

RocketPort[®] Series QNX[®] 4.xx Device Driver Installation Reference Card

Scope

Use this *Reference Card* to configure and install up to three Control RocketPort series multiport serial cards and QNX 4.XX device driver.

Prerequisites

The following are required to use this device driver:

- QNX level 4.XX operating system
- An ISA- or PCI-based machine

Note: This Reference Card assumes that you are familiar with the QNX 4.XX operating system.

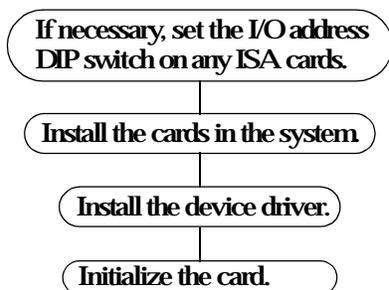
How to Use the On-Line Help

This device driver provides on-line help that shows how to initialize the device driver. To start the help system, enter the following:

```
use/Dev##rckt
```

Installing RocketPort Systems

Use the following procedure to install and configure RocketPort series systems with the QNX 4.XX device driver.



Note: Refer to the Hardware Reference Card for hardware installation information or use the Readme file that came with the driver.

If you are installing a RocketPort ISA in an EISA-bus computer, you may need the EISA configuration files. The EISA configuration files are available on the Control ftp site or the diskette that contains the Diagnostics for the RocketPort series.

Downloading and Installing Driver Files

The file names are released on the ftp/web site with the following file name format:

```
B#####pax.F
```

Where:

- B is optional and signifies a beta driver.
 - ##### is the Control device driver part number, 6523.
 - PAX means multiple files have been combined into one file.
 - .F means the file has been compressed.
-

Extracting Files

Use the following steps to extract the QNX driver files:

1. Download the file on to your system.

Note: If you downloaded the driver to a DOS file system, you may need to use the Dosfsys command to read the DOS formatted file.

2. Copy the 6523pax.f file to your root directory (/).
3. Rename the driver; type:

```
mv 6523pax.f 6523pax.F
```

Use one of the following procedures to install the driver directly onto your hard drive or create an installation diskette.

*Note: Before you install the driver, you may need to increase the size of the Device Manager -n option in the DEV statement in your *sysinit* file for the controllers you are adding.*

Installing the Driver On the Hard Drive

Use the following procedure to install the driver on your hard drive.

1. Follow Steps 1-3 in the *Extracting Files* discussion.
2. Enter one of the following commands to install and create a /Control directory the driver:

```
install -u 6523pax.F
```

OR

```
cat 6523pax.F | melt | pax -rv
```

3. Load the driver by following the *Loading the Driver* discussion.
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Creating an Installation Diskette

Use the following procedure to create a Control QNX driver diskette:

1. Follow Steps 1-3 in the *Extracting Files* discussion.
2. Place diskette into floppy drive (/dev/fd0).
3. Enter the following commands:

```
dmit /dev/fd0
```

```
cat 6523pax.F | vol -ws2/dev/fd0
```

4. To install the driver from the floppy drive, type:
install

Note: By default, the install command looks in the diskette drive for the driver files.

5. Load the driver using the *Loading the Driver* discussion.

Loading the Driver

Before loading the driver, make sure that you have installed the RocketPort ISA or PCI cards. If you are installing an ISA card, it may be necessary to change the I/O address (default is 180) setting. Use the *Hardware Reference Card* or the readme file for hardware installation procedures.

To load the driver, issue the following command line from either the command prompt or from the `/etc/config/sysinit` file. See the *Quickstart* discussion for sample command lines.

If you are installing RocketPort PCI cards, they are detected before any of the RocketPort ISA cards and you do not need to specify I/O addresses or IRQs for RocketPort PCI cards. The system determines the order of the PCI cards.

Note: If you type 'use Dev##.rckt' you will get command line help.

```
[path]Dev##.rckt [options] addr[,irq] [addr[,irq]]
[addr[,irq]] &
```

Where:

Table 1. Commands

Command	Description
[path]	The path to the Control driver files. Optionally, you may either add the directory to your binary path or copy the Control driver files (<code>Dev##.rckt</code>) to your <code>/bin</code> directory.
Dev##.rckt	Where ## is the specific driver; that is: * <code>Dev32.rckt</code> is the 32-bit version of the driver (QNX 4.23 and higher) * <code>Dev16.rckt</code> is the 16-bit version of the driver (QNX 4.22 and below)
[options]	Represents any combination of the parameters listed in Table 2.
[addr] (ISA only)	Represents the I/O base address (hex) of each RocketPort ISA board you are installing. This is not required for RocketPort PCI boards.
[irq] (ISA only)	Represents the software interrupt you want to use with the RocketPort ISA board (default is 15). RocketPort ISA cards cannot share interrupts (IRQs). If you are running in poll mode, you do not need to specify any IRQs. Once loaded, the driver creates devices for each board in the <code>/dev</code> directory by the name of <code>rckt#</code> ; unless otherwise specified by the <code>-N</code> name option; where # is 1 through the number of ports on the card.

Load Options

The following is a table of load option parameters.

Table 2. Driver Load Options

Options	Description
-p	Poll mode (Interrupt default) - 137 Tx polls/sec and 100 Rx polls/sec. If IRQs are specified along with this option, the IRQs are ignored.
-b number	Defines initial baud rate (default 9600).
-C number	Size of canonical input buffer (default 256).
-d	Sets DSR on initially (default).
-D	Sets DSR off initially.
-e	Sets options to "edit" mode.
-E	Sets options to "raw" mode (default).
-f	Enables and locks hardware flow control (default).
-F	Disables hardware flow control.
-h number	Defines high-water mark for system input buffer flow control (default 3/4 point of input buffer).
-I number	Size of raw system input buffer (default 2,048).
-l number	Defines low-water mark for system input buffer flow control (default 1/4 point of input buffer).
-m	Disables modem carrier processing (HUP).
-M	Enables modem processing (HUP) (default).
-N name	Prefix to register (default "rckt").
-O number	Size of system output buffer (default 2,048).
-r	Sets RTS on initially (default).
-R	Sets RTS off initially.
-s	Enables output flow control (ohflow) split, CTS only required (default).
-S	Disables output flow control (ohflow). CTS and DSR required.
-x	Enables and locks software flow control.
-X	Disables software flow control (default).

Quickstart

The following illustrates some sample installations.

Note: You may receive **Error 23 File Table Overflow** message if the `QNX Device Manager (Dev)` statement does not have a large enough value for the `-n` option in the `sysinit` file to accommodate the number of ports.

- Starts `Dev32.rckt` with PCI cards only.
Dev32.rckt &
- Starts `Dev32.rckt` for one RocketPort ISA card with the base I/O address of 180h using IRQ11. If any PCI boards are installed, they are detected and installed first.
Dev32.rckt 18011 &
- Starts `Dev32.rckt` for 2 RocketPort ISA cards with the first using a base I/O address at 180h with IRQ 11, the second with a base I/O address at 100h using IRQ 15, both 1200 baud. If any PCI boards are installed, they are detected and installed.
Dev32.rckt -b 120018011 10015 &

- Starts Dev32.rckt for any number of RocketPort PCI cards at 115200 baud.

Dev32rckt -b 115200 &

Resolving Installation Problems

If installation fails or you are trying to resolve a problem, you should try the following before calling the Control technical support line:

- Check the signals between your peripherals and the interface box to verify that they match (if applicable). See the appropriate *Hardware Reference Card* for information.
- Check to make sure the cables are connected properly.
- Reseat the card in the slot.
- Make sure that the expansion slot screw was replaced after inserting the card.
- Check for possible I/O address conflicts using the following table.

If you have not been able to get the card operating:

1. Turn off your PC and insert the diagnostic diskette.
2. Boot the PC and following the instructions provided by the diagnostic diskette.

Software Sample Code

The QNX system calls: open, close, works for opening and closing ports, and tcsetattr sets the stty settings for the port.

System calls: read and write also work. These are the same calls that you would use for standard ports. There are no special calls needed for the RocketPort, it is treated and manipulated similar to standard ports.

Please refer to your QNX manuals for information about QNX function calls or locate the QNX web page where they have free sample software:

<http://www.qnx.com>

Software & Hardware Buffers

The RocketPort card has a 1,024 byte hardware queue for input data, and a 256 byte hardware queue for output data. This is on a per port basis.

The 1K byte input queue buffer is adequate and works well in most cases. The hardware performs RTS/CTS flow control. The output buffer is smaller and might be a problem for some programs.

An additional software buffer on the output helps ease this problem. (The QNX driver employs a 2K intermediate buffer). Software buffers do have a cost, you pay a penalty of an increase in RAM required by the driver as well as additional overhead required to shuffle data in and out of it. Also, the addition of a software buffer requires polling in order to move data from the software buffer to the hardware buffer. This requires either a dedicated IRQ or a hook into the system timer. (The QNX driver responds to a Transmit Buffer Empty (TBE) interrupt so no polling is required for continuous transmission).

Technical Support

Before you place a technical support call to Control, please make sure that you have the following information.

- Card type
- Connector type
- I/O address selections
- OS type and release
- Driver release number (to verify, enter sin ver)
- PC make, model, & speed
- List of other devices in the PC with addresses

After you have gathered this information, contact Control using one of the following methods.

Control Headquarters

Phone: (612) 631-7654

FAX: (612) 631-8117

Email: support@control.com

Web site: <http://www.control.com>

FTP site: [ftp.control.com](ftp://ftp.control.com)

telnet: [www.control.com](telnet://www.control.com) (or telnet 204.73.219.7)

Control Europe

Phone: +44 (0)1869 323220

FAX: +44 (0)1869 323211

Email: support@control.co.uk

Web site: <http://www.control.co.uk>

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First Edition, March 26, 1998

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