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PCI Hardware Installation Guide

Product Overview

The RocketPort® PCI series multiport serial card fits into the PCI slot of a personal computer, and uses a 36 MHz processor that is specifically designed to process asynchronous serial communications.

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

- The processor
- A serial controller
- Bus interface logic and other miscellaneous logic

You can install up to four RocketPort PCI cards in one PC, with up to 128 additional serial ports, and you can install any combination of PCI-bus and ISA-bus RocketPort cards.

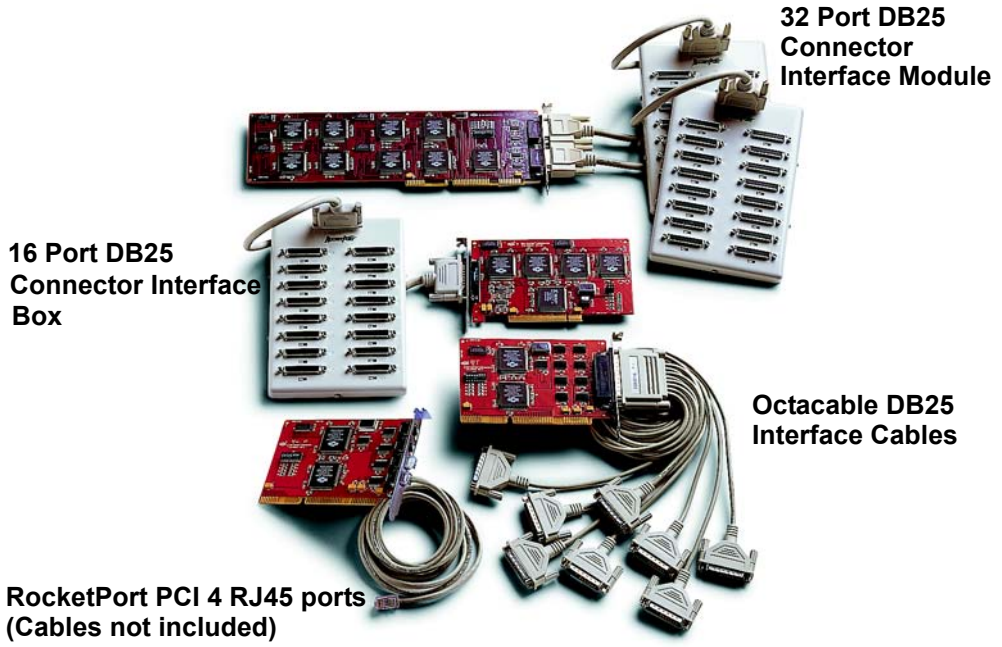
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Product List and Pictures

This *Hardware Installation* document discusses the following serial controllers.

Type	Ports	Interface Type
RJ45	4	This model has four female RJ45 jacks on the mounting bracket for RS-232 serial port connections. Cables are not included.
DB9/DB25 Quadcable	4	Includes a fanout cable with four standard DB25 or DB9 connectors for RS-232 serial port connections. Quadcables have the capability to be 8-port cards with an 8-port interface cable. Some drivers view the 4-port as an 8-port card.
8	8	Requires one 8-port interface module.
RJ11	8	This model has eight female RJ11 jacks on the mounting bracket for RS-232 serial port connections. The RJ11 does not support NT RAS (Remote Access Server), as it lacks the full set of modem control lines. Cables are not included.
DB9/DB25/ RJ45 Octacable	8	Includes a fanout cable with eight standard DB25, DB9, or RJ45 connectors for RS-232 serial port connections.
DB25/ RM16-RJ45	16	Requires one 16-port DB25 connector interface module, or one RM16-RJ45 Rack Mount interface module for RS-232 serial port connections.
DB25/ RM16-RJ45/ RM32-RJ45	32	Requires two 16-port DB25 interface modules, or two 16-port RM16-RJ45 Rack Mount interface modules, or one RM32-RJ45 Rack Mount interface module for RS-232 serial port connections.

Note: *The cables and interface modules shipped with this product are described and illustrated in RocketPort Interfaces on Page 6.*



Locating Drivers and Software Documentation

You can download the latest drivers and software installation documents from the web site at http://support.comtrol.com/Download.asp.

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RocketPort Terminology

For the purposes of the following discussions, “RocketPort ISA” cards means any interface type including 4-port RJ45, 8-port RJ11, Quadcable, and Octacable, or 8/16/32-port model.

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

- RocketPort PCI-bus boards (any interface type including 4-port RJ45, 8-port RJ11, Quadcable, Octacable, and 8/16/32-port models)
- RocketPort *Plus* models
- RocketPort PCI *422* models
- RocketPort Universal PCI-bus boards (any interface type including Quadcable, Octacable, 8-port low profile, 16/32-port models)

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.

Existing RocketPort ISA Cards Installed

You must deconfigure and remove any existing RocketPort ISA cards before installing RocketPort PCI cards. After you have successfully installed the RocketPort PCI cards, reinstall the RocketPort ISA cards.

Explanation

The BIOS on your computer automatically handles I/O addressing for RocketPort PCI cards 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 that 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.

Installing the RocketPort Hardware

Hardware installation consists of installing the card in the system and connecting the interface.

Card Installation

Use the following procedure to install the card.

Note: *If you are installing PCI and ISA RocketPort cards, install the PCI cards and driver before installing and configuring the ISA cards.*

1. Turn off your computer.
2. Remove the system cover.
3. Select a PCI expansion slot.
4. Remove the slot cover.

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

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5. Insert the card into the slot and seat it securely.
6. Reinstall the expansion slot retaining screw.
7. If this is not a 4-port RJ45 or 8-port RJ11 (4 RJ45 or 8 RJ11 ports integrated in the card bracket), attach the interface that came with your card using the appropriate procedure:
   - *Installing a Quad/Octacable Interface* on Page 4
   - *Installing a Standard or Surge Interface Module for an 8 Port Card* on Page 4
   - *Installing a Rack Mount Interface Module* on Page 5

   a. *If this is a 4-port RJ45 or 8-port RJ45,* use the software installation and configuration document for your operating system, with the driver to complete your installation.

   For the latest software and documentation, go to http://support.comtrol.com/download.asp.

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

   b. Verify that the ports are functioning properly and connect your peripheral devices.

Installing a Quad/ Octacable Interface

Use this procedure to complete the Quadcable or Octacable hardware installation.

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

1. Attach the male end of the Quadcable or Octacable to the card.
2. Tighten the retaining screws.

   See *RocketPort Interfaces* on Page 6, if you need information about the connectors.
3. Use the software installation and configuration document for your operating system, with the driver to complete your installation.

   For the latest software and documentation, go to http://support.comtrol.com/download.asp.

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

4. Verify that the ports are functioning properly and connect your peripheral devices.

Installing a Standard or Surge Interface Module for an 8 Port Card

Use this procedure to complete the installation with a standard interface module.



Do not connect the RocketPort cable to the card or the interface module when the PC is powered on. This prevents possible damage to the interface module electronics.

1. Attach the male end of the RocketPort cable to the card and the female end to the connector labeled ***Host*** on the interface module.

   Note: *The male DB25 port labeled **Host** is reserved for Comtrol use and no user accessible signals are present at this port.*
2. Tighten the retaining screws.

   Note: *If you have a 32-port adapter, the connector labeled **J1** corresponds to Ports 0 through 15 and the connector labeled **J2** (closest to the bus) corresponds to Ports 16 through 31.*
3. *If applicable*, use the slide switches on the interface module to set each port to either RS-232 or RS-422.

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4. Use the software installation and configuration document for your operating system, with the driver to complete your installation.

   For the latest software and documentation, go to http://support.comtrol.com/download.asp.

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

5. Verify that the ports are functioning properly and connect your peripheral devices.

Installing a Rack Mount Interface Module

The RM16-RJ45 and RM32-RJ45 are sturdy enough to allow you to stack several units on a shelf, or you can mount it directly into a rack.

1. Place the unit on a stable surface or attach the L brackets to the interface using the screws supplied with the unit and attach the L bracket into your rack.



   Note: *You can mount the unit facing in either direction.*



2. Attach the 3-foot cable or the 3-foot and the 10-foot cables together between the interface and the board.

   Note: *The cables are interchangeable. You may connect either or both cables depending upon the distance between the card and the rack. The maximum distance permitted between the interface module and card is 15 feet.*

3. Optionally, for the RM32-RJ45, attach the two cables to the card and the interface. The connector labeled **J1** corresponds to **Host A** (Ports 0 through 15), and the connector labeled **J2** (closest to the bus) corresponds to **Host B** (Ports 16 through 32).

Caution

Do not connect 16-port cards located in different machines to the RM32-RJ45. It is possible to damage the interface and card if the interface is connected to two PCs using separate line power sources.

4. Use the software installation and configuration document for your operating system, with the driver to complete your installation.

   For the latest software and documentation, go to http://support.comtrol.com/download.asp.

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

5. Verify that the ports are functioning properly and connect your peripheral devices.

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RocketPort Interfaces

A cable or interface module may be shipped with RocketPort PCI series. The type of cable or interface module shipped with RocketPort PCI series depends on the product part number. The cables and interface modules are described below:

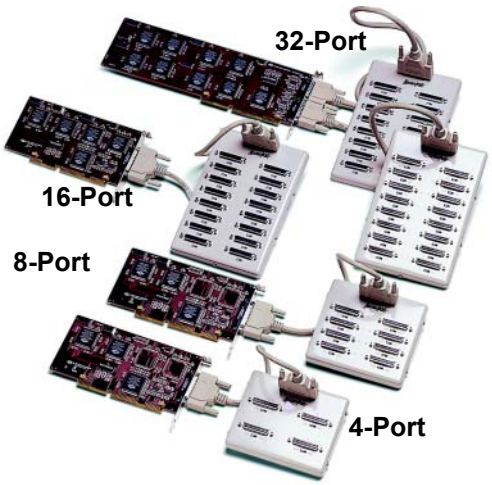
- Quadcable and Octacable fanout cables with the following configurations:
  - Quadcable DB25 and DB9 male
  - Octacable DB25, DB9 male, and RJ45



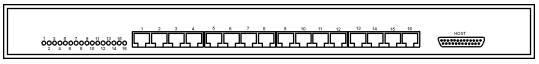
***Note**: The RJ45 Octacable is not displayed.*

- Standard interface modules with the following configurations:
  - RS-232 mode-only or switch-selectable RS-232/422; both models have female DB25 connectors.
  - Surge interface module that is switch-selectable RS-232/422 with male DB25 connectors.

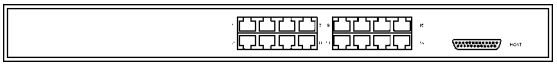
  ***Note:** RS-422 supports up to 10 multidrop devices.*



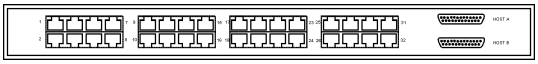
- Rack Mount Models are available with RJ45 connectors (back panels shown).
  - 16-Port RS-232 (with red LEDs)
  - 16-Port RS-422 (with red LEDs)



  - 16-Port RS-232 with integrated status LEDs. The yellow LEDs show receiving activity. The green LEDs show transmitting activity.

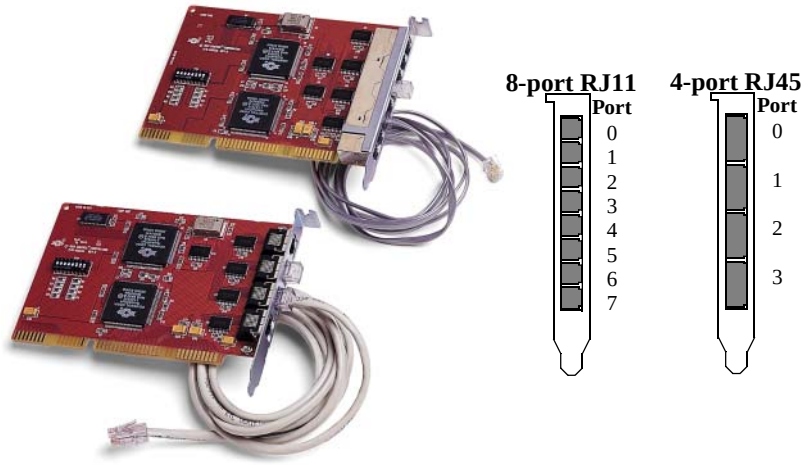


  - 32-Port RS-232 with integrated status LEDs. The yellow LEDs show receiving activity. The green LEDs show transmitting activity.



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- RocketPort PCI 4-port RJ45 and RocketPort PCI 8-port RJ11.



Cabling Requirements

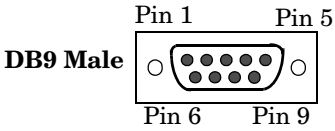
Use the appropriate pinout specification provided below for your hardware.

DB9 Interface Connectors

There are Quadcable and Octacable models available with DB9 connectors on a fanout cable.

DB9 Pinouts

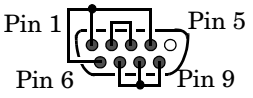
The following information and table provide information on the DB9 connectors that are used on the Quadcable and Octacable.



Pin	RS-232 Signal
1	CD
2	RxD
3	TxD
4	DTR
5	Signal GND
6	DSR
7	RTS
8	CTS
9	Not used

Building DB9 Female Loopback Plugs

Loopback connectors are plugs, with pins wired together as shown, that are used in conjunction with the RocketPort diagnostic software to test serial ports. This loopback is used with the Quadcable and Octacable. To build a loopback plug for the Quadcable and Octacable, wire the following pins together:



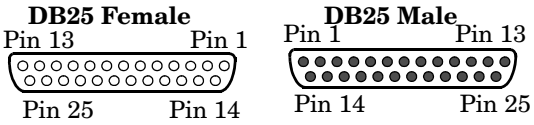
RS-232 (Back View)

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

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DB25 Interfaces

This section describes the DB25 interface connectors. Standard interface modules use female DB25 connectors, while the Surge interface module, Quadcable, and Octacable fanouts use male connectors.



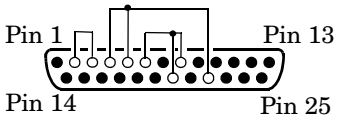
This table shows connector information for DB25 connectors.

	Interface Modules		Quad/Octacable
Pin	**RS-232 Signal**	**RS-422 Signal**	**RS-232 Signal**
1	Not used	Not used	Not used
2	TxD	Not used*	TxD
3	RxD	Not used*	RxD
4	RTS	Not used*	RTS
5	CTS	Not used*	CTS
6	DSR	Not used*	DSR
7	Signal ground	Signal ground*	Signal ground
8	DCD	Not used*	DCD
9 to 14	Not used	Not used	Not used
15	Not used	RxD+	Not used
16	Not used	Not used	Not used
17	Not used	RxD-	Not used
18	Not used	Not used	Not used
19	Not used	TxD+	Not used
20	DTR	Not used*	DTR
21 to 24	Not used	Not used	Not used
25	Not used	TxD-	Not used

* *All RS-232 signals are present in RS-422 mode. The quad/octacables do not support RS-422 mode.*

Building DB25 Female Loopback Plugs

Loopback connectors are plugs, with pins wired together as shown, that are used in conjunction with the RocketPort diagnostic software to test serial ports.



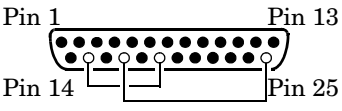
RS-232 Only (Back View)

This loopback is used with the Quadcable and Octacable. To build a DB25 loopback plug for an Quadcable or Octacable, wire the following pins together:

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

To build a DB25 loopback plug (surge interface model) for an RS-422 serial connection, wire the following pins together:

- Pins 15 to 19
- Pins 17 to 25



RS-422 Only (Back View)

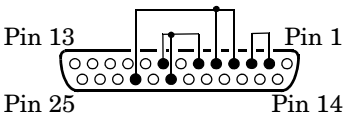
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Building DB25 Male Loopback Plugs

Loopback connectors are plugs, with pins wired together as shown, that are used in conjunction with the RocketPort diagnostic software to test serial ports.

This loopback plug is used with the standard 8- and 16-port DB25 interface modules. To build a DB25 loopback plug for an RS-232 serial connection, wire the following pins together:

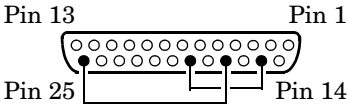
- Pins 2 to 3
- Pins 4 to 5 to 22
- Pins 6 to 8 to 20



RS-232 Only (Back View)

To build a DB25 loopback plug for an RS-422 serial connection, wire the following pins together.

- Pins 15 to 19
- Pins 17 to 25



RS-422 Only (Back View)

RJ45 Interfaces

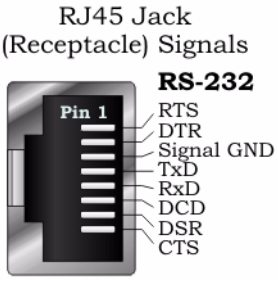
The RocketPort PCI/4-port RJ45, an Octacable model, and the Rack Mount interface module are available with RJ45 connectors.

RJ45 Pinouts for the Octacable and Rack Mount Interface Module

The following figures provide pinout information for the RJ45 connectors used on the Octacable and Rack Mount interface module.

Note: *Ring indicator is not supported on the RJ45 connector.*

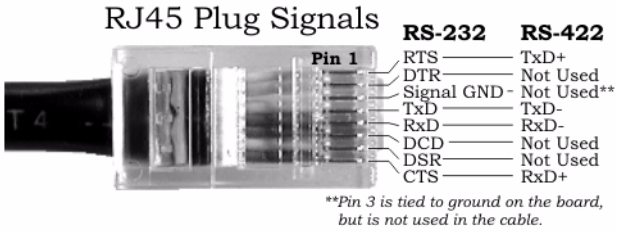


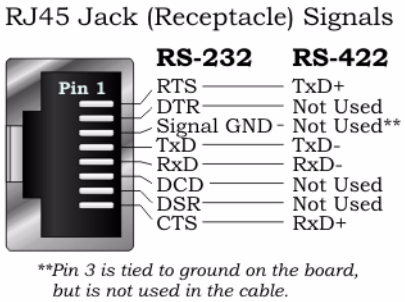


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Pinouts for the RJ45 Interface Module

The following figures provide pinout information for the RJ45 plug and receptacle for the RJ45 interface module.





Building RJ45 Loopback Plugs

Loopback connectors are plugs, with pins wired together as shown, that are used in conjunction with the RocketPort diagnostic software to test serial ports.

This RJ45 loopback is used with the Octacable and Rack Mount interfaces. To build an RJ45 loopback plug, wire the following pins together:

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



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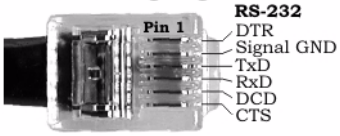
RJ11 Interface

The RocketPort PCI/8-port RJ11 features eight standard RJ11 modular connectors, located on the controller board mounting bracket. The ports are numbered 0 through 7, with Port 7 being the connector closest to the bus.

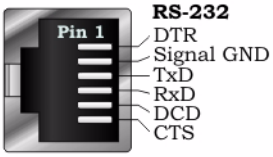
RJ11 Pinouts

The following figures provide pinout information for the RJ11 jack plug and receptacle.

RJ11 Plug Signals



RJ11 Jack (Receptacle) Signals



Building RJ11 Loopback Connectors

Loopback connectors are plugs, with pins wired together as shown, that are used in conjunction with the RocketPort diagnostic software to test serial ports.

To build an RJ11 loopback plug, wire these pins together:

- Pins 3 to 4
- Pins 1 to 5 to 6



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Specifications

The following tables illustrate RocketPort PCI conditions and specifications.

Environmental Condition	Value
Air temperature:	
System on	0 to 40°C
System off	-20 to 85°C
Humidity (non-condensing):	
System on	8% to 80%
System off	20% to 80%
Altitude:	0 to 10,000 feet (0 to 3048 meters)

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

*Class A*4-port RJ45 model meets FCC Part 15 Class B.*

RocketPort PCI Card	Specification
Baud rate:	
RS-232 DTE (4-port RJ45, 8-port RJ11, Quad/Octacable models)	50 to 460.8K baud (without interface module)
RS-232/422 (models with interface module)	50 to 230.4K baud (with interface module)

Note: *Baud rate is dependent upon hardware and operating system configuration.*

Bus interface	PCI		
Control by device driver:			
Data bits	7 or 8		
Parity	Odd, Even, None		
Stop bits	1 or 2		
Current consumption:	**+5V**	**+12V**	**-12V**
4-port RJ45	200 mA	50 mA	10 mA
8-port RJ11	440 mA	100 mA	160 mA
Quadcable	410 mA	100 mA	160 mA
Octacable	440 mA	100 mA	160 mA
RocketPort 8	600 mA	110 mA	160 mA
RocketPort 16	940 mA	220 mA	320 mA
RocketPort 32	2.9 A	440 mA	0

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RocketPort PCI Card	Specification
Power consumption:	
4-port RJ45	1.72 W
8-port RJ11	5.32 W
Quadcable	5.17 W
Octacable	5.32 W
RocketPort 8	6.24 W
RocketPort 16	11.18 W
RocketPort 32	18.78 W
Dimensions:	
4-port RJ45	5.1” by 4.2”
8-port RJ11	6” by 5”
Quad/Octacable	5.6” by 4.2”
8/16-Port	6.875” by 4.21”
32-Port	7.2” by 4.2”
Heat output:	
4-port RJ45	5.87 BTU/Hr.
8-port RJ11	18.1 BTU/Hr.
Quadcable	17.6 BTU/Hr.
Octacable	18.2 BTU/Hr.
8-Port	27.1 BTU/Hr.
16-Port	49.4 BTU/Hr.
32-Port	67.4 BTU/Hr.
I/O ports/expansion slot	From 4 to 32
Interfaces:	
All models except 422	RS-232
With optional switch-selectable interface module	RS-422
Mean time between failures (MTBF):	
4-port RJ45	103.4 Years
8-port RJ11	31.8 Years
Quad/Octacable	23.5 Years
8-Port	60.7 Years
16-Port	45.6 Years
32-Port	17.4 Years
RocketPort cards/system	4
Surge protection:	
4-port RJ45 and 8-port RJ11 interface, Quadcable and Octacable models	Provides ESD surge protection minimum of 15KV @ 200A for a duration of 1 ns.
Standard and rack mount interface modules	Provides ESD surge protection minimum of 10KV @ 200A for a duration of 1 ns.
Surge interface module	Provides ESD surge protection minimum of 25KV @ 200A for a duration of 1 ns.

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Surge Interface Operating Specifications	Limit
Maximum surge current (8x20*u*S)	100 amps (total)
Capacitance	<350pf
Clamping voltage	30 volts
Clamping response time	<5 nanoseconds
Transient energy (10/1000 MS)	300 mJ
Inductance	<1.5 nh
ESD withstand (surge-protection)	25KV

Interface Module Type	Mounting Dimensions	Overall Dimensions
RS-232 only, 8-port	3.2” x 6.48”	5.8” x 5.35” x 0.65”
RS-232 only, 16-port	3.0” x 6.17”	5.8” x 8.5” x 0.65”
RS-422 with 16-ports (Rack Mount with red LEDs)	19” x 8.0” x 1.74” (with brackets)	17.25” x 8.0” x 1.74” (without brackets)
RS-232 with 16-ports (Rack Mount with integrated yellow and green LEDs)	19” x 8.0” x 1.74” (with brackets)	17.25” x 8.0” x 1.74” (without brackets)
RS-232 with 32-ports (Rack Mount with integrated yellow and green LEDs)	19” x 8.0” x 1.74” (with brackets)	17.25” x 8.0” x 1.74” (without brackets)
RS-232/422 with 4-ports	3.2” x 6.48”	5.8” x 5.35” x 0.65”
RS-232/422 with 8-ports (All models)	3.2” x 6.48”	5.8” x 5.35” x 0.65”
RS-232/422 with 16-ports (All Models)	3.0” x 6.48”	5.8” x 8.5” x 0.65”

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FCC Notices

Radio Frequency Interference (RFI) (FCC 15.105)

This equipment has been tested and found to comply with the limits for Class A or B (depending on the model) 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 distance between the equipment and 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.

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Troubleshooting and Running Diagnostics

This section describes how to diagnose and troubleshoot problems. When a problem occurs, first determine that your RocketPort is functioning properly. Start by creating a bootable diagnostics diskette.

Creating a Diagnostics 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 at ftp://ftp.comtrol.com/RPort.

This discussion outlines how to create a bootable diagnostics diskette. You can use our Web site http://support.comtrol.com/bootdiag.asp 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.
- Perform stress test on 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

Use the following procedure to run the diagnostics:

1. Insert the diagnostics diskette you created and restart your machine. The diagnostic starts automatically.
2. Verify that the system locates the RocketPort card.
3. Follow the remainder of the online 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:

- Turn off the power and reseat 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.

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Technical Support

Comtrol has a staff of support technicians available to help you. You should review *Troubleshooting and Running Diagnostics* on Page 16 before calling Technical Support. In addition, the Web site has Online Technical Support available. If you call for Technical Support, please have the following information available:

Item	Your System Information
Model number	
Serial number	
Interface type	
Operating system type, release, and service package	
Device driver version	
PC make, model, speed, and single or dual processor	
List other devices in the PC and their addresses	

Comtrol	Headquarters	Europe
Phone	(763) 494-4100	+44 (0)1869 323220
FAX	(763) 494-4199	+44 (0)1869 323211
E-mail	support@comtrol.com	support@comtrol.co.uk
Web support	http://support.comtrol.com/	
Downloads	http://.support.comtrol.com/download.asp	
Web site	www.comtrol.com	www.comtrol.co.uk
FTP site	ftp.comtrol.com	

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