

## 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.*

## **A Message to the Customer**

---

First of all, thank you for purchasing PFM-C42C PCI-104 4/8-port RS-232 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 sheet of warranty for two years assurances except for improper use. Therefore, we strongly suggest you to read and refer to the Quick Installation Guide before any installation. You may visit AAEON website for the latest version of the instruction. Please refer to <http://www.aaeon.com/>

## Product Warranty

---

### AAEON Customer Services

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

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

### Technical Support

We require you to get the maximum performance from your products. If you run into technical difficulties, we'll be here always for you. For the most frequently asked questions, you can easily find solutions in your product documentation. The guide is for your quick and accurate installation so please refer to it first. We strongly suggest you to read it before asking for a 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 many supports as we can. Based on the customer service we've encountered until now, most of problems are minor and able to be

easily solved over the phone. In addition, free-charged technical support is available from AAEON engineers in the office time. We are always pleased to give advice regarding to any installation and operation for AAEON products.

## **Ordering Information**

---

- TF-PFM-C42C-A10  
PCI/104+ Board, 8 COM ports, Oxford (OXuPCI954),  
PC/104+, Rev. A2.3
- TF-PFM-C42C-A10-02  
PCI/104+ Board, 4 COM ports, Oxford (OXuPCI954),  
PC/104+, Rev. A2.3

## **Packing List**

---

- Product CD (including Quick Installation Guide in pdf format and driver)
- PFM-C42C

## **Optional Accessories**

---

- 1701090150  
Flat Cable, D-sub 9P 1.25mm pitch housing, 15cm

# Content

A Message to the Customer.....	1-2
Product Warranty .....	1-3
Ordering Information .....	1-5
Packing List.....	1-5
Optional Accessories .....	1-5
1.1 Features .....	1-8
1.2 Specifications .....	1-8
1.3 Location of Jumpers.....	1-9
1.4 Mechanical Drawing.....	1-11
1.5 List of Jumpers.....	1-13
1.6 List of Connectors .....	1-14
1.7 Setting Jumpers .....	1-15
1.8 COM5 Ring/+5V/+12V Selection (JP1)(For 8-port only)	1-16
1.9 COM1 Ring/+5V/+12V Selection (JP2) (For 4/8-port) ...	1-16
1.10 COM6 Ring/+5V/+12V Selection (JP3) (For 8-port only)	1-16
.....	1-16
1.11 COM2 Ring/+5V/+12V Selection (JP4) (For 4/8-port) .	1-16
1.12 PCI Routing Setting Selection (SW1) (For 4/8-port) ....	1-17
1.13 COM1 & COM2 RS-232/422/485 Selection (S1) (For 4/8-port).....	1-17
1.14 COM5 & COM6 RS-232/422/485 Selection (S2) (For 8-port only).....	1-17

1.15 RS-232 Serial Port Connector (COM1) (For 4/8-port) .1-18

1.16 RS-232 Serial Port Connector (COM2) (For 4/8-port) .1-18

1.17 RS-232 Serial Port Connector (COM3) (For 4/8-port) .1-18

1.18 RS-232 Serial Port Connector (COM4) (For 4/8-port) .1-18

1.19 RS-232 Serial Port Connector (COM5) (For 8-port only)  
.....1-19

1.20 RS-232 Serial Port Connector (COM6) (For 8-port only)  
.....1-19

1.21 RS-232 Serial Port Connector (COM7) (For 8-port only)  
.....1-19

1.22 RS-232 Serial Port Connector (COM8) (For 8-port only)  
.....1-20

1.23 Driver Installation .....1-20

## 1.1 Features

---

- PC/104+ Interface Rev.2.3
- Supports COM Ports:
  - a. RS-232 x 4 or RS-232 x 8 for TF-PFM-C42C-A10
  - b. RS-232 x 4 and RS-232 x 8 for TF-PFM-C42C-A10  
(Optional)
  - c. RS-232 x 2 or RS-232 x 4 for TF-PFM-C42C-A10-02
  - d. RS-232 x 2 and RS-232 x 4 for TF-PFM-C42C-A10-02  
(Optional)
- Full Duplex Serial Communication
- Supports Window And Linux

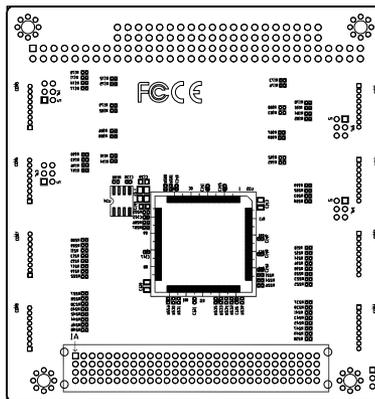
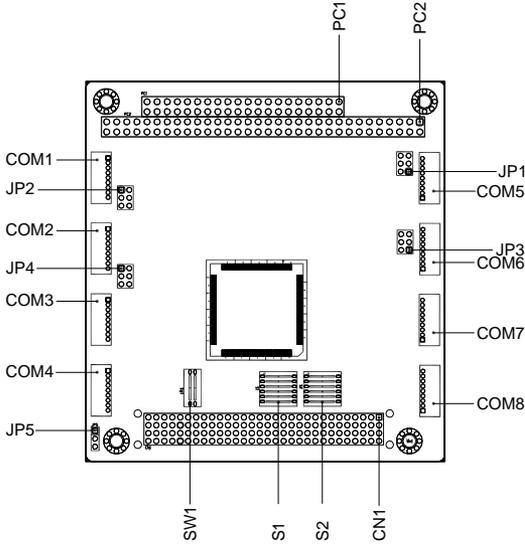
## 1.2 Specifications

---

- |                         |                       |
|-------------------------|-----------------------|
| ● Chipset               | Oxford OXuPCI954      |
| ● Power Requirement     | 12V, 5V, 3.3V         |
| ● Board Size            | 96mm x 91mm           |
| ● Operating Temperature | 32°F~140°F (0°C~60°C) |

### 1.3 Location of Jumpers and Connectors

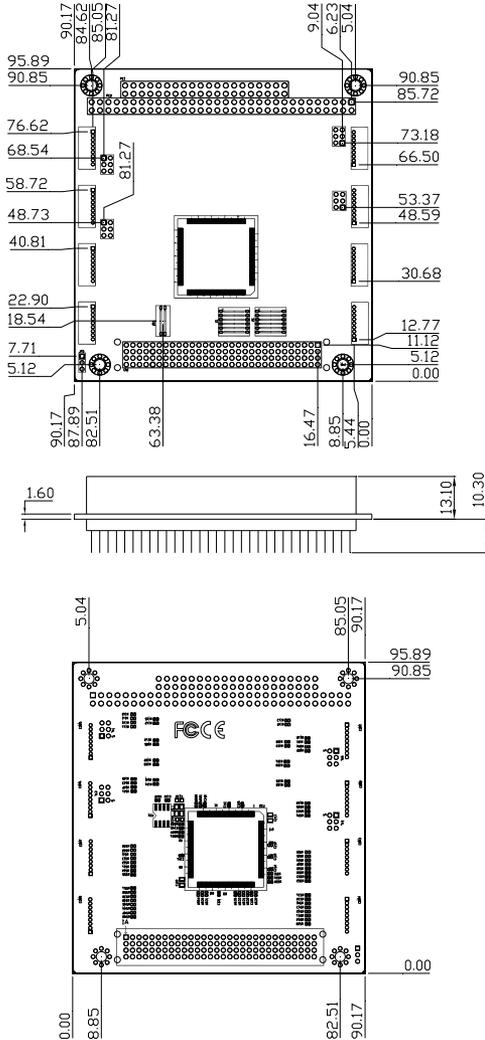
For 8-port





### 1.4 Mechanical Drawing

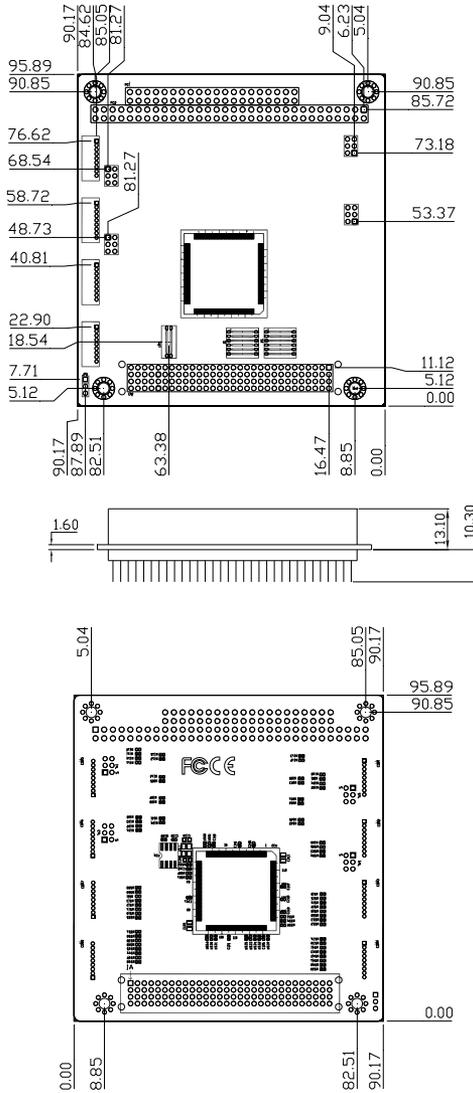
For 8-port



# PC/104 Peripheral Module

# PFM-C42C

For 4-port



## 1.5 List of Jumpers

---

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

<b>Label</b>	<b>Function</b>
JP1 (8-port only)	COM5 Ring/+5V/+12V Selection
JP2 (4/8-port)	COM1 Ring/+5V/+12V Selection
JP3 (8-port only)	COM6 Ring/+5V/+12V Selection
JP4 (4/8-port)	COM2 Ring/+5V/+12V Selection
S1 (4/8-port)	COM1 & 2 RS232/422/485 Selection
S2 (8-port only)	COM5 & 6 RS232/422/485 Selection

## 1.6 List of Connectors

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:

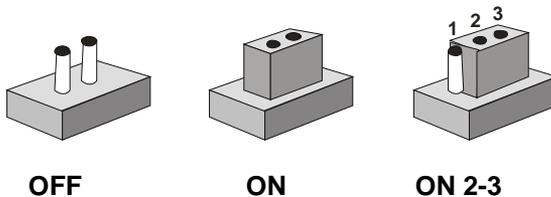
<b>Label</b>	<b>Port</b>	<b>Function</b>
CN1		PCI-104 Connector
COM1	4/8-port	COM1 RS-232/422/485 Serial Port Connector
COM2	4/8-port	COM2 RS-232/422/485 Serial Port Connector
COM3	4/8-port	COM3 RS-232 Serial Port Connector
COM4	4/8-port	COM4 RS-232 Serial Port Connector
COM5	8-port only	COM5 RS-232/422/485 Serial Port Connector
COM6	8-port only	COM6 RS-232/422/485 Serial Port Connector
COM7	8-port only	COM7 RS-232 Serial Port Connector
COM8	8-port only	COM8 RS-232 Serial Port Connector
SW1		PCI Routing Setting Selection

## 1.7 Setting Jumpers

---

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change. Generally, you simply need a standard cable to make most connections.

**1.8 COM5 Ring/+5V/+12V Selection (JP1) (For 8-port only)**

---

<b>JP1</b>	<b>Function</b>
1-2	+12V
3-4	Ring (Default)
5-6	+5V

---

**1.9 COM1 Ring/+5V/+12V Selection (JP2) (For 4/8-port)**

---

<b>JP2</b>	<b>Function</b>
1-2	+12V
3-4	Ring (Default)
5-6	+5V

---

**1.10 COM6 Ring/+5V/+12V Selection (JP3) (For 8-port only)**

---

<b>JP3</b>	<b>Function</b>
1-2	+12V
3-4	Ring (Default)
5-6	+5V

---

**1.11 COM2 Ring/+5V/+12V Selection (JP4) (For 4/8-port)**

---

<b>JP4</b>	<b>Function</b>
1-2	+12V
3-4	Ring (Default)
5-6	+5V

---

### 1.12 PCI Routing setting Selection (SW1) (For 4/8-port)

OXuPCI954 for COM1~4		OXuPCI954 for COM5~8	
<b>1=ON,2=ON</b>	<b>PIRQ#A , IDSEL0</b>	<b>PIRQ#B , IDSEL1</b>	
1=ON,2=OFF	PIRQ#B , IDSEL1	PIRQ#A , IDSEL0	
1=OFF,2=ON	PIRQ#C , IDSEL2	PIRQ#D , IDSEL3	
1=OFF,2=OFF	PIRQ#D , IDSEL3	PIRQ#C , IDSEL2	

Note: The line with Bold letters is the default setting.

### 1.13 COM1 & COM2 RS-232/422/485 Selection (S1) (For 4/8-port)

	COM1	COM2
<b>RS-232</b>	<b>1=ON,2=OFF,3=OFF</b>	<b>4=ON,5=OFF,6=OFF</b>
RS-422	1=OFF,2=ON,3=OFF	4=OFF,5=ON,6=OFF
RS-485	1=OFF,2=OFF,3=ON	4=OFF,5=OFF,6=ON

Note: The line with Bold letters is the default setting.

### 1.14 COM5 & COM6 RS-232/422/485 Selection (S2) (For 8-port only)

	COM5	COM6
<b>RS-232</b>	<b>1=ON,2=OFF,3=OFF</b>	<b>4=ON,5=OFF,6=OFF</b>
RS-422	1=OFF,2=ON,3=OFF	4=OFF,5=ON,6=OFF
RS-485	1=OFF,2=OFF,3=ON	4=OFF,5=OFF,6=ON

Note: The line with Bold letters is the default setting.

**1.15 RS-232 Serial Port Connector (COM1) (For 4/8-port)**

Pin	Signal	Pin	Signal
1	DCD#1(485D- / 422TXD-)	2	RXD1(422RXD+)
3	TXD1(485D+ / 422TXD+)	4	DTR#1(422RXD-)
5	GND	6	DSR#1
7	RTS#1	8	CTS#1
9	RI#1	10	N.C

**1.16 RS-232 Serial Port Connector (COM2) (For 4/8-port)**

Pin	Signal	Pin	Signal
1	DCD#2(485D- / 422TXD-)	2	RXD2(422RXD+)
3	TXD2(485D+ / 422TXD+)	4	DTR#2(422RXD-)
5	GND	6	DSR#2
7	RTS#2	8	CTS#2
9	RI#2	10	N.C

**1.17 RS-232 Serial Port Connector (COM3) (For 4/8-port)**

Pin	Signal	Pin	Signal
1	DCD#3	2	RXD3
3	TXD3	4	DTR#3
5	GND	6	DSR#3
7	RTS#3	8	CTS#3
9	RI#3	10	N.C

**1.18 RS-232 Serial Port Connector (COM4) (For 4/8-port)**

Pin	Signal	Pin	Signal
1	DCD#4	2	RXD4

3	TXD4	4	DTR#4
5	GND	6	DSR#4
7	RTS#4	8	CTS#4
9	RI#4	10	N.C

### 1.19 RS-232 Serial Port Connector (COM5) (For 8-port only)

Pin	Signal	Pin	Signal
1	DCD#5(485D- / 422TXD-)	2	RXD5(422RXD+)
3	TXD5(485D+ / 422TXD+)	4	DTR#5(422RXD-)
5	GND	6	DSR#5
7	RTS#5	8	CTS#5
9	RI#5	10	N.C

### 1.20 RS-232 Serial Port Connector (COM6) (For 8-port only)

Pin	Signal	Pin	Signal
1	DCD#6(485D- / 422TXD-)	2	RXD6(422RXD+)
3	TXD6(485D+ / 422TXD+)	4	DTR#6(422RXD-)
5	GND	6	DSR#6
7	RTS#6	8	CTS#6
9	RI#6	10	N.C

### 1.21 RS-232 Serial Port Connector (COM7) (For 8-port only)

Pin	Signal	Pin	Signal
1	DCD#7	2	RXD7
3	TXD7	4	DTR#7
5	GND	6	DSR#7
7	RTS#7	8	CTS#7
9	RI#7	10	N.C

## 1.22 RS-232 Serial Port Connector (COM8) (For 8-port only)

Pin	Signal	Pin	Signal
1	DCD#8	2	RXD8
3	TXD8	4	DTR#8
5	GND	6	DSR#8
7	RTS#8	8	CTS#8
9	RI#8	10	N.C

## 1.23 Driver Installation

The PFM-C42C 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/PFM-C42C 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

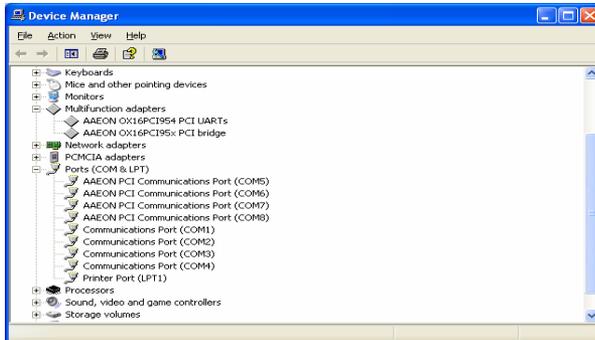


Figure 4

### 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 **Terminal** screen and make a **`cat /proc/tty/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 **ispci -v** command to find OXmPCI952 IRQ and I/O address

```

root@localhost:~# lspci -v
00:10.0 Serial controller: Oxford Semiconductor Ltd: Unknown device 9505 (prog-if 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 ec10e000 (32-bit, non-prefetchable) [size=4K]
Capabilities: [40] Power Management version 2

00:10.1 Bridge: Oxford Semiconductor Ltd 0x16PCI954 (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
```

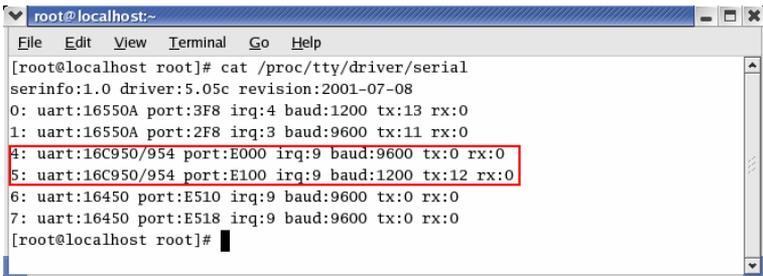
```
setserial /dev/ttySX2 port IOADDR2 irq Y uart 16950 baud_base 115200
```

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:~  
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: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]#
```