



# CHAPTER 1

## INTRODUCTION

The PCI bus 8255 adapter is a 32 bits PCI bus adapter with Plug and Play (PnP) features, it is a programmable I/O interface for PC/486, Pentium or compatible computers. The PnP features let hardware configuration for IRQ and I/O address is detected by BIOS automatically, you don't need set switch and jumper.

The PCI bus 8255 adapter provides total 6 digital I/O ports, each I/O port contains 8 I/O lines, and can be set either input or output by the user's program. The signal assignments of PCI bus 8255 adapter is designed as a standard configurations, so that it can be used to connect to the 8255 terminator board for several applications.



### The features of the PCI bus 8255 adapter are:


- 32 bits PCI bus with Plug and Play (PnP) features.
- Programmable I/O control functions.
- Up to 48 I/O lines.
- Maximum of 10 MHZ counter rate.
- Support several operating modes that are programmable.
- Provides DII device driver for PnP features.





## CHAPTER 2

### UNPACKING INFORMATION

 **Check that your PCI bus 8255 package includes the following items:**

- PCI bus 8255 adapter.
- Demo Program.
- Data Capture Software Manual with CD.
- 8255 terminator board (option).
- Two expansion flat cables (option).
- DII device driver.
- User manual.
- Warranty form.



## CHAPTER 3

### HARDWARE INSTALLATION

Your PCI bus 8255 adapter is designed to be inserted in any available PCI slot in your PC/486, Pentium or compatibles. In order to gain access to the expansion slots, follow the steps listed below:

1. Turn off all power to your computer and all peripheral devices before installing your 8255 adapter.
2. Remove the cover of the computer.
3. Insert the 8255 adapter into any available PCI slot. Make sure the adapter is firmly seated in the chosen slot.
4. Replace the cover of the computer.
5. Connects the expansion cables.
6. Turn on the power of your computer, the PnP features will recognize the 8255 adapter.

## CHAPTER 4

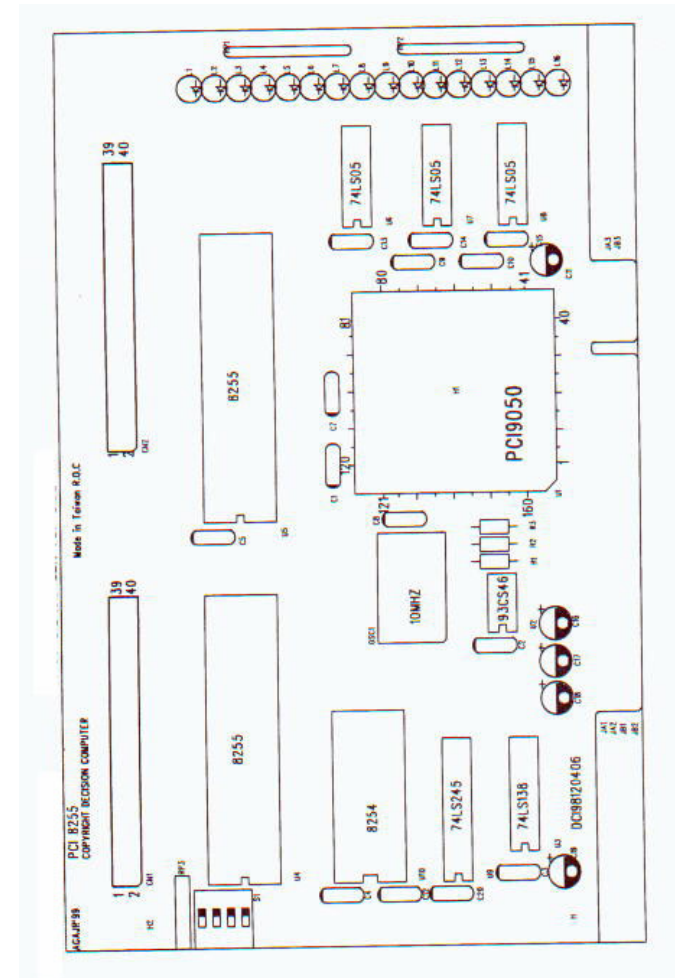
### HARDWARE CONFIGURATION

#### 4.1 I/O Port Address

- Base + 0 : Port 1A input/output buffer.
- Base + 1 : Port 1B input/output buffer.
- Base + 2 : Port 1C input/output buffer.
- Base + 3 : Port 1 control register.
- Base + 4 : Port 2A input/output buffer.
- Base + 5 : Port 2B input/output buffer.
- Base + 6 : Port 2C input/output buffer.
- Base + 7 : Port 2 control register.

The DIP switch is used to identify 8255 adapter, you may set any switch, however if more than one 8255 adapters are plugged in, please set different switch number to avoid address conflict with each others.

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## 4.2 Pin Assignments

### 1. Pin Assignments for CN1 Connector

| Pin | Function | Pin | Function |
|-----|----------|-----|----------|
| 1   | GND      | 2   | GND      |
| 3   | GND      | 4   | P1A3     |
| 5   | P1A1     | 6   | P1A2     |
| 7   | CLK0     | 8   | P1A0     |
| 9   | GATE0    | 10  | OUT0     |
| 11  | OUT2     | 12  | CLK2     |
| 13  | CLK1     | 14  | GATE2    |
| 15  | OUT1     | 16  | GATE1    |
| 17  | P1A5     | 18  | P1A4     |
| 19  | P1A7     | 20  | P1A6     |
| 21  | P1C6     | 22  | P1C7     |
| 23  | P1C4     | 24  | P1C5     |
| 25  | P1C1     | 26  | P1C0     |
| 27  | P1B7     | 28  | P1C2     |
| 29  | P1B6     | 30  | P1C3     |
| 31  | P1B5     | 32  | P1B0     |
| 33  | P1B4     | 34  | P1B1     |
| 35  | P1B3     | 36  | P1B2     |
| 37  | +5V      | 38  | -5V      |
| 39  | +12V     | 40  | -12V     |

### 2. Pin Assignments for CN2 Connector

| Pin | Function | Pin | Function |
|-----|----------|-----|----------|
| 1   | GND      | 2   | GND      |
| 3   | GND      | 4   | GND      |
| 5   | GND      | 6   | GND      |
| 7   | GND      | 8   | GND      |
| 9   | GND      | 10  | GND      |
| 11  | GND      | 12  | GND      |
| 13  | P2A0     | 14  | P2A1     |
| 15  | P2A2     | 16  | P2A3     |
| 17  | P2A4     | 18  | P2A5     |
| 19  | P2A6     | 20  | P2A7     |
| 21  | P2C7     | 22  | P2C6     |
| 23  | P2C5     | 24  | P2C4     |
| 25  | P2C0     | 26  | P2C1     |
| 27  | P2C2     | 28  | P2B7     |
| 29  | P2C3     | 30  | P2B6     |
| 31  | P2B0     | 32  | P2B5     |
| 33  | P2B1     | 34  | P2B4     |
| 35  | P2B2     | 36  | P2B3     |
| 37  | +5V      | 38  | -5V      |
| 39  | +12V     | 40  | -12V     |



## CHAPTER 5

### DII DEVICE DRIVER

To install DII (Decision Industrial Interface) for Windows 95 and Windows NT, you may start the installation by running SETUP.EXE supplied on this distribution CD. During installation, the Setup application will install an icon into a new program group in your start menu (default name: "Decision Industrial Interface"). After DII is installed, please select "Start" menu, then "Settings", then "Control Panel", then "Add New Hardware" menu, then select PCI 8255 card on the "Industrial I/O Devices" hardware group.

The DII provides DLL, OCX, ... etc. components for further programming. For more details, please refer DII manual.



## CHAPTER 6

### DIAGNOSTIC

#### 6.1 BASIC Programming

```

100 REM 8255 I/O CARD TESTING PROGRAM
110 SCREEN 0,0,0: WIDTH 80,25: KEY OFF: CLS
120 LOCATE 10,10: PRINT "8255 I/O CARD TESTING"
130 LOCATE 12,10: PRINT "TWO 8255 PORT A,B,C OUTPUT
SQUARE WAVE"
140 LOCATE 14,10: PRINT "8253 COUNTER 0 DIVIDE BY 2"
150 LOCATE 16,10: PRINT "  COUNTER 1 DIVIDE BY 50"
160 LOCATE 18,10: PRINT "  COUNTER 2 DIVIDE BY 100"
250 REM 8253 TESTING
255 PORT = &H1B0
260 OUT PORT+11,&H36
270 OUT PORT+11,&H76
280 OUT PORT+11,&HB6
290 OUT PORT+8,&H2: OUT PORT+8,&H0
300 OUT PORT+9,&H32: OUT PORT+9,&H0
310 OUT PORT+10,&H64: OUT PORT+10,&H0
320 PORT=&H1B0
330 OUT PORT+3,&H80
340 A=0: GOSUB 500
345 FOR K= 0 TO 1000: NEXT K
350 A=&HFF: GOSUB 500
360 PORT=PORT+4
370 OUT PORT+3,&H80
380 A=0: GOSUB 500
385 FOR K=0 TO 1000: NEXT K
390 A=&HFF: GOSUB 500
400 GOTO 320
500 FOR I=0 TO 2
510 OUT PORT+I,A
520 NEXT I
530 RETURN
    
```



## 6.2 PASCAL Programming

```

program diagnostic(input, output);
uses Crt;
var a, i, test : integer;
procedure subtest;
begin
  for i := 0 to 2 do
    port[test+i] := a;
end;
begin
  { 8255 I/O Card Testing Program }
  clrscr;
  gotoxy(10, 10);
  writeln('8255 I/O CARD TESTING');
  gotoxy(10, 12);
  writeln('TWO 8255 PORT A,B,C OUTPUT SQUARE WAVE');
  gotoxy(10, 14);
  writeln('8253 COUNTER 0 DIVIDE BY 2');
  gotoxy(10, 16);
  writeln('  COUNTER 1 DIVIDE BY 50');
  gotoxy(10, 18);
  writeln('  COUNTER 2 DIVIDE BY 100');
  { 8253 Testing }
  test := $1B0;
  port[test+11] := $36;
  port[test+11] := $76;
  port[test+11] := $B6;
  port[test+ 8] := $02; port[test+ 8] := $0;
  port[test+ 9] := $32; port[test+ 9] := $0;
  port[test+10] := $64; port[test+10] := $0;
  repeat
    test := $1B0;
    port[test+3] := $80;
    a := 0; subtest;
    for i := 0 to 1000 do;
      a := $ff; subtest;
      test := test + 4;
      port[test+3] := $80;
      a := 0; subtest;
    for i := 0 to 1000 do;
      a := $ff; subtest
    until keypressed;
end.

```

## 6.3 C Programming

```

#include <stdio.h>
#include <conio.h>
int test,i,a;
void subtest()
{
  for(i=0;i<=2;i++) outportb(test+i,a);
}
main()
{
  clrscr();
  gotoxy(10,10);
  puts("8255 I/O CARD TESTING");
  gotoxy(10,12);
  puts("TWO 8255 PORT A,B,C OUTPUT SQUARE WAVE");
  gotoxy(10,14);
  puts("8253 COUNTER 0 DIVIDE BY 2");
  gotoxy(10,16);
  puts("8253 COUNTER 1 DIVIDE BY 50");
  gotoxy(10,18);
  puts("8253 COUNTER 2 DIVIDE BY 100");

  test = 0x1b0;
  outportb(test+11,0x36);
  outportb(test+11,0x76);
  outportb(test+11,0xb6);
  outportb(test+ 8,0x02);
  outportb(test+ 8,0x00);
  outportb(test+ 9,0x32);
  outportb(test+ 9,0x00);
  outportb(test+10,0x64);
  outportb(test+10,0x00);

  do {
    test = 0x1b0;
    outportb(test+3,0x80);
    a = 0;
    subtest();
    for(i=0;i<=1000;i++);
    a = 0xff;
    subtest();
  } while(!kbhit());
}

```

## APPENDIX A

### TERMINATOR BOARD

The 8255 terminator board provides expansion signal connection for convenience purpose. When power control on the normal condition, the LED will light. To connect 8255 adapter to terminator board, please plug in CN1 connector (at 8255 adapter) to J1 (at terminator board). The similar method will be used to connect CN2 to J2. The signal assignment is shown in the follows.

#### 1. TB1

|        |     |
|--------|-----|
| PORT 1 | PA0 |
| PORT 1 | PA1 |
| PORT 1 | PA2 |
| PORT 1 | PA3 |
| PORT 1 | PA4 |
| PORT 1 | PA5 |
| PORT 1 | PA6 |
| PORT 1 | PA7 |
| PORT 1 | PB0 |
| PORT 1 | PB1 |
| PORT 1 | PB2 |
| PORT 1 | PB3 |
| PORT 1 | PB4 |
| PORT 1 | PB5 |
| PORT 1 | PB6 |
| PORT 1 | PB7 |

#### 2. TB2

|        |     |
|--------|-----|
| PORT 1 | PC0 |
| PORT 1 | PC1 |
| PORT 1 | PC2 |
| PORT 1 | PC3 |
| PORT 1 | PC4 |
| PORT 1 | PC5 |
| PORT 1 | PC6 |
| PORT 1 | PC7 |
| PORT 2 | PA0 |
| PORT 2 | PA1 |
| PORT 2 | PA2 |
| PORT 2 | PA3 |
| PORT 2 | PA4 |
| PORT 2 | PA5 |
| PORT 2 | PA6 |
| PORT 2 | PA7 |

#### 3. TB3

|        |     |
|--------|-----|
| PORT 2 | PB0 |
| PORT 2 | PB1 |
| PORT 2 | PB2 |
| PORT 2 | PB3 |
| PORT 2 | PB4 |
| PORT 2 | PB5 |
| PORT 2 | PB6 |
| PORT 2 | PB7 |
| PORT 2 | PC0 |
| PORT 2 | PC1 |
| PORT 2 | PC2 |
| PORT 2 | PC3 |
| PORT 2 | PC4 |
| PORT 2 | PC5 |
| PORT 2 | PC6 |
| PORT 2 | PC7 |

**4. TB4**

|       |
|-------|
| CLK0  |
| GATE0 |
| OUT0  |
| CLK1  |
| GATE1 |
| OUT1  |
| CLK2  |
| GATE2 |
| OUT2  |
| GND1  |
| GND2  |
| +5V   |
| -5V   |
| GND1  |
| GND1  |
| GND2  |

**APPENDIX B****WARRANTY INFORMATION*****B.1 Copyright***

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Each piece of PCI bus 8255 adapter package permits user to use PCI bus 8255 adapter only on a single computer, a registered user may use the program on a different computer, but may not use the program on more than one computer at the same time.

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***B.2 Warranty Information***

DECISION warrants that for a period of one year from the date of purchase (unless otherwise specified in the warranty card) that the goods supplied will perform according to the specifications defined in the user manual. Furthermore that the PCI bus 8255 adapter product will be supplied free from defects in materials and workmanship and be fully functional under normal usage.

In the event of the failure of a PCI bus 8255 adapter product within the specified warranty period, DECISION will, at its option, replace or repair the item at no additional charge. This limited warranty does not cover damage resulting from incorrect use, electrical interference, accident, or modification of the product.

All goods returned for warranty repair must have the serial number intact. Goods without serial numbers attached will not be covered by the warranty.

Transportation costs for goods returned must be paid by the purchaser. Repaired goods will be dispatched at the expense of PCI bus 8255 adapter.

To ensure that your PCI bus 8255 adapter product is covered by the warranty provisions, it is necessary that you return the Warranty card.

Under this Limited Warranty, DECISION's obligations will be limited to repair or replacement only, of goods found to be defective as specified above during the warranty period. DECISION is not liable to the purchaser for any damages or

losses of any kind, through the use of, or inability to use, the PCI bus 8255 adapter product.

DECISION reserves the right to determine what constitutes warranty repair or replacement.

***Return Authorization:*** It is necessary that any returned goods are clearly marked with an RA number that has been issued by DECISION. Goods returned without this authorization will not be attended to.



## APPENDIX C

### DATA SHEET

