PM-1028-R20

PC/104 4/8-Port RS-232 Module

PCB Ver2.0

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1

Introduction

The PM-1028 is a PC/104-compliant 4-port or 8-port RS-232 module with one TI 16C544Ahigh performance serial I/O chip integrated on board. Its UART is compatible with the 16C550. PM-1028 provides two ways of interrupt control mechanism – shared or independent IRQ. Besides, its IO address and interrupt status address are also selectable by jumpers.

1.1 Specifications:

- **Bus**: PC/104.
- **Interrupt Level**: 3, 4, 5, 7, 9, 10, 11, 12.
- **Chipset**: TI 16C554A.
- **Baud Rate**: up to 921.6K bps (at 14.745Mhz clock input).
- **Serial ports**: 8 16C550-compatible UARTs -- PM-1028-8,
  4 16C550-compatible UARTs -- PM-1028-4
- **Shared or Independent Interrupt.**
- **Selectable Interrupt vector address.**
- **Selectable I/O address.**
- **Power Consumption**: +5V @ 0.6A max.
- **Operating Temperature**: 0◦ ~ 60 ◦ C.

1.2 PM-1028 package contents

PM-1028 package includes the following items:

- 1 x User Manual
- 1 x PM-1028 x 1
- 2 x Serial port cables (40 pin, 4 DB-9) for the PM-1028-8
- 1 x Serial port cable (40 pin, 4 DB-9) for the PM-1028-4
- 1 x CD-ROM Driver

If any of theitems listed above are missing or damaged, please contact the dealer who you purchased the product from. Be sure to save the shipping materials and carton in case you want to ship or store the product in the future.

2

Installation

This chapter describes how to install the PM-1028.

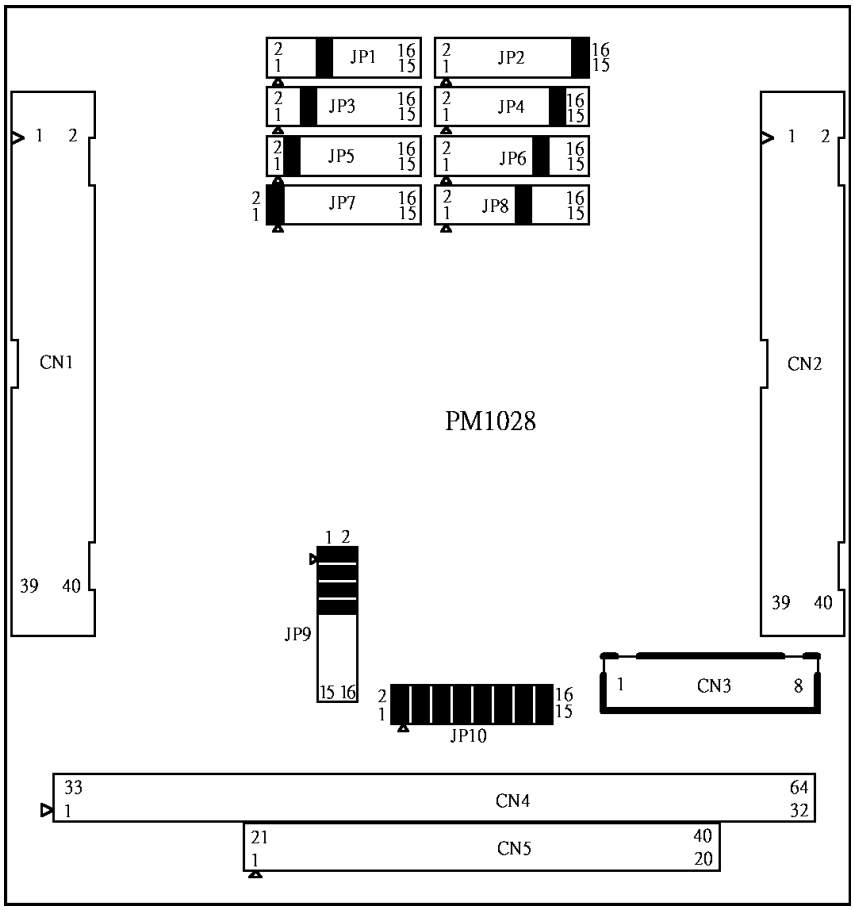
2.1 Hardware Installation

Installation of the PC/104 modules on CPU card is quick and simple. The following steps describe how to mount the PC/104 modules.

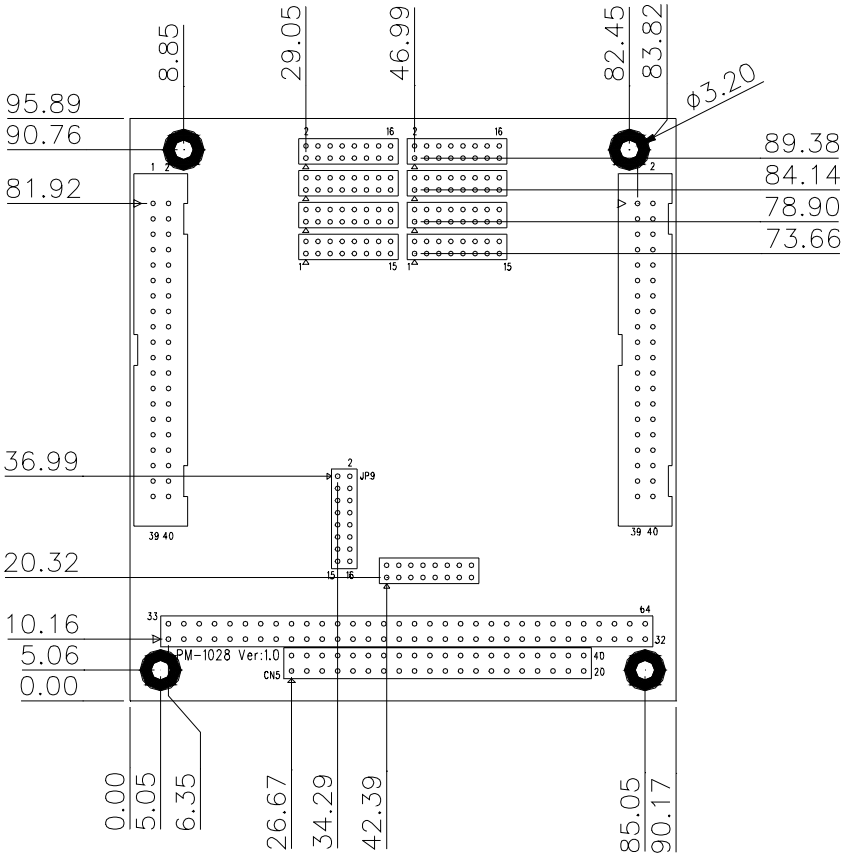
Note: *Ground yourself to remove any static charge before touching your PM-1028. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that are connected to the ground*.

1. Turn the power off
2. Plug the PC/104 module in to the connectors on the CPU card carefully
3. Secure the PC/104 module with the four mounting spacers and screws
4. Set the jumper settings
5. Attach the cables
6. Turn the power on

2.2 Board Layout



Board Dimension (mm)



2.3 Interrupt Status address setting

- **JP9**: Interrupt status address setting

Interrupt Status Address	9-10	7-8	5-6	3-4	1-2
200H	ON	ON	ON	ON	ON
210H	ON	ON	ON	ON	OFF
220H	ON	ON	ON	OFF	ON
230H	ON	ON	ON	OFF	OFF
240H	ON	ON	OFF	ON	ON
250H	ON	ON	OFF	ON	OFF
260H	ON	ON	OFF	OFF	ON
270H	ON	ON	OFF	OFF	OFF
280H	ON	OFF	ON	ON	ON
290H	ON	OFF	ON	ON	OFF
2A0H	ON	OFF	ON	OFF	ON
2B0H	ON	OFF	ON	OFF	OFF
2C0H	ON	OFF	OFF	ON	ON
2D0H	ON	OFF	OFF	ON	OFF
2E0H	ON	OFF	OFF	OFF	ON
2F0H	ON	OFF	OFF	OFF	OFF
***300H**	**OFF**	**ON**	**ON**	**ON**	**ON**
310H	OFF	ON	ON	ON	OFF
320H	OFF	ON	ON	OFF	ON
330H	OFF	ON	ON	OFF	OFF
340H	OFF	ON	OFF	ON	ON
350H	OFF	ON	OFF	ON	OFF
360H	OFF	ON	OFF	OFF	ON
370H	OFF	ON	OFF	OFF	OFF
380H	OFF	OFF	ON	ON	ON
390H	OFF	OFF	ON	ON	OFF
3A0H	OFF	OFF	ON	OFF	ON
3B0H	OFF	OFF	ON	OFF	OFF
3C0H	OFF	OFF	OFF	ON	ON
3D0H	OFF	OFF	OFF	ON	OFF
3E0H	OFF	OFF	OFF	OFF	ON
3F0H	OFF	OFF	OFF	OFF	OFF

*: Default

2.4 COM Port I/O base address setting

- **JP10:** COM Port I/O base address setting

Base Address	11-12	9-10	7-8	5-6	3-4	1-2
***200-207H**	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**
208-20FH	ON	ON	ON	ON	ON	OFF
210-217H	ON	ON	ON	ON	OFF	ON
218-21FH	ON	ON	ON	ON	OFF	OFF
220-227H	ON	ON	ON	OFF	ON	ON
228-22FH	ON	ON	ON	OFF	ON	OFF
230-237H	ON	ON	ON	OFF	OFF	ON
238-23FH	ON	ON	ON	OFF	OFF	OFF
240-247H	ON	ON	OFF	ON	ON	ON
248-24FH	ON	ON	OFF	ON	ON	OFF
250-257H	ON	ON	OFF	ON	OFF	ON
258-25FH	ON	ON	OFF	ON	OFF	OFF
260-267H	ON	ON	OFF	OFF	ON	ON
268-26FH	ON	ON	OFF	OFF	ON	OFF
270-277H	ON	ON	OFF	OFF	OFF	ON
278-27FH	ON	ON	OFF	OFF	OFF	OFF
280-287H	ON	OFF	ON	ON	ON	ON
288-28FH	ON	OFF	ON	ON	ON	OFF
290-297H	ON	OFF	ON	ON	OFF	ON
298-29FH	ON	OFF	ON	ON	OFF	OFF
2A0-2A7H	ON	OFF	ON	OFF	ON	ON
2A8-2AFH	ON	OFF	ON	OFF	ON	OFF
2B0-2B7H	ON	OFF	ON	OFF	OFF	ON
2B8-2BFH	ON	OFF	ON	OFF	OFF	OFF
2C0-2C7H	ON	OFF	OFF	ON	ON	ON
2C8-2CFH	ON	OFF	OFF	ON	ON	OFF
2D0-2D7H	ON	OFF	OFF	ON	OFF	ON
2D8-2DFH	ON	OFF	OFF	ON	OFF	OFF
2E0-2E7H	ON	OFF	OFF	OFF	ON	ON
2E8-2EFH	ON	OFF	OFF	OFF	ON	OFF
2F0-2F7H	ON	OFF	OFF	OFF	OFF	ON
2F8-2FFH	ON	OFF	OFF	OFF	OFF	OFF
300-307H	OFF	ON	ON	ON	ON	ON
308-30FH	OFF	ON	ON	ON	ON	OFF
310-317H	OFF	ON	ON	ON	OFF	ON

318-31FH	OFF	ON	ON	ON	OFF	OFF
320-327H	OFF	ON	ON	OFF	ON	ON
328-32FH	OFF	ON	ON	OFF	ON	OFF
330-337H	OFF	ON	ON	OFF	OFF	ON
338-33FH	OFF	ON	ON	OFF	OFF	OFF
340-347H	OFF	ON	OFF	ON	ON	ON
348-34FH	OFF	ON	OFF	ON	ON	OFF
350-357H	OFF	ON	OFF	ON	OFF	ON
358-35FH	OFF	ON	OFF	ON	OFF	OFF
360-367H	OFF	ON	OFF	OFF	ON	ON
368-36FH	OFF	ON	OFF	OFF	ON	OFF
370-377H	OFF	ON	OFF	OFF	OFF	ON
378-37FH	OFF	ON	OFF	OFF	OFF	OFF
380-387H	OFF	OFF	ON	ON	ON	ON
388-38FH	OFF	OFF	ON	ON	ON	OFF
390-397H	OFF	OFF	ON	ON	OFF	ON
398-39FH	OFF	OFF	ON	ON	OFF	OFF
3A0-3A7H	OFF	OFF	ON	OFF	ON	ON
3A8-3AFH	OFF	OFF	ON	OFF	ON	OFF
3B0-3B7H	OFF	OFF	ON	OFF	OFF	ON
3B8-3BFH	OFF	OFF	ON	OFF	OFF	OFF
3C0-3C7H	OFF	OFF	OFF	ON	ON	ON
3C8-3CFH	OFF	OFF	OFF	ON	ON	OFF
3D0-3D7H	OFF	OFF	OFF	ON	OFF	ON
3D8-3DFH	OFF	OFF	OFF	ON	OFF	OFF
3E0-3E7H	OFF	OFF	OFF	OFF	ON	ON
3E8-3EFH	OFF	OFF	OFF	OFF	ON	OFF
3F0-3F7H	OFF	OFF	OFF	OFF	OFF	ON
3F8-3FFH	OFF	OFF	OFF	OFF	OFF	OFF

*: Default

COM Port I/O address

COM Port	I/O address
COM1	Base Address + 00H
COM2	Base Address + 08H
COM3	Base Address + 10H
COM4	Base Address + 18H
COM5	Base Address + 20H
COM6	Base Address + 28H
COM7	Base Address + 30H
COM8	Base Address + 38H

2.5 COM Port IRQ selection

JP1: COM4 IRQ setting, **JP2**: COM8 IRQ setting
JP3: COM3 IRQ setting, **JP4**: COM7 IRQ setting
JP5: COM2 IRQ setting, **JP6**: COM6 IRQ setting
JP7: COM1 IRQ setting, **JP8**: COM5 IRQ setting

IRQ	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16
3	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
5	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
7	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
9	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
10	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
11	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
12	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON

Default setting: COM1 – IRQ3, COM2 – IRQ4, COM3 – IRQ5, COM4 – IRQ7, COM5 – IRQ9, COM6 – IRQ10, COM7 – IRQ11COM8 – IRQ12

2.6 IRQ sharing mode selection

- **JP10**: IRQ sharing mode selection

Mode	13-14	15-16
***Independent IRQ Mode**	ON	ON
COM1~COM8 share 1 IRQ (assigned by JP7)	OFF	ON

*: Default

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the PM-1028 board.

3.1 RS-232 Connector

The serial ports are high speed NS16C550 compatible UART ports with Read/Receive 16 byte FIFO.

- **CN1: COM1 ~ COM4 serial port connectors.**

PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	DCD (COM4)	**2**	DSR (COM4)
3	RXD (COM4)	**4**	RTS (COM4)
5	TXD (COM4)	**6**	CTX (COM4)
7	DTR (COM4)	**8**	RI (COM4)
9	GND (COM4)	**10**	GND (COM4)
11	DCD (COM3)	**12**	DSR (COM3)
13	RXD (COM3)	**14**	RTS (COM3)
15	TXD (COM3)	**16**	CTX (COM3)
17	DTR (COM3)	**18**	RI (COM3)
19	GND (COM3)	**20**	GND (COM3)
21	DCD (COM2)	**22**	DSR (COM2)
23	RXD (COM2)	**24**	RTS (COM2)
25	TXD (COM2)	**26**	CTX (COM2)
27	DTR (COM2)	**28**	RI (COM2)
29	GND (COM2)	**30**	GND (COM2)
31	DCD (COM1)	**32**	DSR (COM1)
33	RXD (COM1)	**34**	RTS (COM1)
35	TXD (COM1)	**36**	CTX (COM1)
37	DTR (COM1)	**38**	RI (COM1)
39	GND (COM1)	**40**	GND (COM1)

- **CN2: COM5 ~ COM8 serial port connectors.**

PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	DCD (COM8)	**2**	DSR (COM8)
3	RXD (COM8)	**4**	RTS (COM8)
5	TXD (COM8)	**6**	CTX (COM8)
7	DTR (COM8)	**8**	RI (COM8)
9	GND (COM8)	**10**	GND (COM8)
11	DCD (COM7)	**12**	DSR (COM7)
13	RXD (COM7)	**14**	RTS (COM7)
15	TXD (COM7)	**16**	CTX (COM7)
17	DTR (COM7)	**18**	RI (COM7)
19	GND (COM7)	**20**	GND (COM7)
21	DCD (COM6)	**22**	DSR (COM6)
23	RXD (COM6)	**24**	RTS (COM6)
25	TXD (COM6)	**26**	CTX (COM6)
27	DTR (COM6)	**28**	RI (COM6)
29	GND (COM6)	**30**	GND (COM6)
31	DCD (COM5)	**32**	DSR (COM5)
33	RXD (COM5)	**34**	RTS (COM5)
35	TXD (COM5)	**36**	CTX (COM5)
37	DTR (COM5)	**38**	RI (COM5)
39	GND (COM5)	**40**	GND (COM5)

3.2 PC/104 Expansion Bus

The PC/104 expansion bus on the PM-1028enables you to attach the PM-1028 to the PC/104 slot on the target system. The PC/104 bus has already become the industrial embedded PC bus standard, so you can easily install thousands of PC/104 modules from hundreds of vendors around the world. There are two types of connectors on this board -- PC/104-64 and PC/104-40.

•PC/104-40 Connector

PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	GND	**21**	GND
2	MCS16#	**22**	SBHE#
3	IOCS16#	**23**	LA23
4	IRQ10	**24**	LA22
5	IRQ11	**25**	LA21
6	IRQ12	**26**	LA20
7	IRQ15	**27**	LA19
8	IRQ14	**28**	LA18
9	DACK0#	**29**	AL17
10	DRQ0	**30**	MEMR#
11	DACK5#	**31**	MEMW#
12	DRQ5	**32**	SD8
13	DACK6#	**33**	SD9
14	DRQ6	**34**	SD10
15	DACK7#	**35**	SD11
16	DRQ7	**36**	SD12
17	VCC	**37**	SD13
18	MASTER#	**38**	SD14
19	GND	**39**	SD15
20	GND	**40**	GND

- **PC/104-64 Connector**

PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	IOCHCK#	33	GND
2	SD7	34	IRSTDRV
3	SD6	35	VCC
4	SD5	36	IRQ9
5	SD4	37	-5V
6	SD3	38	N/C
7	SD2	39	-12V
8	SD1	40	ZWS
9	SD0	41	+12V
10	IOCHRDY	42	GND
11	AEN	43	SMEMW#
12	LA19	44	SMEMR#
13	LA18	45	IOW#
14	LA17	46	IOR#
15	SA16	47	DACK3#
16	SA15	48	DRQ3
17	SA14	49	DACK1#
18	SA13	50	DRQ1
19	SA12	51	REFRESH#
20	SA11	52	SYSCLK
21	SA10	53	IRQ7
22	SA9	54	N/C
23	SA8	55	IRQ5
24	SA7	56	IRQ4
25	SA6	57	IRQ3
26	SA5	58	N/C
27	SA4	59	TC
28	SA3	60	BALE
29	SA2	61	VCC
30	SA1	62	OSC
31	SA0	63	GND
32	GND	64	GND

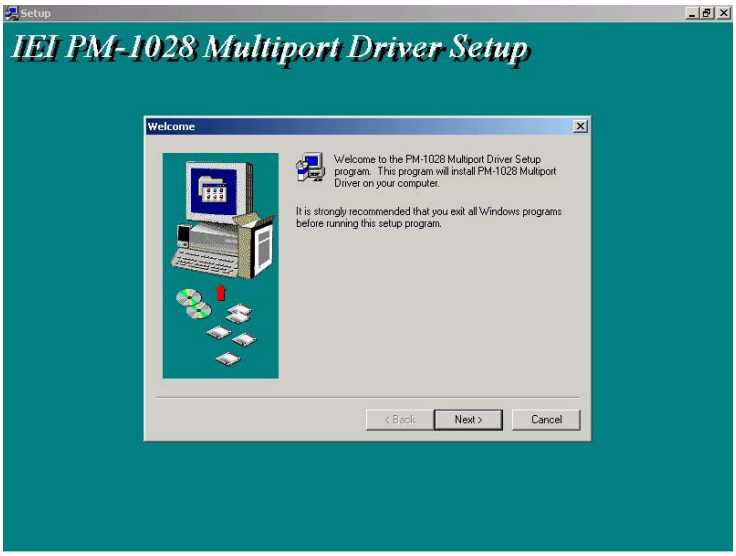
4

Device Driver Installation

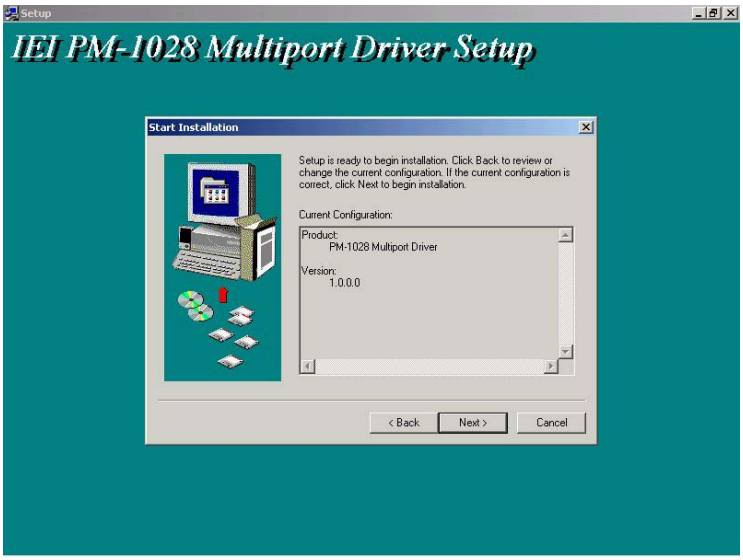
4.1 PM-1028 Device Driver Installation

NOTE: It is necessary to go into the BIOS setup and ensure that the IRQs used by the PM-1028 are set to Legacy ISA only. Please refer to your BIOS setup manual for more information.

To install the device driver for the PM-1028, run installation wizard IEISETUP.EXE

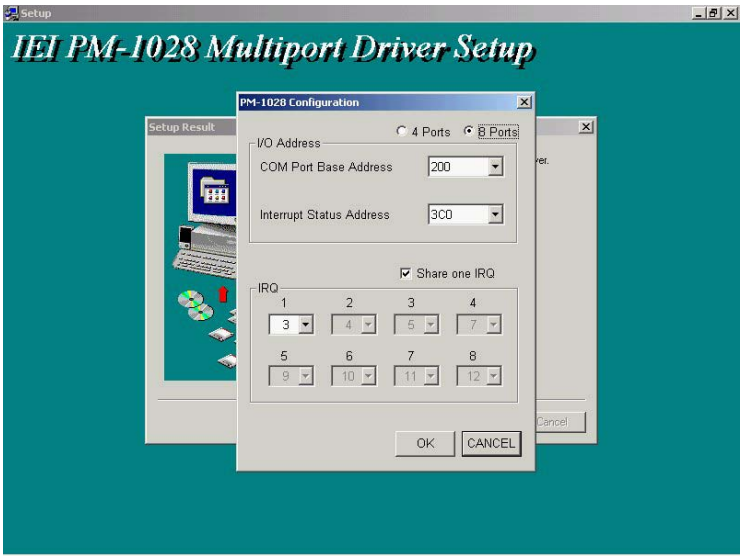


Click “Next>”

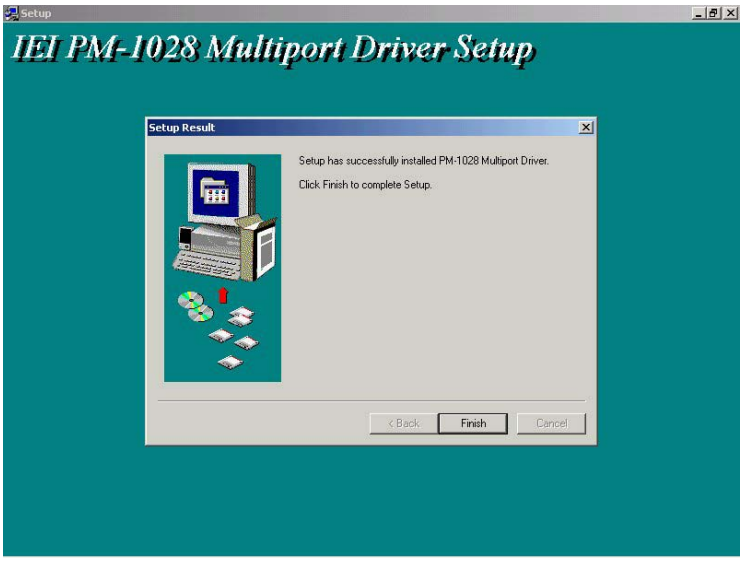


Click “Next>” and the installation wizard starts to copy files to you hard disk.

After the files are copied, PMSETUP.EXE is auto launched to the configure system resources for the PM-1028. You can continue the resource configuration (ref. Section 4.2) or click “Cancel” now and run PMSETUP.EXE later.

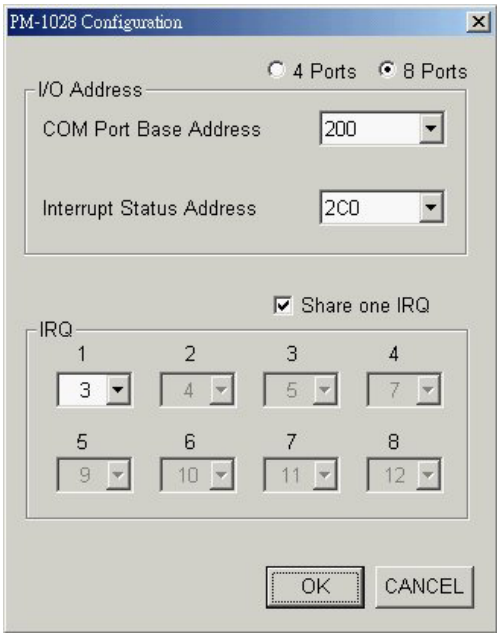


Click “Finish” to complete the device driver installation.

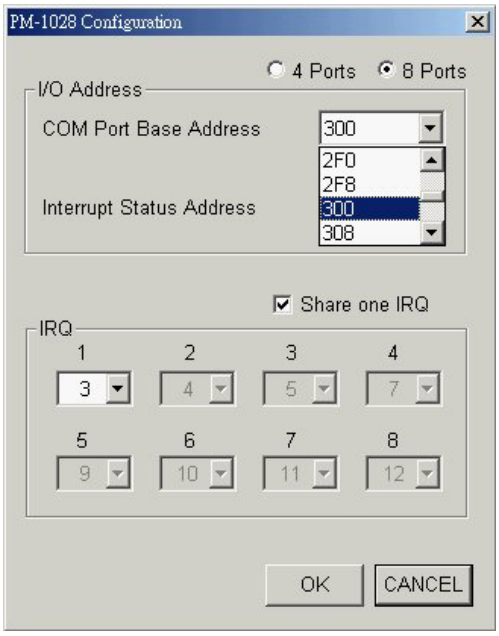


4.2 PM-1028 resource setup

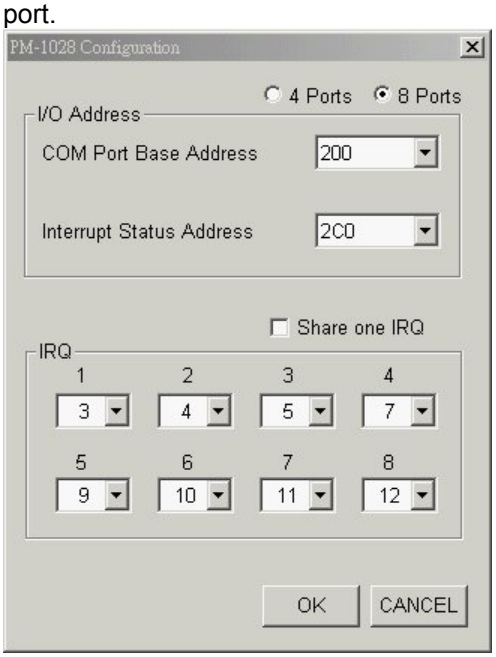
At device driver installation, the installation wizard copied a utility PMSETUP.EXE to your local hard disk and created a shortcut link “PM-1028 Setup”.
To configure PM-1028 resource settings, click “PM-1028 Setup”.



Click “8 Ports” for PM-1028-8 or “4 Ports” for PM-1028-4.
Select the “COM Port Base Address” and “ Interrupt Status Address” options that match the jumper settings the PM-1028.



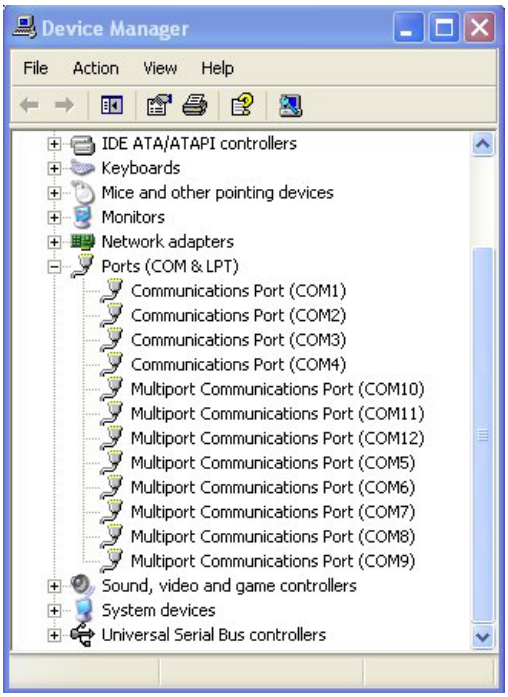
Check “Share one IRQ” if you want to share one IRQ for all ports, otherwise uncheck it and select different IRQ for each port.



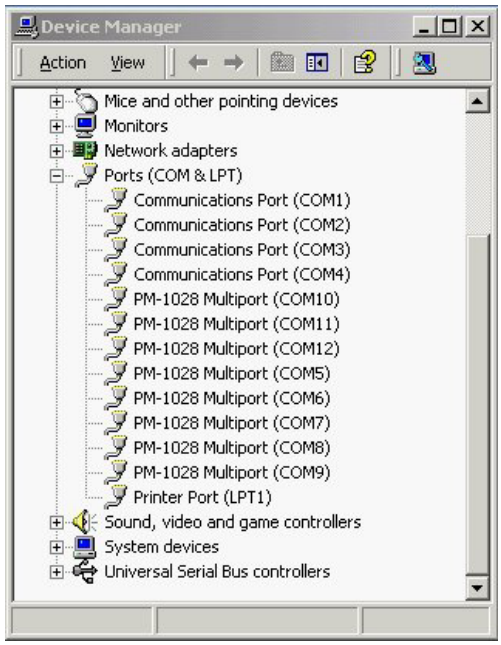
After you complete the resource settings, click “OK” to accept the settings and restart the computer in the following window to let the new settings take effect.

After the computer restarts, you can use Device Manager to check if all the PM-1028 ports were successfully added.

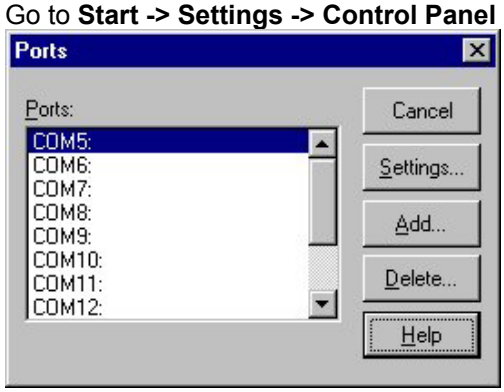
For Windows XP:
Go to **Start -> Settings -> Control Panel -> System -> Hardware -> Device Manager -> Ports** and look for “Multiport Communications Port”.



For Windows 2000:
Go to **Start -> Settings -> Control Panel -> System -> Hardware -> Device Manager -> Ports** and look for “PM-1028 Multiport”.



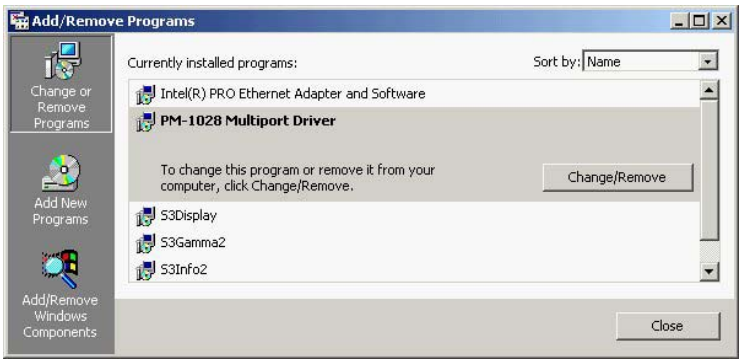
For Windows NT:
Go to **Start -> Settings -> Control Panel -> Ports**



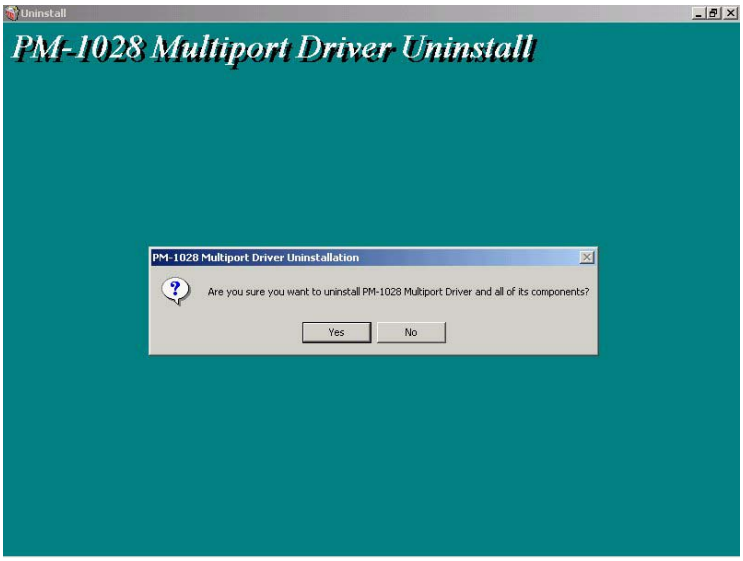
NOTE: To change jumper settings after ports are installed and listed in Device Manager, remove the PM-1028 ports from the list of Device Manger and run PM-1028 Setup again.

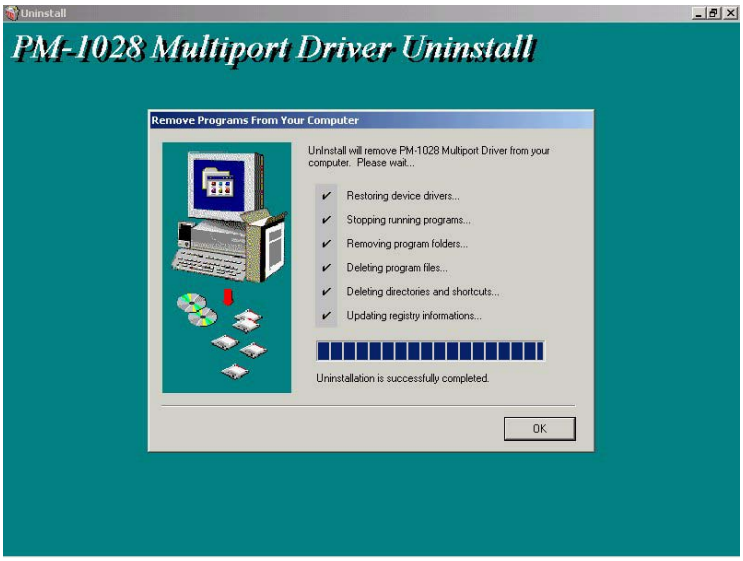
4.3 Uninstall PM-1028 Device Driver

To uninstall PM-1028 device driver, go to **start -> Settings -> Control Panel -> Add/Remove Programs.**



Select “PM-1028 Multiport Driver” in the list of programs and click “Change/Remove”. Follow the instructions on the screen to complete the procedure.




Uninstall
PM-1028 Multiport Driver Uninstall
Remove Programs From Your Computer
UnInstall will remove PM-1028 Multiport Driver from your computer. Please wait...
Restoring device drivers...
Stopping running programs...
Removing program folders...
Deleting program files...
Deleting directories and shortcuts...
Updating registry informations...
Uninstallation is successfully completed.
OK

Uninstall
PM-1028 Multiport Driver Uninstall
Uninstall Result
Uninstall has successfully finished removing PM-1028 Multiport Driver from your computer.
Finish