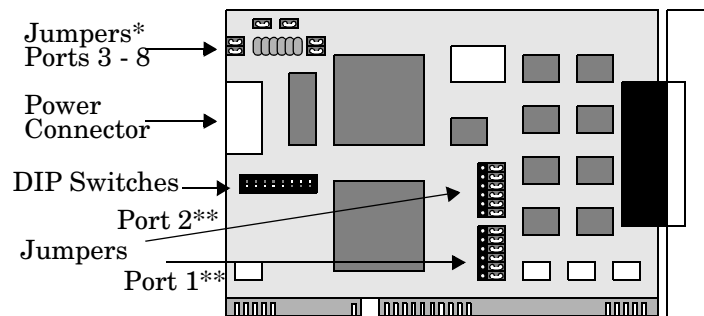
Note: After installing the hardware, you must install the device driver for your operating system.

Use the following procedure to install the card.

1. If required, change the DIP switches (default is 180 hexadecimal) on the card to the desired settings. See the *Setting the DIP Switches* discussion towards the end of this *Hardware Installation* document.

Note: If you are installing PCI and ISA RocketPort cards, install the PCI cards and driver before installing and configuring the ISA cards. See the [software installation and configuration](#) documentation or the [driver readme](#) file for information.

2. To use RS-485 on Ports 1 and 2, move all six pins on the port you want to use RS-485 to the *left* and *center* position. (When all six pins are in the *center* and *right* positions, the port is configured for RS-232.)



* The Power feature is disabled as the factory default (jumpers NOT connected).

** Port 1 is labeled Port 0 on the card and Port 2 is labeled Port 1 on the card. Ports 1 and 2 are set to RS-232 as the factory default.

Note: In addition, you must configure the ports for RS-485 operation during the driver installation. For more information, see the *Software Installation and Configuration* documentation or the *readme* file with the driver.

3. To use the Power feature for Ports 3 through 8, connect the jumper for each port.



When using this card with interfaces other than the DB9 box, do not use the Power feature. Using this feature with Quad/Octacable interfaces may produce unacceptable voltage loss under load.

4. Turn off your computer.
5. Remove the system cover.
6. Select an ISA or EISA expansion slot.

Note: RocketPort 485 can be installed in an ISA or EISA slot. They are available on the Comtrol Software and Documentation CD or at the Comtrol web site ftp://ftp.comtrol.com/rport/eisa_cfg/directory.

7. Remove the slot cover.

Note: You may want to write down the model number and serial number of the card before installation.

8. Insert the card into the slot, seating it securely.

9. If using the Power feature, connect a hard drive-type power supply cord in your computer to the power connector on the card.



Caution

When enabling the Power feature, Pin 9 (DB9) or Pin 22 (DB25) carries +5 V ($\pm 2\%$) at 0.5 amp.

10. Reinstall the expansion slot retaining screw.

Note: You may want to leave the system unit cover off until the driver is installed and running, in case you need to experiment with DIP switch settings.

11. Attach the interface that came with your card using the appropriate procedure:

If installing a Quad/Octacable:

- a. Attach the male end of the Quadcable or Octacable to the card.
- b. Tighten the retaining screws.

Note: Quad and Octacable models support RS-232 exclusively.

- c. Go to Step 12 to complete the installation.

If installing a standard interface box:

- a. Attach the interface box cable to the connector on the RocketPort card mounting bracket.
- a. Attach the male end of the RocketPort cable to the card and the female end to the connector labeled **Host** on the interface box.
- b. Tighten the retaining screws.

12. Connect your peripheral devices.

13. Use the [software installation and configuration](#) documentation or device driver **readme** file to install the driver to complete your installation.

Note: If installing on an EISA machine, you may need the EISACFG files. They are available on the Comtrol Software and Documentation CD or at the Comtrol web site ftp://ftp.comtrol.com/rport/eisa_cfg/directory.

RocketPort Interface Overview

The RocketPort series provides several interface options:

- Quadcable and Octacable fanout cables, which are available with the following configurations:
 - Quadcable DB25 and DB9
 - Octacable DB25, DB9, and RJ45

**Octacable
DB9**



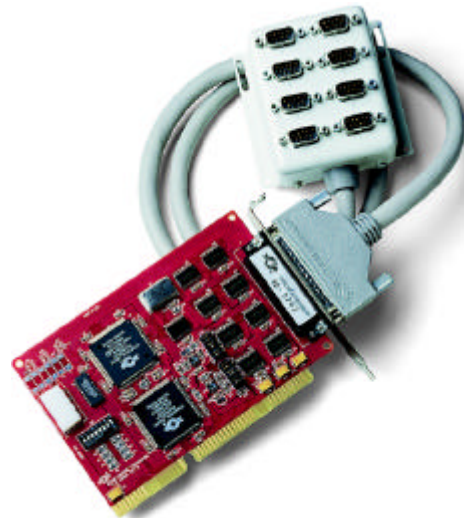
**Quadcable
DB25**



Note: The RJ45 cable is not displayed.

Note: RS-485 supports up to 32 multidrop.

- Interface box



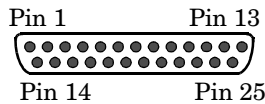
DB25 Interface Connectors

Use the following subsections for DB25 interface connectors. The Quad- and Octacable DB25 fanouts use DB25 male connectors.

Note: *Although the RocketPort 485 card supports eight ports, if you have a quadcable connected, you will only have four port available for use.*

DB25 Pinouts

The following table and figure illustrates the DB25 connectors:



Depending on jumper configuration, the pins carry the following values:

Pin	RS-232 Signal	RS-485 Signal
1	Not used	Not used
2	TxD	TRX+
3	RxD	TRX-
4	RTS	Not used*
5	CTS	Not used*
6	DSR	Not used*
7	Signal ground	Signal ground
8	DCD	Not used*
9-19	Not used	Not used
20	DTR	Not used*
21	Not used	Not used
22	See Caution below	
23-25	Not used	Not used

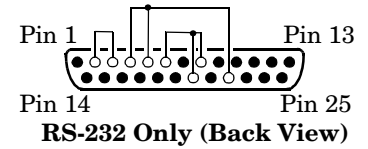
* Ports 1 and 2 can be either RS-232 or RS-485, while Ports 3 through 8 are RS-232 only. All RS-232 modem control signals are present in RS-485 mode, but not used.



Caution Although the RocketPort 485 is designed to provide +5V on Ports 3 - 8, do not use the +5V power option with the Quad/Octacable. Using this feature with interfaces other than the DB9 box may result in unacceptable voltage loss.

Building DB25 Female Loopback Plugs or Cables

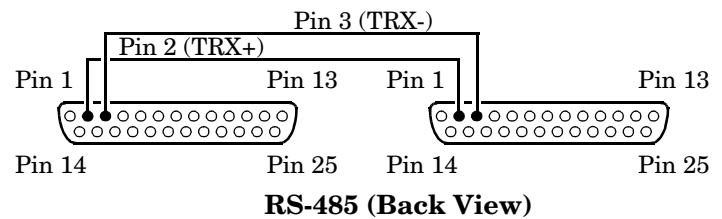
To perform loopback testing of DB25 ports in RS-232 mode, obtain or create a female DB25 connector with the following pins wired together:



- Pins 2 to 3
- Pins 4 to 5 to 22
- Pins 6 to 8 to 20

Note: *(The connector illustrated is the standard DB25F supplied by Control for use with RS-232/422 interfaces.)*

To test DB25 ports in RS-485 mode, obtain two female DB25 connectors and create the cable shown below:



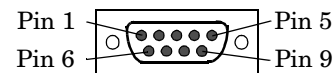
DB9 Interfaces

The interface box, the Quadcable, and the Octacable all feature DB9 ports, labeled from 1 to 8, which correspond to the jumpers on the card.

Note: *Although the RocketPort 485 card supports eight ports, if you have a quadcable connected, you will only have four port available for use.*

DB9 Pinouts

Each connector is a DB9 male, with pins numbered as shown below:



Depending on jumper configuration, the pins carry the following values:

Pin	RS-232 Signal	RS-485 Signal
1	CD	Not used*
2	RxD	TRX-
3	TxD	TRX+
4	DTR	Not used*
5	Signal ground	Signal ground
6	DSR	Not used*
7	RTS	Not used*
8	CTS	Not used*
9	**	**

- * Ports 1 and 2 can be either RS-232 or RS-485, while Ports 3 through 8 are RS-232 only. All RS-232 control signals are present in RS-485 mode, but not used.
- ** Ports 3 - 8 can be configured to carry +5V on Pin 9.

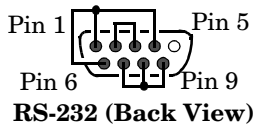


Caution

Do not use the +5V Power feature with the Quad/Octacable Using Power feature with interfaces other than the DB9 box may result in unacceptable voltage loss.

Building DB9 Female Loopback Plugs or Cables

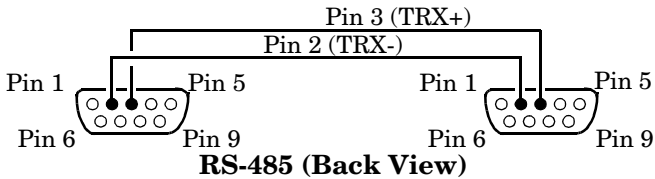
To perform loopback testing of DB9 ports in RS-232 mode, obtain or create a female DB9 connector with the following pins wired together:



- Pins 2 to 3
- Pins 7 to 8 to 9
- Pins 1 to 4 to 6

Note: If you use the +5V Power feature, either remove the jumper or disconnect the power supply cable before running the diagnostics. If you do not do so, the diagnostics fail.

To test DB9 ports in RS-485 mode, obtain two female DB9 connectors and create a cable with the following wiring:

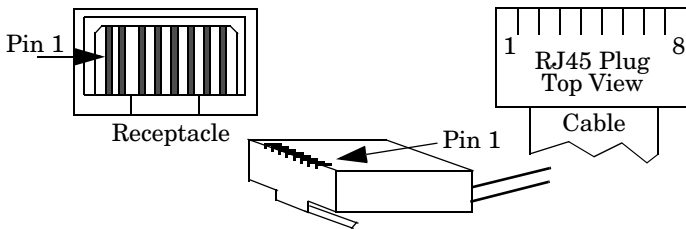


RJ45 Interfaces

The Octacable RJ45 fanouts use RJ45 connectors.

RJ45 Pinouts

The RocketPort 485 uses RJ45 connectors with the pins numbered as shown below:



Depending on jumper configuration, the pins carry the following values:

Pin	RS-232 Signal	RS-485 Signal
1	RTS	Not used*
2	DTR	Not used*
3	Signal ground	Signal ground
4	TxD	TRX+
5	RxD	TRX-
6	DCD	Not used*
7	DSR	Not used*
8	CTS	Not used*

- * Ports 1 and 2 can be either RS-232 or RS-485, while Ports 3 through 8 are RS-232 only. All RS-232 modem control signals are present in RS-485 mode, but not used.



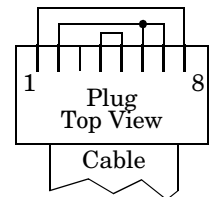
Caution

While the RocketPort 485 card can be configured to supply +5V, this voltage is not accessible on the RJ45 connector. Therefore this option should not be used with the Octacable RJ45.

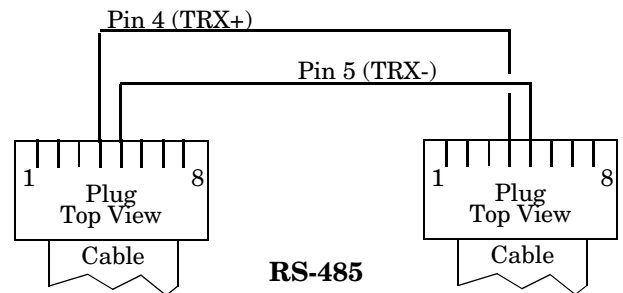
Building RJ45 Loopback Plugs or Cables

To perform loopback testing of RJ45 ports in RS-232 mode, obtain or create an RJ45 connector with the following pins wired together:

- Pins 4 to 5
- Pins 1 to 8
- Pins 2 to 6 to 7



To test RJ45 ports in RS-485 mode, obtain two RJ45 connectors and create the cable shown below:





Setting the DIP Switches

The RocketPort ISA card uses a DIP switch to set the base I/O address range. The default value is 180 (hex). If you are installing more than one RocketPort card, or if you experience an I/O address conflict with another device, use the DIP switches to change the I/O address.









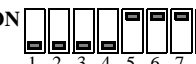
For example, if you install two RocketPort cards and are using the default address range:

Sample DIP Switch Settings

1st RocketPort 180 (hex)	ON  1st Card 1 2 3 4 5 6 7 8
2nd RocketPort (Software address can be any unused I/O address)	ON  2nd Card 1 2 3 4 5 6 7 8

The following table lists possible DIP switch settings. We recommend starting with the default settings and making changes only if the default values produce conflicts.

First ISA Card DIP Switch Settings (see Notes)

100 - 143 hex ON 	140 - 183 hex ON 	180 - 1C3 hex ON 
200 - 243 hex ON 	240 - 283 hex ON 	280 - 2C3 hex ON 
300 - 343 hex ON 	340 - 383 hex ON 	380 - 3C3 hex ON 

Notes:

1. If installing a single RocketPort ISA card, set the DIP switches as shown in the table.
2. If installing two ISA cards, 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 ISA cards, follow Note 2 for the 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 ISA cards, follow Notes 2 and 3 for the second and third cards, then set the DIP switches on the fourth card the same as on the first card, EXCEPT SWITCHES 5 AND 6 OFF.

Specifications

The following tables illustrate RocketPort conditions and specifications.

Environmental Condition	Value
Air temperature: System on System off	0 to 40°C -20 to 85°C
Humidity (non-condensing): System on System off	8% to 80% 20% to 80%
Altitude	0 to 10,000 feet

Electromagnetic Compliance	Status
Emission: Canadian EMC requirements CISPR-22/EN55022 Class A FCC PART 15: Class A	Yes
Immunity: EN50082: 801-2 ESD, 801-3 RF, 801-4 FT	Yes
UL Recognized	Yes

RocketPort 485 Card	Specification
Baud Rate:	50 to 460.8K bps
<i>Note: Baud rate is dependent upon hardware and operating system configuration.</i>	
Bus interface	ISA
<i>Note: EISA files are on the Diagnostics diskette.</i>	
Control by device driver: Data bits Parity Stop bits	7 or 8 Odd, Even, None 1 or 2
Current Consumption (Values do not include the power supplied to external devices on Ports 3 through 8.)	<u>+5V</u> <u>+12V</u> <u>-12V</u> 350 mA 110 mA 160 mA
Dimensions	6.25" by 4.2"
Heat output	16.6 BTU/Hr
Interfaces: All models	RS-232
With optional RS-485 feature enabled on Ports 1 and 2	RS-485
Interrupt (software selectable)	None, 3, 4, 5, 9, 10, 11, 12, 15
Mean time between failures (MTBF)	20.5 Years
Power consumption	4.87 W

RocketPort 485 Card	Specification
RocketPort cards/system	4
Surge protection with standard interface box	Provides ESD surge protection exceeding 10 KV.

Interface Box Type	Mounting Dimensions	Overall Dimensions
RS-232/485, 8-Port	3.37" x 2.69"	3.68" x 3.6" x 1.6"

FCC Notices

Radio Frequency Interference (RFI) (FCC 15.105)

This equipment has been tested and found to comply with the limits for Class A digital devices pursuant to Part 15 of the FCC Rules.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, 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, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to 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)

This equipment 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.

Serial Cables (FCC 15.27)

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

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 create a bootable diskette.

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

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

You can find both files on the *Comtrol Software and Documentation CD* or [download](#) them from the ftp site.

Note: *If you have the Comtrol Software and Documentation CD, you can use the Quick Start Card for procedures for your operating system.*

Creating a Bootable Diagnostics Diskette

This discussion outlines how to create a bootable diagnostics diskette. You can use [this file](#) on our web site to:

- Download the necessary files.
- Easily find specific procedures for your operating system to create the bootable diskette.

Diagnostics Overview

After you create 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 will 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](#) discussion in this document to build additional loopback plugs.

Running the Diagnostics

You can run the diagnostics using one of the following methods:

- Execute the **rocket.exe** file on the diskette in a native DOS environment.

Note: *The diagnostic occasionally fails when running in Windows MS-DOS(R) windows.*

- Boot the system from diagnostics diskette you created.

Use the following procedure to run the diagnostics:

1. Restart your machine in DOS mode or insert the diagnostics diskette.
2. Execute **rocket.exe** or start the machine.
The diagnostic starts automatically,
3. Enter the appropriate letter for the base I/O range and IRQ used for the first card.

Note: Only the first card requires that the I/O address matches the physical DIP switch setting. For each subsequent card, select any unused I/O address available in your system.

4. Follow the remainder of the on-line instructions.

If the diagnostics did not pass you may want to use the following discussion to diagnose your problem.

Resolving Failures

If the diagnostics could not find the card:

- Make sure that you have entered the correct I/O base address and IRQ.
- Select a different unused I/O address (also reset the DIP switch to the new selection).
- Turn off the power and reseal the card into the slot.
- Check for proper cable connections.
- Check for proper installation of the loopback plug.

Try running the diagnostics again. If they fail again, you may have a bad port. [Contact Technical Support](#).

Technical Support

Control has a staff of support technicians available to help you. Before you call, please have the following information available:

Item	Your System Information
Model number	
Serial number	
Interface type	
I/O address and IRQ	
Operating system type and release	
Device driver version	
PC make, model, and speed	
List other devices in the PC and their addresses	

Control	Headquarters	Europe
Phone	(612) 494-4100	+44 (0)1869 323220
FAX	(612) 494-4199	+44 (0)1869 323211
Email	support@control.com	support@control.co.uk
Web support	Searchable Solution Database and FAQs	
Web site	www.control.com	www.control.co.uk
FTP site	ftp.control.com	

Second Edition, January 10, 2000
 Copyright © 1999, 2000 Control Corporation
 All Rights Reserved.

RocketPort is a registered trademark of the Control Corporation. Other product and company names mentioned herein may be the trademarks of their respective owners.

Control Corporation makes no representations or warranties with regard to the contents of this reference card or to the suitability of any Control product for any particular purpose. Specifications subject to change without notice. Some software or features may not be available at the time of publication. Contact your reseller for current product information.

2000048 Rev. B