

# PCM-3643 PC/104 8-Port RS-232 Module



## Startup Manual

### Introduction

Advantech introduced its new PC/104-compatible communication module with eight individually configurable RS-232 ports, PCM-3643. Targeting embedded system customers with a need for high-speed and shared IRQ ports, high-performance PCM-3643 is especially suitable for multitasking environments. The PCM-3643 provides versatile function settings to meet users needs. These function settings include Standard/Enhance setting, Independent/Shared IRQ setting and Speed setting. Standard/Enhance setting can help users to flexibly use base address. Especially in Enhance setting, different base addresses can be set according to the application. In Shared IRQ setting, all eight interrupt ports can be specified to one. This solves IRQ insufficiency problems within the embedded system. In Speed setting, the PCM-3643 allows transmission rate up to 921.6 kbps. It improves the performance of the system.

### Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 PCM-3643 PC/104 Multi COM Port module
- 1 Start-up manual
- 1 CD-ROM or Disks for utility, drivers, and manual (in PDF format)
- COM Port Cable= pn: 1700400220 (1 COM Port cable for PCM-3643-04A1, and 2 COM Port cables for PCM-3643-08A1)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

For more information on this and other Advantech products, please visit our website at:

<http://www.advantech.com>  
<http://www.advantech.com/epc>

For technical support and service, please visit our support website at:

<http://www.advantech.com/support>

This manual is for the PCM-3643 Rev.A1

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### Features

#### PCM-3643 PC/104 8-port RS-232 Module

- Chipset: 16C550 (4 sets of 16550) standard serial port chipset
- Channel: 4/8 port RS-232 support
- IRQ: 3, 4, 5, 7, 9, 10, 11, 12
- Baud rate: 50 ~ 921.6 kbps
- Charter length: 5, 6, 7 or 8 bits
- Stop bits: 1, 1.5, 2
- Parity: none, even, odd
- Data signals: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND

### Mechanical and Environment

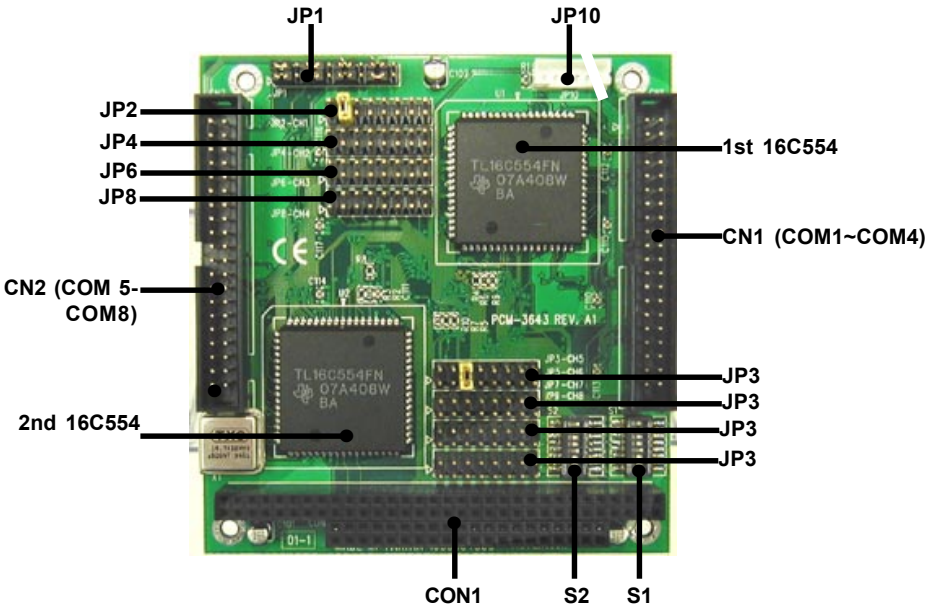
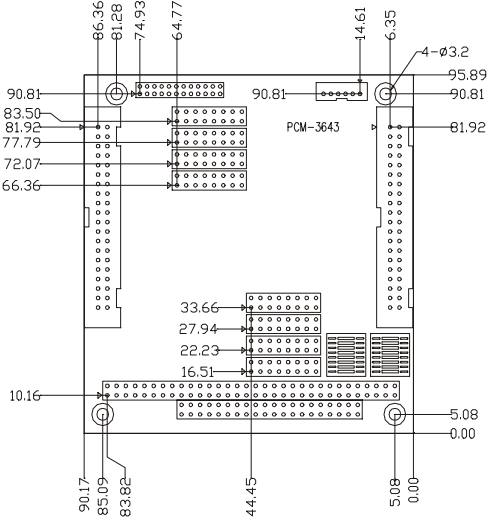
- Power consumption: +5 V @ 400 mA (typical)
- Power requirement: +5 V@ ± 5% tolerance on power supply
- Size/Weight: 96 mm x 90 mm (3.8" x 3.5"), .084 kg (.185lb)
- Operating Temperature.: 0 ~ 60° C (32 ~ 140°F)
- Storage Temperature: -40 ~ 85° C (-40 ~ 185°F)
- Operating humidity: 0 ~ 90% Rel Humd., noncondensing

### Installation

#### Connectors and jumpers

CN1:	1st 4 COM port connector
CN2:	2nd 4 COM port connector
CON1:	PC/104 connector
JP1:	(Reserve)
JP2,4,6,8:	IRQ setting for 1st 4 COM port
JP3,5,7,9:	IRQ setting for 2nd 4 COM port
S1:	Interrupt vector address setting
S2:	COM port base I/O address setting

# Mechanical Drawing



# Jumper Setting

## (1) S1: Interrupt vector address setting/ I/O addressing mode/ IRQ sharing mode

S1 (switch 1 ~ switch 5): Interrupt vector address setting



Default Setting:

Interrupt vector address= 280H  
 I/O Addressing mode= Enhance mode  
 IRQ sharing mode= 4 COM share one IRQ

Switch 5	Switch 4	Switch 3	Switch 2	Switch 1	Interrupt Register
ON	ON	ON	ON	ON	200H
ON	ON	ON	ON	OFF	210H
ON	ON	ON	OFF	ON	220H
ON	ON	ON	OFF	OFF	230H
ON	ON	OFF	ON	ON	240H
ON	ON	OFF	ON	OFF	250H
ON	ON	OFF	OFF	ON	260H
ON	ON	OFF	OFF	OFF	270H
ON	OFF	ON	ON	ON	280H*
ON	OFF	ON	ON	OFF	290H
ON	OFF	ON	OFF	ON	2A0H
ON	OFF	ON	OFF	OFF	2B0H
ON	OFF	OFF	ON	ON	2C0H
ON	OFF	OFF	ON	OFF	2D0H
ON	OFF	OFF	OFF	ON	2E0H
ON	OFF	OFF	OFF	OFF	2F0H
OFF	ON	ON	ON	ON	300H
OFF	ON	ON	ON	OFF	310H
OFF	ON	ON	OFF	ON	320H
OFF	ON	ON	OFF	OFF	330H
OFF	ON	OFF	ON	ON	340H
OFF	ON	OFF	ON	OFF	350H

\*Default setting

OFF	ON	OFF	OFF	ON	360H
OFF	ON	OFF	OFF	OFF	370H
OFF	OFF	ON	ON	ON	380H
OFF	OFF	ON	ON	OFF	390H
OFF	OFF	ON	OFF	ON	3A0H
OFF	OFF	ON	OFF	OFF	3B0H
OFF	OFF	OFF	ON	ON	3C0H
OFF	OFF	OFF	ON	OFF	3D0H
OFF	OFF	OFF	OFF	ON	3E0H
OFF	OFF	OFF	OFF	OFF	3F0H

S1 (switch 6): I/O addressing mode

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ON	Standard mode (3F8, 2F8, 3E8, 2E8, 240, 248, 250, 258 )
OFF*	Enhance mode (use S2 select base address)

\*Default setting

S1 (switch 7, switch 8): IRQ sharing mode select

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Switch 8	Switch 7	Mode
ON	ON	Independent IRQ Mode
ON	OFF	COM 1 ~ COM 8 share 1 IRQ assigned by JP2
OFF*	ON*	COM 1 ~ COM 4 share 1 IRQ assigned by JP2 COM 5 ~ COM 8 share 1 IRQ assigned by JP3
OFF	OFF	COM 1 and COM 2 share 1 IRQ assigned by JP2 COM 3 and COM 4 share 1 IRQ assigned by JP6 COM 5 and COM 6 share 1 IRQ assigned by JP3 COM 7 and COM 8 share 1 IRQ assigned by JP7

\*Default setting

**(2) S2: Base I/O address setting / Speed selection / Operation system select**

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Default setting:

I/O Address=240H  
Speed=normal  
Operating system=98/NT

S2 (switch 1 ~ switch 6): COM Port base I/O address setting

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Switch 1 A3 (Bit1)	Switch 2 A4 (Bit2)	Switch 3 A5 (Bit3)	Switch 4 A6 (Bit4)	Switch 5 A7 (Bit5)	Switch 6 A8 (Bit6)	Base Address
8h	10h	20h	40h	80h	100h	
On	On	On	On	On	On	200 - 207h
Off	On	On	On	On	On	208 - 20Fh
		...				
On	On	On	Off	On	On	240 - 247h
		...				
On	On	On	On	On	Off	300 - 307h
On	On	On	Off	Off	Off	3C0 - 3C7h

\*Default Settings

Base address = 200h + 8h (switch 1) + 10h (switch 2) + 20h (switch 3) + 40h (switch 4) + 80h (switch 5) + 100h (switch 6)

For example: Base address 240h = 200h + 8h (On) + 10h (On) + 20h (On) + 40h (Off) + 80h (On) + 100h (On)

COM Port I/O address

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COM Port	I/O address
COM 1	Base Address + 00H
COM 2	Base Address + 08H
COM 3	Base + 10H
COM 4	Base + 18H
COM 5	Base + 20H
COM 6	Base + 28H
COM 7	Base + 30H
COM 8	Base + 38H

S2 (switch 7): Speed selection

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ON*	Normal speed
OFF	High speed

\*Default setting

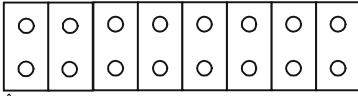
S2 (switch 8): Operation system select

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ON*	98/NT
OFF	DOS

\*Default setting

**(3) JP2 ~ JP9: IRQ Select**



IRQ 3 4 5 7 9 10 11 12

JP2,4,6,8; JP3,5,7,9-----IRQ Select

Bit1 - IRQ3

Bit2 - IRQ4

Bit3 - IRQ5

Bit4 - IRQ7

Bit5 - IRQ9

Bit6 - IRQ10

Bit7 - IRQ11

Bit8 - IRQ12

Note: The right jumper is Bit8 and the left is Bit1.

Note: Share mode recommended 4 COM Share 1 IRQ.

The Advantech PCM-3643 PC/104 Serial Port Module is flexible in that it can use multiple configurations of jumpers JP2 to JP9 to control IRQ sharing. Here are the choices:

**1. Can use 1 COM port with 1 IRQ, so**

JP2 controls	COM1
JP4 controls	COM2
JP6 controls	COM3
JP8 controls	COM4
JP3 controls	COM5
JP5 controls	COM6
JP7 controls	COM7
JP9 controls	COM8

**2. Can use 2 COM ports shared on 1 IRQ**

<b>JP2 controls</b>	<b>COM1 and COM2</b>
JP4-inactive	
<b>JP6</b>	<b>COM3 and COM4</b>
JP8-inactive	
<b>JP3</b>	<b>COM5 and COM6</b>
JP5-inactive	
<b>JP7</b>	<b>COM7 and COM8</b>
JP9-inactive	

**3. Can use 4 COM ports shared on 1 IRQ (Default setting)**

**JP2 controls** COM1,COM2,COM3,COM4  
 JP4-inactive  
 JP6-inactive  
 JP8-inactive

**JP3 controls** COM5,COM6,COM7,COM8  
 JP5-inactive  
 JP7-inactive  
 JP9-inactive

**4. Can use 8 COM ports shared on 1 IRQ**

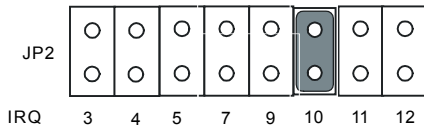
**JP2 controls** COM1,COM2,COM3,COM4,COM5,COM6,COM7,COM8  
 JP4-inactive  
 JP6-inactive  
 JP8-inactive  
 JP3-inactive  
 JP5-inactive  
 JP7-inactive  
 JP9-inactive

**Example:** Lets use the default for example. 4 COM ports (COM1, COM2, COM3, COM4) are controlled by JP2 (jumped), so, JP4, JP6, JP8 are ignored.

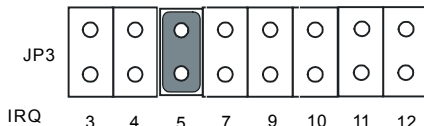
**Note: You can't use the same IRQ at the same time.**

So, in our example above, since IRQ3 is being used by COM1, COM2, COM3, COM4 (default setting), you can't use IRQ3 again by jumping JP3 to use COM5, COM6, COM7, COM8. You have to use a different IRQ.

Default setting: 4 COM ports share 1 1 IRQ, JP2 set to IRQ5, JP3 set to IRQ10



IRQ 3 4 5 7 9 10 11 12



IRQ 3 4 5 7 9 10 11 12

## CN1: COM 1-4 Assignments

Pin #	Assignment
1	NDCDO
2	NDSRO
3	NRXO
4	NRT SO
5	NTXO
6	NCT SO
7	NDTRO
8	RI_O
9	GND
10	GND
11	NDCD1
12	NDSR1
13	NRX1
14	NRT S1
15	NTX1
16	NCT S1
17	NDTR1
18	RI_1
19	GND
20	GND
21	NDCD2
22	NDSR2
23	NRX2
24	NRT S2
25	NTX2
26	NCT S2
27	NDTR2
28	RI_2
29	GND
30	GND
31	NDCD3
32	NDSR3
33	NRX3
34	NRTS3
35	NTX3
36	NCTS3
37	NDTR3
38	RI_3
39	GND
40	GND

## CN2: COM 5-8 Assignments

Pin #	Assignment
1	NDCD4
2	NDSR4
3	NRX4
4	NRT S4
5	NTX4
6	NCT S4
7	NDTR4
8	RI_4
9	GND
10	GND
11	NDCD5
12	NDSR5
13	NRX5
14	NRT S5
15	NTX5
16	NCT S5
17	NDTR5
18	RI_5
19	GND
20	GND
21	NDCD6
22	NDSR6
23	NRX6
24	NRT S6
25	NTX6
26	NCT S6
27	NDTR6
28	RI_6
29	GND
30	GND
31	NDCD7
32	NDSR7
33	NRX7
34	NRTS7
35	NTX7
36	NCTS7
37	NDTR7
38	RI_7
39	GND
40	GND

1. Run Windows. Launch the Add New Hardware wizard from Control Panel.

Press the Next button twice to dismiss the first two pages.

2. You see a dialog listing devices. Select "No, the device isn't in the list," and press the Next button.
3. If you see a dialog asking your permission to search for hardware that isn't Plug and Play compatible, select the choice that reads, "No, I want to select the hardware from a list," and press the Next button.
4. You'll now see a dialog that asks you to "Select the type of hardware you want to install." Select the "Other devices" choice and press the Next button.
5. If you're installing a PCM-3643 for the first time, press the "Have Disk" button. In the ensuing dialog, enter the directory where the PCM-3643 INF file is located.
6. After selecting the appropriate INF directory, the device will be listed in the Models list box. Select one choice and press Next.
7. In the final dialog, press the Finish button. The wizard will now copy files to perform the installation.
8. Please click the "System" icon in Control Panel and click Device Manager tab.  
  
Select "Multi-function" adapter and double click the PCM-3643 item.
9. Click Adapter settings page, then please fill in IRQ and Base Address.
10. Restart system.

## Standard Mode

### 4 ports

IRQ 4 ports share 1 IRQ  
IOBASE 0x3f8, 0x2f8, 0x3ef, 0x2fe

### 8 ports

IRQ 8 ports share 2 IRQs  
IOBASE 0x3f8, 0x2f8, 0x3ef, 0x2fe, 0x240, 0x248, 0x250, 0x258

Example:

JP2 = IRQ3  
JP3 = IRQ4  
Switch1 Bit6 = On  
Bit7 = On  
Bit8 = Off

Note: Please disable onboard COM1, COM2.

## Enhanced Mode

### 4 ports

IRQ 4 ports share 1 IRQ  
IOBASE Base, Base+0x8, Base+0x10, Base+0x18

### 8 ports

IRQ 8 ports share 2 IRQs  
IOBASE Base, Base+0x8, Base+0x10, Base+0x18, Base+0x20, Base+0x28, Base+0x30, Base+0x38



# Windows NT Port Setup and Testing

Under Win NT, do the manual hardware settings, then set up the needed ports in BIOS and Windows Control Panel.

## Hardware settings:

SW1: Set SW1 (see page 3)  
Example: 11101001 (1:on, 0:off) (bit1...bit8)  
Interrupt vector address= 280H  
I/O Addressing mode= Enhance mode  
IRQ sharing mode= COM1-COM8 share 1 IRQ assigned by JP2

SW2:Set SW2 (see page 5)  
Example:11101111 (1:on, 0:off) (bit1...bit8)  
I/O Address= 240H  
Speed= Normal  
Operation system= 98/NT

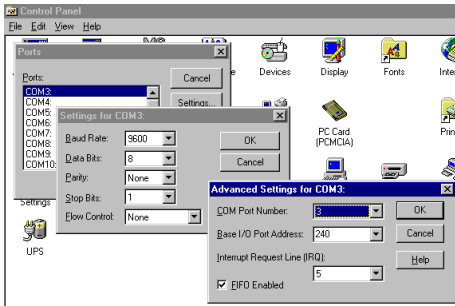
JUMPER settings: (see page 2, ff.)  
Example setting: JP2-CH1 Bit 3 (IRQ5)  
8 COM ports (COM1-COM8) are controlled by JP2 (Jumped), so JP3-JP9 are ignored

## BIOS settings:

In BIOS, go to PnP/PCI Configuration=>Resource controlled by "Manual" => go to "IRQ resource"=> Set IRQ 5 as "Legacy ISA" Example: IRQ5.

## Windows Control Panel settings:

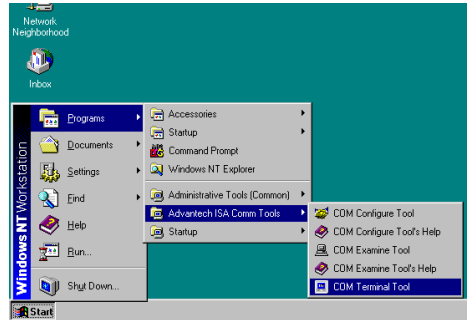
In Control panel, add the COM3~10 Ports. All of them are set at IRQ 5. Set the base I/O port addresses for COM 3/4/5/6/7/8/9/10 at 240/248/250/258/260/268/270/278 respectively.



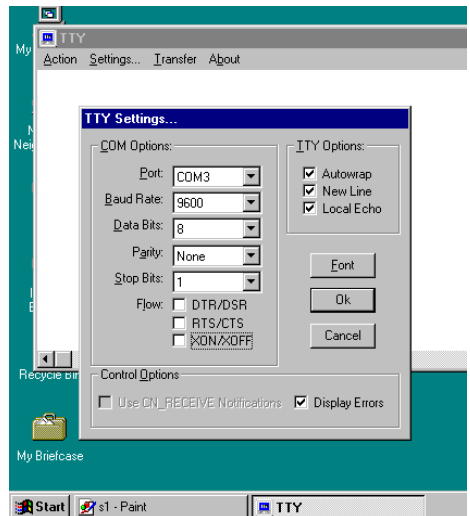
## Testing method:

You can test all COM ports using the COM Terminal Tool located in Advantech ISA Comm tools.

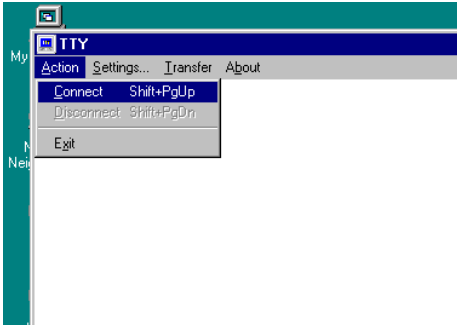
Step1: Enter the testing program.



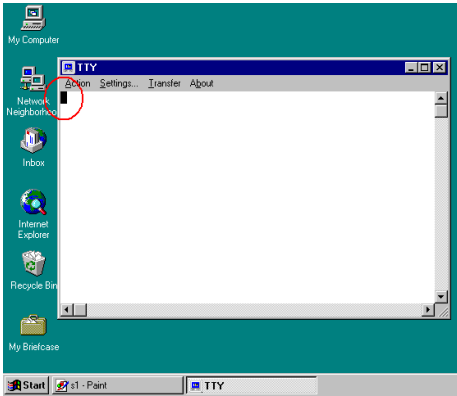
Step2: Select the "Settings" function to enter the TTY Settings and input the data as shown. Then click the "OK" button. Repeat through COM10.



Step3: Select "Action" > ">"Connect" function to test if the COM port is set successfully or not.



Step4: If the COM port is set correctly, a cursor should appear in the TTY screen.



If the COM port is *not* set correctly, you will see the following error message, in which case, backtrack and try again.

