



## LAVA COMPUTER MFG. INC.

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## TECHNICAL SUPPORT FAQ

TOPIC:	QNX 6 Installation	PRODUCT(s):	Quattro-PCI
		REVISION:	A00

### Installation

- With the power turned off, insert the Quattro-PCI card into any free PCI slot in your PC. Make sure the card is well seated. Turn your PC on and start QNX 6.  
**NOTE:** If you are using an AGP video card you may find that QNX will not boot with the card in the PCI slot immediately following the AGP slot. Simply place the card in the second slot to alleviate this problem.
- Since the Quattro-PCI card has multiple ports sharing a single Device ID, QNX will only be able auto-detect the presence of the first port of each Device ID (Port A and Port C).
- Obtain the Lava Serial Driver and follow the directions in the Readme.1st file. You will need to modify the Port Addresses in the Lava.include file to match the actual IO addresses in the PCI listings on your own system.
- Reboot your system. If you have correctly configured your system you should find that QNX will set up all four serial ports at start-up.  
**NOTE:** The Lava.include driver may need to be reconfigured if the profile of your system is modified (i.e. by adding or removing any PCI cards). If you find that you are having problems with all of the ports on your Lava card you may want to double check that the IO addresses in the PCI listing match the values set in the Lava.include file.
- To verify that the card has been installed you may check in either the /etc/dev/ folder, or in QNX's System Information (Launch>Utilities>System Information). Within the System Information listing you will find a process named "devc-ser8250". By selecting this process you will have access to several different information tabs. Selecting the Arguments tab (Args) will provide you with the exact arguments that were passed to the devc-ser8250 process at boot-up. From here you can easily determine which port is assigned to which serial device by referring to the card's resources.  
For example, given the process command "devc-ser8250 -u1 3F8,3 -u2 2F8,4 -u3 a000,5" we can see that Com1 and Com2 were mapped to devices Ser1 and Ser2 respectively and our serial port at a000 was mapped to device Ser3.

### Card Resources

You can easily determine the physical address and IRQ resources of the card's serial port by displaying the PCI listing "pci -v". This command will display all the information for each of the PCI devices on the system bus. To find the IO address and IRQ of the card, simply scan through the output of this command for a section beginning with "Vendor ID = 1407h, Lava Computer MFG Inc.", of which there should be two sections, one for each port.

**NOTE:** QNX will always enumerate ports in sequential order. Therefore, when reading the PCI listing from top to bottom the address of Port A will be displayed first, followed immediately by the address of Port B. The ordering same can be applied to Device IDs.

### Testing

Testing the card's functionality can be done by using QNX's own terminal program, Qtalk, and a loopback connector. To test a port, attach the loopback connector and open up a Qtalk session by executing the command "qtalk -m /dev/ser3 -b 115200,8,n,1" on the port. While the loopback connector is attached any characters entered in Qtalk should be echoed back to the screen. Removing the loopback connector should prevent character echoing from occurring.

### Troubleshooting

If for some reason the card was not picked up by QNX at boot-up, but the card is displayed in the PCI listing, you may manually add the port by using the devc-ser8250 command.

**Example:** Say we have four serial ports residing at physical addresses=a000, a400, a800 and ac00, all sharing IRQ=5 and none of which is allocated a serial device in the /etc/dev/ folder. If we have determined that Ser1 and Ser2 already exist in the /etc/dev/ folder (this is done by inspecting the folder /etc/dev/ for all serial devices), we can add four new serial devices by running the command:

```
devc-ser8250 -u3 a000,5 -u4 a400,5 -u5 a800,5 -u6 ac00,5
```

This is a very simple example of adding four new serial devices by using the devc-ser8250 command. Full documentation of all the options associated with this command can be found in the QNX 6 RTOS Utilities Reference Manual.