Notice

This guide is designed for experienced users to setup the system in the shortest time.

Safety Precautions

Warning!

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

OZONE SAFE

RECYCLABLE

A Message to the Customer

Fist of all, thank you for purchasing PER-C40C Mini PCI module. This Quick Installation Guide will help you on the process of the installation. Please read it thoroughly before you start to install it. The product comes with a two year limited warranty except for improper use. Therefore, we strongly suggest that you read and refer to the Quick Installation Guide before any installation. You may visit AAEON website for the latest version of the instruction guide. Please refer to Http://www.aaeon.com

Product Warranty

AAEON Customer Services

All products in AAEON are designed according to the strictest specifications to ensure that these products will retain reliable performance in typical industrial environments. Whether your purchase from AAEON is made for use in the laboratory or the factory facility, you can be assured that every purchase in AAEON will provide reliability and stability of operation.

Your satisfaction is our primary concern. Here is a guide for AAEON's customer services. To ensure you get full benefits of our services, please follow the instructions below step by step.

Technical Support

We want you to get the maximum performance from your products. If you run into technical difficulties, we will always be here for you. For the most frequently asked questions, you can easily find solutions in your product documentation. The guide is specific in detail so please refer to it first. Therefore, we suggest strongly that you can read it before asking for customer service over the phone. If you still cannot find the answer, gather all questions you can think of and have the product at hand before giving a call to your dealer. All dealers of AAEON are well-trained and ready to provide you as much supports as they can. Based on the customer service problems we have encountered, most of them are minor and able to be easily solved

over the phone. In addition, free technical support is available from AAEON engineers during office hours. We are always pleased to give advice regarding any installation and operation for AAEON products.

Ordering Information

- **TF-PER-C40C-B10-01**

  Mini-PCI 4-port RS-232 Module, Rev. B1.0

Packing List

- 1 PER-C40C Mini-PCI Module

- 4 RS-232 Cable

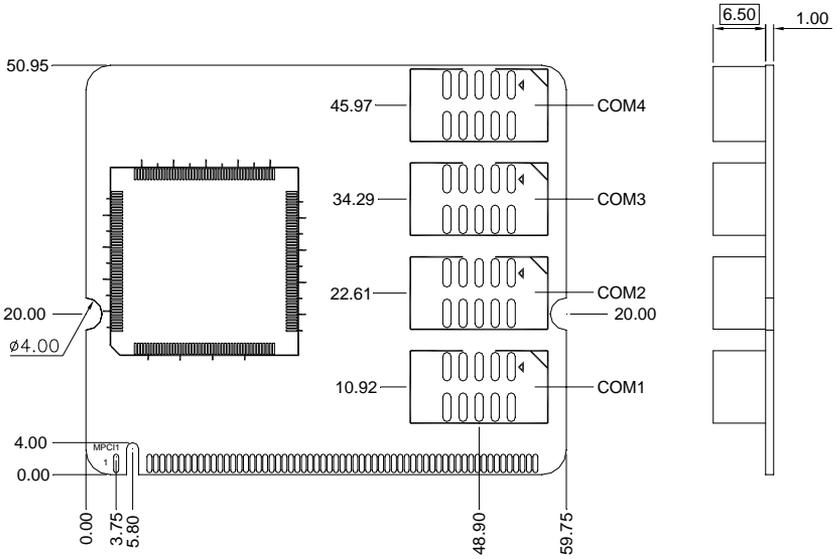- 1 CD-ROM for QIG (in PDF format) and drivers

Content

1.1 Features

- Mini-PCI Type III Interface
- Four RS-232 Ports Onboard
- Full Duplex Serial Communication

1.2 Specifications

- Form Factor   Mini-PCI Type III A 2" x 2.35"

  (50.8mm x 59.6mm)
- UART Chipset   OXFORD OXmPCI954
- Power Requirement   +3.3V
- Operating Temperature 32°F ~ 140°F (0°C ~ 60°C)

1.3 Connector Locations and Dimension

1.4 Connector List

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Label	Function
COM1	Serial Port #1
COM2	Serial Port #2
COM3	Serial Port #3
COM4	Serial Port #4

1.5 COM Port 1 Connector (COM1)

Pin	Signal	Pin	Signal
1	DCDA	2	RXA
3	TXA	4	DTRA
5	Ground	6	DSRA
7	RTSA	8	CTSA
9	RIA	10	N/C

1.6 COM Port 2 Connector (COM2)

Pin	Signal	Pin	Signal
1	DCDB	2	RXB
3	TXB	4	DTRB
5	Ground	6	DSRB
7	RTSB	8	CTSB
9	RIB	10	N/C

1.7 COM Port 3 Connector (COM3)

Pin	Signal	Pin	Signal
1	DCDC	2	RXC
3	TXC	4	DTRC
5	Ground	6	DSRC
7	RTSC	8	CTSC
9	RIC	10	N/C

1.8 COM Port 4 Connector (COM4)

Pin	Signal	Pin	Signal
1	DCDD	2	RXD
3	TXD	4	DTRD
5	Ground	6	DSRD
7	RTSD	8	CTSD
9	RID	10	N/C

1.9 Driver Installation and Module set up

The PER-C40C supports Linux and Windows XP platforms. It comes

with a CD-ROM that contains all drivers and utilities that meet your

needs. When your platform is *Windows XP* please following the

sequence below to install the drivers, when your system is Linux,
you don't need to install the driver just process the Mini PCI RS-232
module set up in Linux

Installing Mini PCI RS-232 drivers in Windows XP

Once the card is installed and the computer is restarted, Windows
will detect the board and attempt to load the drivers for it.

1. Windows will detect a "PCI Serial Port". Select "Install

from a list or specific location (Advanced)" as the shown of figure 1. Click "Next."

Figure 1

2. Select "Search for the best driver in these locations.", next select "Include this location in this search:" and then click "Browse" to open the "CD-ROM/Driver/PER-C40C Mini PCI RS-232 Module driver V1.0 for Windows" file as shown in figure 2 . Click "Next."

Figure 2

3. Windows has found an updated driver for this device as shown in figure 3. Click "Next."

Figure 3

4. The "Completing the Found New Hardware Wizard" dialog Appears as shown in figure 3, click "Finish."

5. Repeat the above process for the second, third, fourth, fifth AAEON PCI Communications Port.

6. Please re-start your Windows.

Finalizing Mini PCI RS-232 module settings

Check your Windows System/Device Manager to confirm proper installation of Mini PCI RS-232 drivers:

Multifunction adapters

　　AAEON OX16PCI954 PCI UARTs

　　AAEON OX16PCI95x PCI bridge

Ports(COM & LPT)

4-port Mini PCI module will show 4 AAEON PCI

Communications Port and 2-port Mini PCI module will show 2

AAEON PCI Communications Port as the figure 4 shows 4
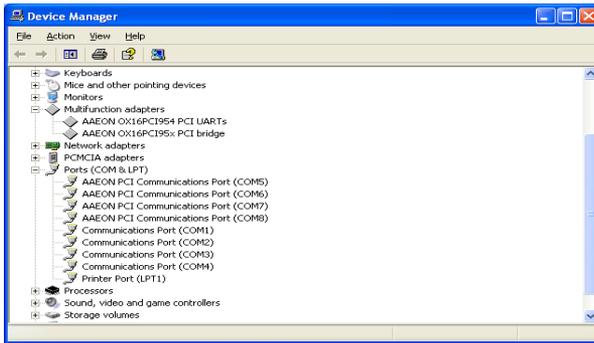
ports Mini PCI module

Figure 4

Mini-PCI RS-232 module set up in Linux

If the module is a 4-port Mini PCI, you don't need to proceed with the

set up process, you can use it directly. **2-port Mini PCI module**

please use following the sequence below to set up the module.

1. Open the *Termina*l screen and make a

   cat /proc/tty6/driver/serial command to check your

   COM port settings.

```
root@localhost:~
File  Edit  View  Terminal  Go  Help
[root@localhost root]# cat /proc/tty/driver/serial
serinfo:1.0 driver:5.05c revision:2001-07-08
0: uart:16550A port:3F8 irq:4 baud:9600 tx:11 rx:0
1: uart:16550A port:2F8 irq:3 baud:9600 tx:11 rx:0
4: uart:16450 port:E500 irq:9 baud:9600 tx:0 rx:0
5: uart:16450 port:E508 irq:9 baud:9600 tx:0 rx:0
6: uart:16450 port:E510 irq:9 baud:9600 tx:0 rx:0
7: uart:16450 port:E518 irq:9 baud:9600 tx:0 rx:0
[root@localhost root]#
```

As the screen showing, use 16550A to be UART prefix is the system COM ports, and we can see this system have 2 COM ports, leave each other ttyS0, ttyS1.

2. Make *lspci -v* command to find OXmPCI952 IRQ and I/O address

```
root@localhost:~
File  Edit  View  Terminal  Go  Help
00:10.0 Serial controller: Oxford Semiconductor Ltd: Unknown device 9505 (prog-i
f 06 [16950])
        Subsystem: Oxford Semiconductor Ltd: Unknown device 0000
        Flags: medium devsel, IRQ 9
        I/O ports at e000 [size=8]
        I/O ports at e100 [size=8]
        I/O ports at e200 [size=8]
        I/O ports at e300 [size=8]
        I/O ports at e400 [size=32]
        Memory at ec1c000 (32-bit, non-prefetchable) [size=4K]
        Capabilities: [40] Power Management version 2
00:10.1 Bridge: Oxford Semiconductor Ltd OX16PCI954 (Quad 16950 UART) function 1
        Subsystem: Oxford Semiconductor Ltd: Unknown device 0000
        Flags: medium devsel, IRQ 9
        I/O ports at e500 [size=32]
        Memory at ec10d000 (32-bit, non-prefetchable) [size=4K]
        I/O ports at e600 [size=32]
        Memory at ec10e000 (32-bit, non-prefetchable) [size=4K]
        Capabilities: [40] Power Management version 2
```

As the screen showing, we can find "Serial controller: Oxford Semiconductor Ltd:" this alphabetic string then to see the next line have IRQ number and the next have I/O address

3. Open the file: */etc/rc.local* and add two commands

setserial /dev/ttySX1 port IOADDR1 irq Y uart 16950 baud_base 115200

*setserial /dev/ttySX2 port IOADDR2 irq Y uart 16950 baud_base 115200*

In above command line **X1,X2** is the COM port number
and it must be beyond beforehand. So in this case X1 is 4,
X2 is 5. Besides, **Y** is IRQ number . Finally, we can set the
I/O address individually.

setserial /dev/ttyS4 port 0xe000 irq 9 uart 16950 baud_base 115200
setserial /dev/ttyS5 port 0xe100 irq 9 uart 16950 baud_base 115200

4.　Please re-start your computer.
5.　Make **cat /proc/tty/driver/serial** command to see if the
display is as following, if yes you already set it up.
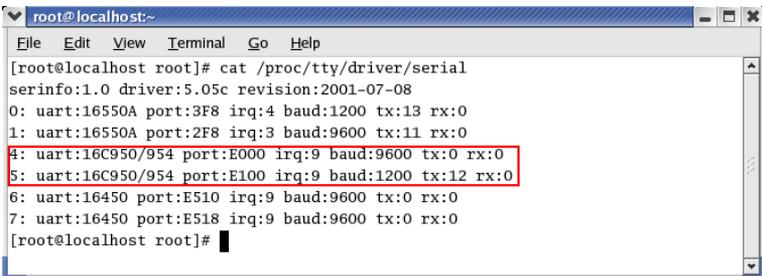
```
[root@localhost root]# cat /proc/tty/driver/serial
serinfo:1.0 driver:5.05c revision:2001-07-08
0: uart:16550A port:3F8 irq:4 baud:1200 tx:13 rx:0
1: uart:16550A port:2F8 irq:3 baud:9600 tx:11 rx:0
4: uart:16C950/954 port:E000 irq:9 baud:9600 tx:0 rx:0
5: uart:16C950/954 port:E100 irq:9 baud:1200 tx:12 rx:0
6: uart:16450 port:E510 irq:9 baud:9600 tx:0 rx:0
7: uart:16450 port:E518 irq:9 baud:9600 tx:0 rx:0
[root@localhost root]#
```