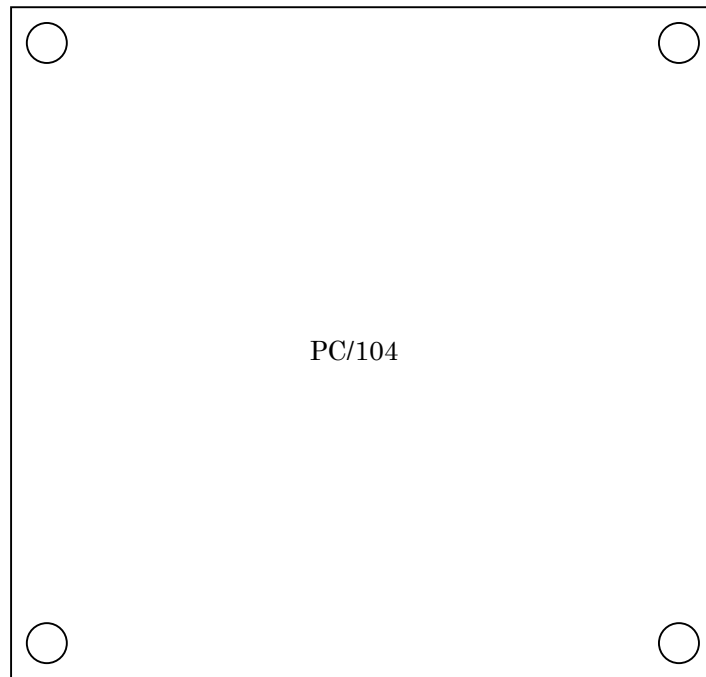


Real Solution for FA & LA



32-bit TTL Input, and 8-bit TTL output

DIO-214PC104

User's Manual

for PC/104-BUS

MICRO SCIENCE.,Co Ltd

2-37-12, Nishiogikita, Suginami-ku,
Tokyo, 167-0042, JAPAN

Phone: +81-3-3396-8362 (Japanese only)

Fax: +81-3-3301-5593 (also English)

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Caution

Unpacking

This package contain a DIO-214PC104 board, and 4 pieces of standoff.

Upon receipt the package, visually inspect the board for missing or damaged materials. This product was shipped in perfect condition as it was new.

Examine the package for physical damage. In the event of damage, save all packing materials and notify your courier to validate shipping claims.

Anti-static discharge

The DIO-214PC104 contains components that are susceptible to static discharge, and should be handled with appropriate caution. The anti-static packing material protects components from being damaged by static discharge.

Should the DIO-214PC104 board need to be returned for repair at a later date, it can be safely done by packing it in the original materials.

Warranty

MICRO SCIENCE warrants that this product was manufactured free of defect in materials or workmanship under normal use and service as described in this User's Manual. Obligations under this warranty are limited to replacing or repairing at MICRO SCIENCE's option.

Any said of products, at MICRO SCIENCE's factory or facility, should have to be prepaid transportation charges, and which are after examination disclosed to the satisfaction of MICRO SCIENCE to be thus defective, for a period within one year shipment.

These provisions do not extend the original warranty period of any product which has either been repaired or replaced by MICRO SCIENCE.

This warranty does not contain a guarantee, either expressed or implied, of merchantability or fitness for particular purpose.

This warranty shall not apply to any such products which have been repaired or altered except by MICRO SCIENCE or which have been subject to misuse, negligence, or accident.

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Disclaimer

The information contained in this document has been carefully examined and is believed to be entirely accurate.

However, MICRO SCIENCE assumes no responsibility for errors or omissions. MICRO SCIENCE reserves the right to make changes to this manual without prior notification in accordance with the purpose of product support and or improvement.

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This Agreement constitutes the license between MICRO SCIENCE, Co and the purchaser of MICRO SCIENCE products.

Definitions

In this Agreement, a "FILE" shall mean a contiguous collection of machine-readable symbols, bytes, characters, or codes which may be used by the CPU on the user's computer or processing equipment.

A "PROGRAM" is a file or related group of files which may be loaded and processed on the user's computer or processing equipment to perform the functions.

A "SOFTWARE" shall mean one or more FILES or PROGRAMS.

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Customer Product Support Policy

MICRO SCIENCE will answer the written questions (including FAX, or Email) in Japanese or English from the registered user about this product.
Send us the question form in this manual filled with the information.

We do not answer on phone with any language but Japanese.
Although MICRO SCIENCE may offer advice, we will not design the user's application.

Price List (# on Jul, 2002)

Items	Unit Price	Description
DIO-214PC104	\$ 150.00	32-bit TTL Input and 8-bit Output board for PC/104
User's Manual	\$10.00	Printed one. (PDF file is free for download from WEB)

The product consists of a DIO-214PC104 board and 4 pieces of standoff.

WEB : www.microscience.co.jp/eng/

Section 1. Introduction

1-1. Guide this Manual

This Manual contains a complete set of hardware and programming information for the DIO-214PC104 board, including configuration, installation, and I/O connection.

Section 1 contains the outline of functional descriptions and detail specifications, the installation, and setup procedure for the board.

Section 2 contains the digital input, output, and their timing information.

Section 3 contains the trouble-shootings, and repair.

The last page is the request form for the Q and A.

1-2. Functional Specification

Digital Inputs and Outputs.

Number of Input	32-bits (:8-bits x 4 ports) and the strobes for each port.
Input Level	TTL level.
Number of Output	8-bits and the update strobe pulse for acceptors.
Output Level	TTL level, latched. (74LS04N assembled in the dual-in-line socket.)

System Configuration

###: on-board switch programmable.

Bus Compatibility	PC/104 Bus Data-bus is driven by 74HCT245, and all other signals are driven or accepted by (HCT-type) C-MOS devices.
Board Address ###	Upper 12Bits: programmable by on-board switches. Lower 4Bits: on-board logic decoded for multiple I/O ports.
Interrupt ###	IRQ3,4,5,6,7,9

I/O Connectors

for Digital Input	40pin FRC type (2.54mm pitch)
for Digital Output	20pin FRC type (2.54mm pitch)

Physical, Environmental

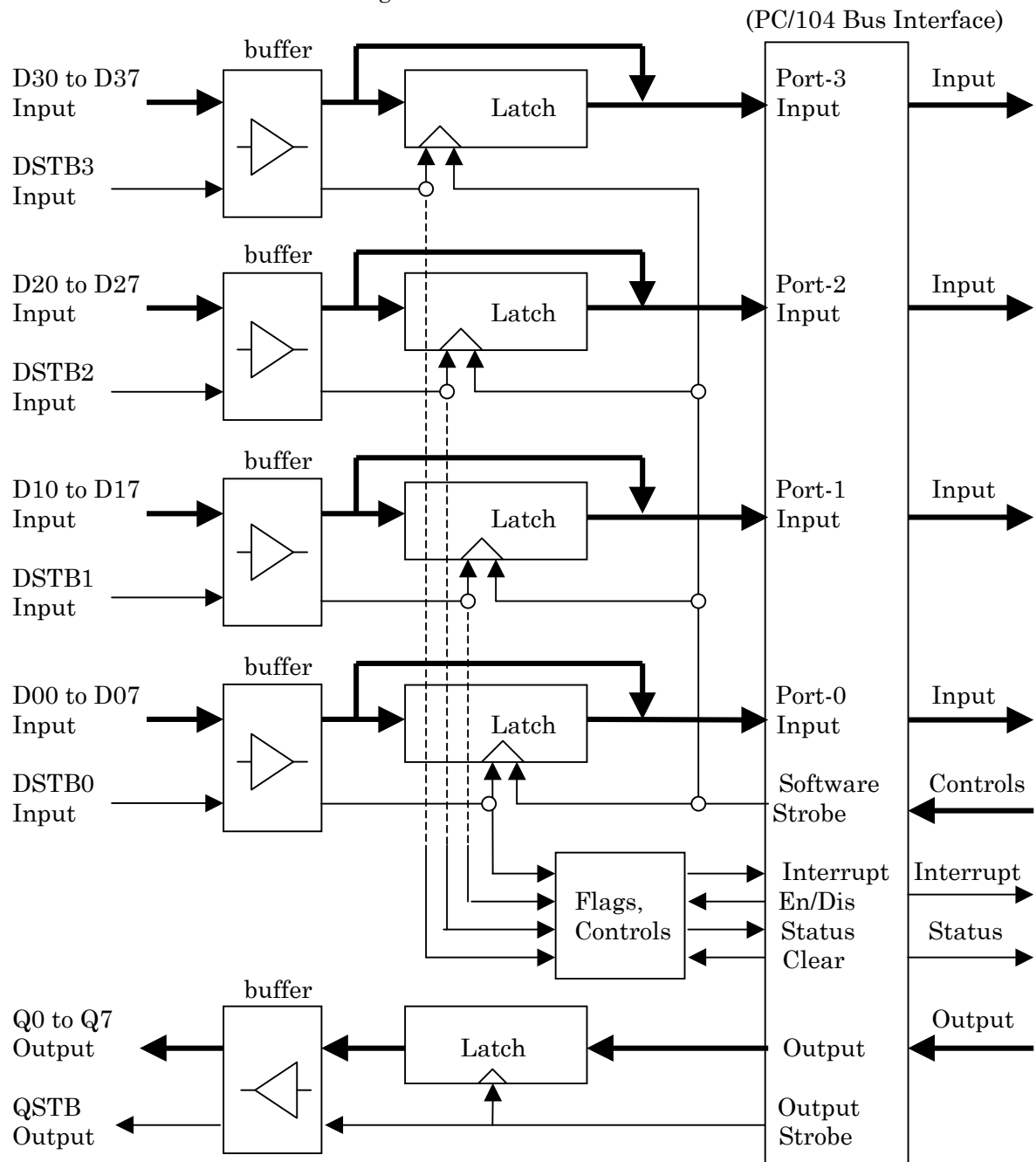
Operating Temperature Range	0 to +55
Storage Temperature Range	-10 to +85
Relative Humidity	80% (Non-condensing)
Power Supply, Consumption	+5v 0.33 A

1-3. Functional Description

DIO-214PC104 is designed for multiple digital input and output channels. General purpose 32-bit TTL inputs are consist of 8-bits by 4-ports. The strobe inputs for each port are also available for the input-latches. You can read the current state of the inputs, or the state of last latched timing.

General purpose 8-bit TTL latched outputs and the update strobe pulse output are available with assembled 74LS04 in socket. It is also available for open collector output with replace the 74LS04 to 74LS06. The base address of the board is programmable with the on-board switches.

Figure 1-3. Function Block



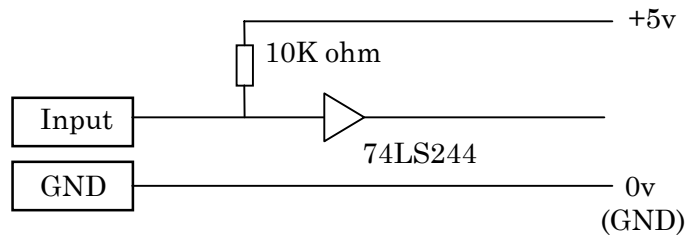
1-4. Input and Output circuit

Input.

All Inputs are TTL level, and pulled-up with 10K ohm resistor. See section 2-8 for programming.

Figure 1-4A shows the circuit.

Figure 1-4A. Input circuit.(shows only one input.)

**Output.**

All Outputs are also TTL level, latched, and you can select the logical polarity by on-board switch "S-POL".

MICRO SCIENCE set "S-POL" to "N" as negative logic, that cause all outputs to "TTL-High" level at the hardware reset in power-on process.

Figure 1-4B shows the circuit for Q0 to Q7 and strobe "QSTB" output.

<Note-1>

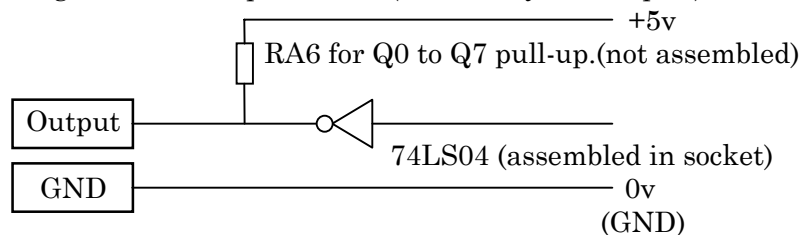
Output Q0 to Q7 are not cleared by the software reset with Read(BASE+7H) command but cleared by the hardware reset.

<Note-2>

74LS04 are assembled in the socket as TTL level digital output devices at the factory of MICRO SCIENCE.

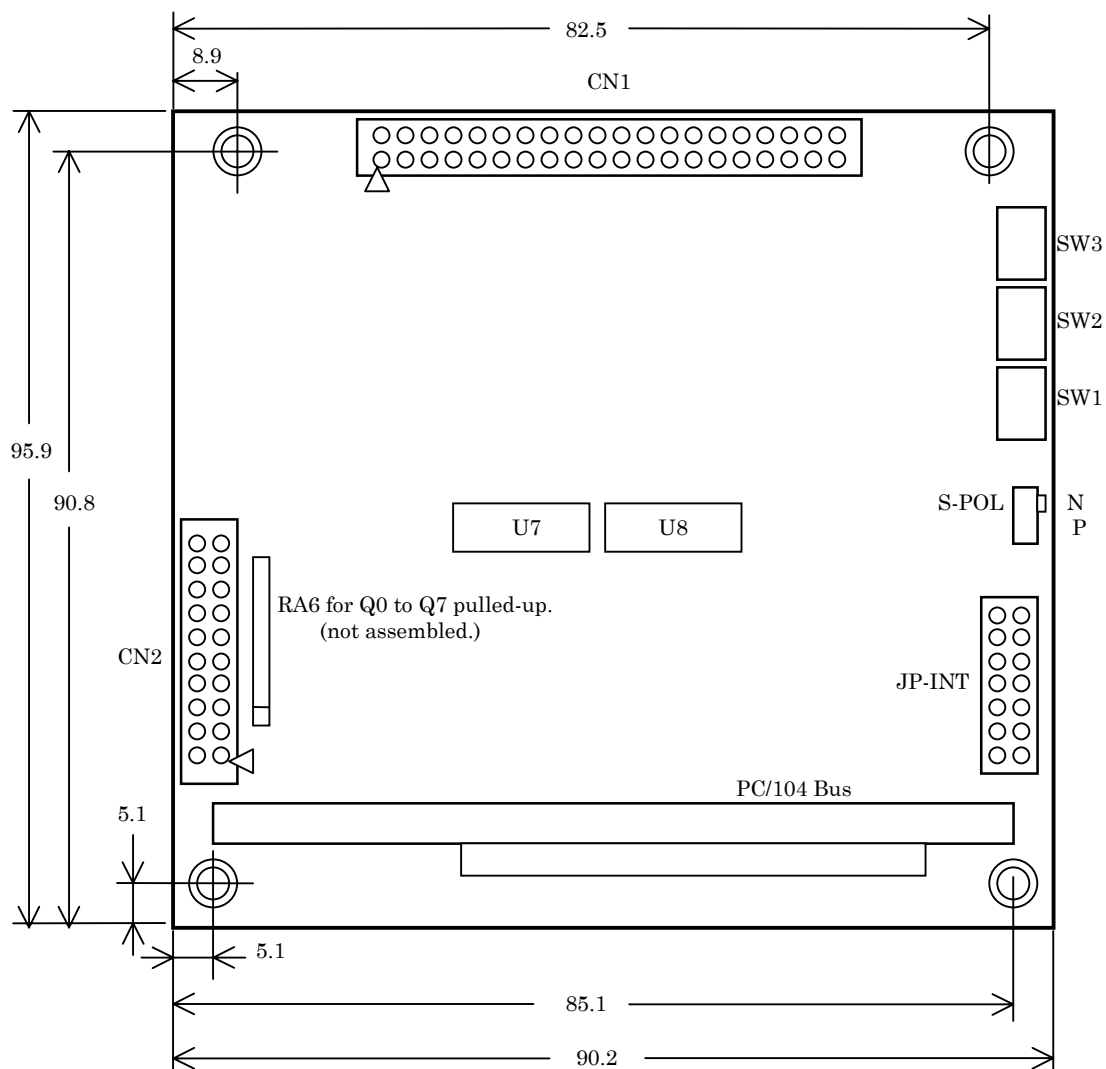
You can replace them by 74LS06 or 74LS07 for change to open-collector level. See section 2-9 for programming.

Figure 1-4B. Output circuit.(shows only one output.)



1-5. Layout of the board

Figure 1-5.



Unit: mm

At shipping, on-board programmable elements are set to < > position.

SW1, SW2, SW3 : Program switch for Base Address of the board. <0,1,C> / see 1-6-1./

JP-INT : Select jumper-switch for Interrupt Level. <NC> / see 1-6-2./

S-POL : Select switch for Logic Polarity of the Outputs. <N> / see 1-6-3 /

RA6 : Pull-up resistor for Q0 to Q7 output. <Not assembled> / see 1-4 /

U7,U8 : Output device in the socket. <74LS04> / see 1-4 /

CN1 : Connector for Input (40pin FRC) / see 1-7 /

CN2 : Connector for Output (20pin FRC) / see 1-8 /

1-6. Settings on the board

1-6-1. BASE ADDRESS

DIO-214PC104 appears as a 16-byte block of registers within the host CPU's I/O address space. This address block must not conflict with other system I/O devices.

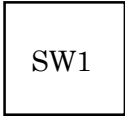

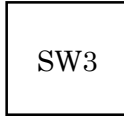
You can program the on-board switches SW1, SW2, and SW3 as BASE ADDRESS of the board.

These hex-a-decimal defined switches are set to SW1=0, SW2=1, SW3=C at the factory of MICRO SCIENCE, that define the BASE ADDRESS to "01C0" hex.

DIO-214PC104 occupies upper 16 byte address from the BASE.

See section 2-2 for more information.








Figure 1-6A. Setting the BASE ADDRESS

Address Line →	AB15 to AB12	AB11 to AB08	AB07 to AB04	AB03 to AB00
On-board Hex-a-decimal → Switches				on-board logic decoded for multiple ports
Factory setting →	0	1	C	(F to 0)

1-6-2. Interrupt Level

Strobe inputs "DSTB0,1,2,3" can cause an interrupt request to the CPU. Select the interrupt level by the jumper-switch "JP-INT", and program Write (BASE+7H) register to enable the state. See section 2-5 for the details.

Figure 1-6B. select the Interrupt Level.

JP-INT	(Level)
	IRQ3
	IRQ4
	IRQ5
	IRQ6
	IRQ7
	IRQ9
	NC (non-connected)

1-6-3. Output Logic Polarity

DIO-214PC104 has 8-bits TTL level output for general purpose.

Select the logical polarity of the outputs by the switch "S-POL".

This switch is set to "N" at the factory of MICRO SCIENCE that defines the logical polarity to "Negative".

You can also set to "P" for "Positive".

See section 2-9 for the programming.

1-7. Digital Input Connector

32-bits Parallel Digital Inputs are available on 40-pin FRC-type male connector CN1 on the board as illustrated in Figure 1-5.

The plug is also provided for general purpose, come with the board.
See section 2-8 for programming.

Figure 1-7. Digital Input Connector CN1 pin assignment

Function	Sign	Pin assign		Sign	Function
(Port-0) Input 00	D00	1	O O	2	D01 (Port-0) Input 01
02	D02	3	O O	4	D03 03
04	D04	5	O O	6	D05 05
06	D06	7	O O	8	D07 07
(Port-1) Input 10	D10	9	O O	10	D11 (Port-1) Input 11
12	D12	11	O O	12	D13 13
14	D14	13	O O	14	D15 15
16	D16	15	O O	16	D17 17
(Port-2) Input 20	D20	17	O O	18	D21 (Port-2) Input 21
22	D22	19	O O	20	D23 23
24	D24	21	O O	22	D25 25
26	D26	23	O O	24	D27 27
(Port-3) Input 30	D30	25	O O	26	D31 (Port-3) Input 31
32	D32	27	O O	28	D33 33
34	D34	29	O O	30	D35 35
36	D36	31	O O	32	D37 37
Ground	GND	33	O O	34	GND Ground
Input strobe for Port-0	DSTB0	35	O O	36	DSTB1 Input strobe for Port-1
Input strobe for Port-2	DSTB2	37	O O	38	DSTB3 Input strobe for Port-3
Ground	GND	39	O O	40	GND Ground

<Note> On-board bracket : Model=HIF3FC-40PA-2.54DSA /made by HIROSE/
Plug : Model=HIF3BA-40DA-2.54R(11) /made by HIROSE/

1-8. Digital Output Connector

Digital Outputs are available on a 20-pin FRC-type male connector CN2 on the board as illustrated in Figure 1-5.
All outputs have the capability for 10 TTL load.

See section 2-9 for programming.

The plug is also provided for general purpose, come with the board.

Figure 1-8. Digital Output Connector CN2 pin assignment

Function	Sign	Pin assign		Sign	Function
Digital output Q0	Q0	1	O O	2	GND
Q1	Q1	3	O O	4	GND
Q2	Q2	5	O O	6	GND
Q3	Q3	7	O O	8	GND
Q4	Q4	9	O O	10	GND
Q5	Q5	11	O O	12	GND
Q6	Q6	13	O O	14	GND
Q7	Q7	15	O O	16	GND
Output strobe	QSTB	17	O O	18	GND
+5v Output	+5v	19	O O	20	GND

<Note-1> On-board bracket : Model= HIF3FC-20PA-2.54DSA /made by HIROSE/
Plug : Model= HIF3BA-20DA-2.54R(11) /made by HIROSE/

<Note-2> +5v Output is supplied from PC/104 Bus.

Section 2. General Programming

2-1. General Programming Information

Handling

DIO-214PC104 appears to the host PC/104 bus CPU as a block of contiguous 16 hardware registers mapped within the I/O address space. See Table.2-2 for the map. These registers control the operation of DIO-214PC104 as long as they are accessed using 16bit I/O addressing with each 8bit data transfers.

These registers include Reset-board, General Purpose Digital I/O, Interrupt, and Status.

Operation

Entire information for programming are specified and explained in order as follows.

(section 2-1)

General software sequences for reading input, writing output, and Interrupt control.

(section 2-2 to 2-9)

The functions of each register. These are the elements for programming.

----- Typical software sequence -----

(1)

Set input strobe condition.

Outp (BASE+0x5, DSTB) ; /* Enable/Disable, and Polarity */

(2)

Read input.

```
CD0 = inp (BASE+0x0) ; /* Read current input 00 to 07 */
CD1 = inp (BASE+0x1) ; /* Read current input 10 to 17 */
CD2 = inp (BASE+0x2) ; /* Read current input 20 to 27 */
CD3 = inp (BASE+0x3) ; /* Read current input 30 to 37 */

LD0 = inp (BASE+0x8) ; /* Read latched input 00 to 07 */
LD1 = inp (BASE+0x9) ; /* Read latched input 10 to 17 */
LD2 = inp (BASE+0xA) ; /* Read latched input 20 to 27 */
LD3 = inp (BASE+0xB) ; /* Read latched input 30 to 37 */
```

(3)

Write output.

Outp (BASE+0x0, P0Q) ; /* Output Q0 to Q7, Latched */

(4)

Set interrupt condition.

Outp (BASE+0x7, ice) ; /* specify the interrupt conditions */

(5)

Polling for detecting the strobe.

While ((inp(BASE+0x4) & 0xFF) == 0x00) ; /* Detecting the strobe */

2-2. I/O Register Map

DIO-214PC104 appears as a 16-byte block of registers within the host CPU's I/O address space. This address block must not conflict with other system I/O devices.

You can program the on-board switches SW1, SW2, and SW3 as BASE ADDRESS of the board.

These hex-a-decimal defined switches are set to SW1=0, SW2=1, SW3=C at the factory of MICRO SCIENCE, that specify the BASE ADDRESS to "01C0" hex.

DIO-214PC104 occupies upper 16 byte address from the BASE.

See figure 1-5 for the location of the board.

Figure 1-6A. Setting the BASE ADDRESS

Address Line →	AB15 to AB12	AB11 to AB08	AB07 to AB04	AB03 to AB00
On-board Hex-a-decimal Switches →	SW1	SW2	SW3	on-board logic decoded for multiple ports
Factory setting →	0	1	C	(F to 0)

Table 2-2. DIO-214PC104 Register Assignment. (All the port consist of 8bit.)

I/O Address	Direction	Description	Refer to
BASE +BH	Read	Latched input D30 to D37 (Port-3)	Section 2-8
	Write		
BASE +AH	Read	Latched input D20 to D27 (Port-2)	Section 2-8
	Write		
BASE +9H	Read	Latched input D10 to D17 (Port-1)	Section 2-8
	Write		
BASE +8H	Read	Latched input D00 to D07 (Port-0)	Section 2-8
	Write		
BASE +7H	Read	Reset Board, and get ID.	Section 2-3
	Write	Interrupt control. (Enable/Disable, Polarity)	
BASE +6H	Read	Software strobe operation.	Section 2-6
	Write		
BASE +5H	Read		
	Write	Input strobe control. (Enable/Disable, Polarity)	
BASE +4H	Read	Get status.	Section 2-7
	Write	Clear status.	
BASE +3H	Read	Current input D30 to D37 (Port-3)	Section 2-8
	Write		
BASE +2H	Read	Current input D20 to D27 (Port-2)	Section 2-8
	Write		
BASE +1H	Read	Current input D10 to D17 (Port-1)	Section 2-8
	Write		
BASE +0H	Read	Current input D00 to D07 (Port-0)	Section 2-8
	Write	Update output Q0 to Q7 (Latched)	

	Not-used
--	----------

2-3. Reset the Board, and get ID

```
rst = inp (BASE+0x7) ; /* Reset the Board */
```

Read (BASE+7H) Register cause the board reset.
All registers of the board must be initialized except for the last values of General Purpose Digital Output described in section 2-9.

Where “rst” is the ID that depend on the board, “25H” for DIO-214PC104.

Table 2-3. Read (BASE+7H) Register Bit Field.

Bit	Description
B7	25H is the ID for DIO-214PC104.
B6	
B5	
B4	
B3	
B2	
B1	
B0	

2-4. Input Strobe Control

```
outp (BASE+0x5, SIC) ; /* Specify the Input Strobes */
```

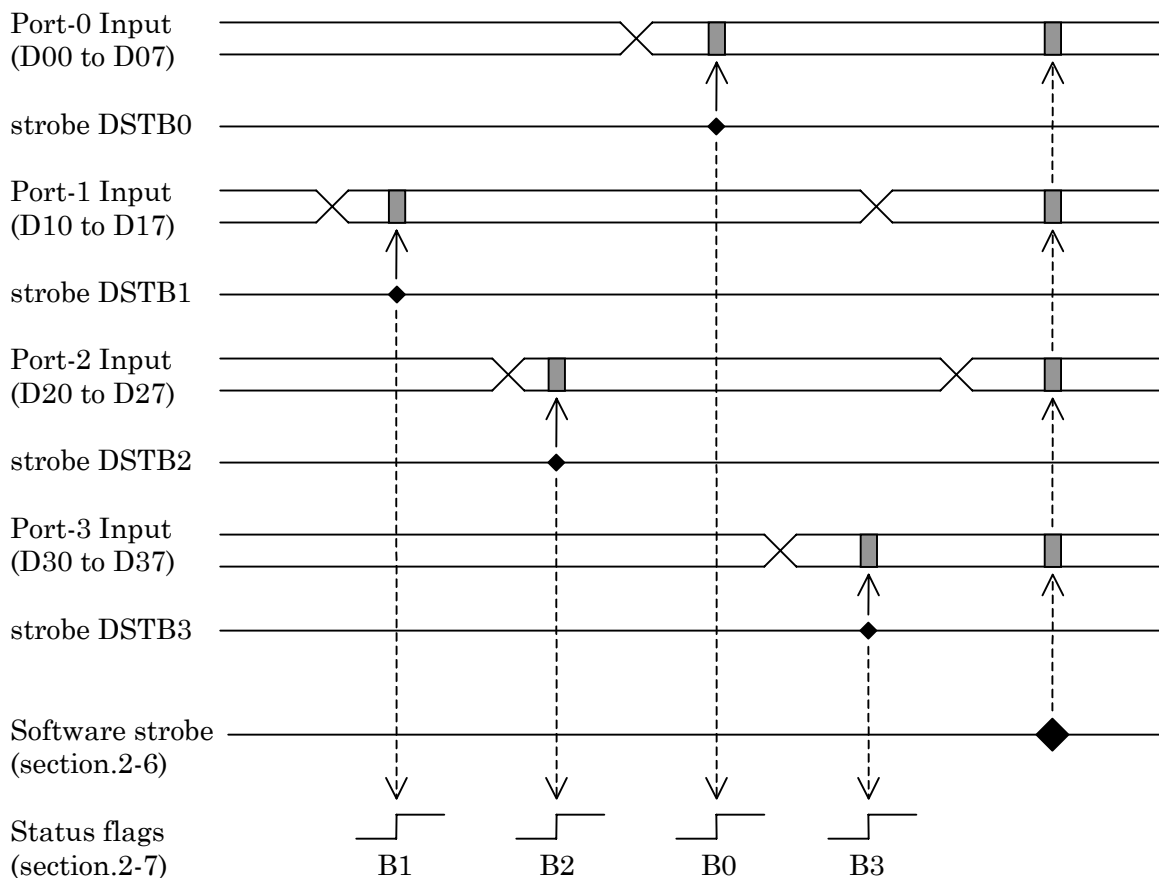
Write (BASE+5H) Register specifies the input strobes for control the latches.

Enabled strobe shall update the latch and set the appropriate flag of the status. See Table 2-8B and Table 2-7A for the result.

Table 2-4. Write (BASE+5H) Register Bit Field.

Bit	Term	"=1" specifies	"=0" specifies	On reset
B7	Valid Polarity of the strobe "DSTB3"	Rising Edge.	Falling Edge.	0
B6	Valid Polarity of the strobe "DSTB2"			0
B5	Valid Polarity of the strobe "DSTB1"			0
B4	Valid Polarity of the strobe "DSTB0"			0
B3	Enable/Disable of the strobe "DSTB3"	Enable	Disable	0
B2	Enable/Disable of the strobe "DSTB2"			0
B1	Enable/Disable of the strobe "DSTB1"			0
B0	Enable/Disable of the strobe "DSTB0"			0

Figure 2-4. Latching operation by the strobes enabled them all.



Where, \blacklozenge is the valid edge of the strobe input, \blacksquare is the stored data.

2-5. Interrupt Control

```
outp (BASE+0x7, IC) ; /* Interrupt Controls */
```

Write (BASE+7H) Register specifies the input strobes for control the interrupt request.
Enabled strobe shall cause generating the interrupt request and set the status flag.

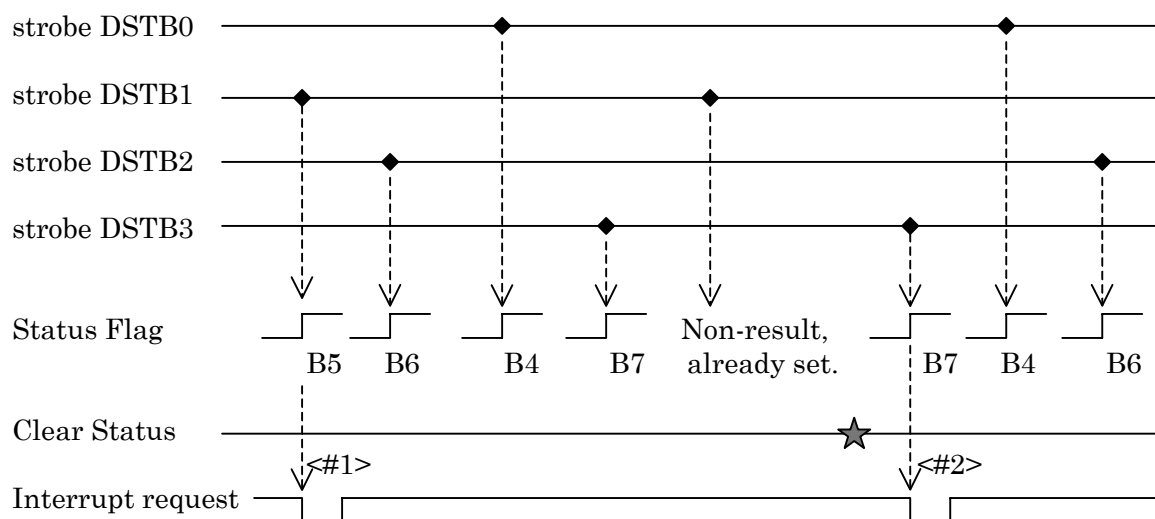
Multiple enabled strobes shall work with their "OR" operation.
See Table 2-7A for the result.
Interrupt request shall not be generated again before clear the status flag.

Table 2-5. Write (BASE+7H) Register Bit Field.

Bit	Term	"=1" specifies	"=0" specifies	On reset
B7	Valid Polarity of the strobe "DSTB3"	Rising Edge.	Falling Edge.	0
B6	Valid Polarity of the strobe "DSTB2"			0
B5	Valid Polarity of the strobe "DSTB1"			0
B4	Valid Polarity of the strobe "DSTB0"			0
B3	Enable/Disable of the strobe "DSTB3"	Enable	Disable	0
B2	Enable/Disable of the strobe "DSTB2"			0
B1	Enable/Disable of the strobe "DSTB1"			0
B0	Enable/Disable of the strobe "DSTB0"			0

(#) : Interrupt pulse to the PC/104 bus is 500ns width, and selected by "JP-INT" on the board illustrated in figure 1-5 & 1-6B.

Figure 2-5. Interrupt request by the strobes enabled them all.



Where, ◆ is the valid edge of the strobe input.

- <#1> The first one of the enabled strobes generate the interrupt request.
- <#2> Next interrupt request is generated as same as <#1> after clear status.
- <#3> Software strobe does not generate the interrupt request.

2-6. Software Strobe

STB = inp (BASE+0x6) ; /* Software Strobe */

Read (BASE+6H) Register update all the input latches simultaneously.

Where “STB” is a dummy data, this operation is done by the read input control signal.

2-7. Get Status and Clear Status

```
STS = inp (BASE+0x4) ; /* Get Status Flags */
```

Status data shall be read from (BASE+4H) Register.
Enabled input strobe set the flag as it accepted.

<Note>
Interrupt request shall not be generated again before clear the status flag.

Table 2-7A. Read (BASE+4H) Register Bit Field.

Bit	Term	"=1" specifies	"=0" specifies	On reset
B7	Enabled strobe "DSTB3" for interrupt	Accepted.	Not-Accepted.	0
B6	Enabled strobe "DSTB2" for interrupt			0
B5	Enabled strobe "DSTB1" for interrupt			0
B4	Enabled strobe "DSTB0" for interrupt			0
B3	Enabled strobe "DSTB3" for latching	Accepted.	Not-Accepted.	0
B2	Enabled strobe "DSTB2" for latching			0
B1	Enabled strobe "DSTB1" for latching			0
B0	Enabled strobe "DSTB0" for latching			0

```
outp (BASE+0x4, CLR) ; /* Clear Status Flags */
```

Write (BASE+0x4) Register command
makes clear the flags.

Table 2-7B. Write (BASE+4H) Register Bit Field.

Bit	Term	"=1" specifies	"=0" specifies	On reset
B7	Enabled strobe "DSTB3" for interrupt	Clear.	Non-Effect.	0
B6	Enabled strobe "DSTB2" for interrupt			0
B5	Enabled strobe "DSTB1" for interrupt			0
B4	Enabled strobe "DSTB0" for interrupt			0
B3	Enabled strobe "DSTB3" for latching	Clear.	Non-Effect.	0
B2	Enabled strobe "DSTB2" for latching			0
B1	Enabled strobe "DSTB1" for latching			0
B0	Enabled strobe "DSTB0" for latching			0

2-8. Read inputs

```

CD0 = inp (BASE+0x0) ; /* Read current input D00 to D07 */
CD1 = inp (BASE+0x1) ; /* Read current input D10 to D17 */
CD2 = inp (BASE+0x2) ; /* Read current input D20 to D27 */
CD3 = inp (BASE+0x3) ; /* Read current input D30 to D37 */

```

Current inputs shall be read from
(BASE+0H), (BASE+1H), (BASE+2H), and
(BASE+3H) Register.

See section 1-4 for the circuit, and
section 1-7 for assignment of the connector.

Table 2-8A. Current input register bit field.

Bit	(BASE+0H)	(BASE+1H)	(BASE+2H)	(BASE+3H)
B7	Input "D07"	Input "D17"	Input "D27"	Input "D37"
B6	Input "D06"	Input "D16"	Input "D26"	Input "D36"
B5	Input "D05"	Input "D15"	Input "D25"	Input "D35"
B4	Input "D04"	Input "D14"	Input "D24"	Input "D34"
B3	Input "D03"	Input "D13"	Input "D23"	Input "D33"
B2	Input "D02"	Input "D12"	Input "D22"	Input "D32"
B1	Input "D01"	Input "D11"	Input "D21"	Input "D31"
B0	Input "D00"	Input "D10"	Input "D20"	Input "D30"

Read Latched Input

```

LD0 = inp (BASE+0x8) ; /* Read latched input d00 to d07 */
LD1 = inp (BASE+0x9) ; /* Read latched input d10 to d17 */
LD2 = inp (BASE+0xA) ; /* Read latched input d20 to d27 */
LD3 = inp (BASE+0xB) ; /* Read latched input d30 to d37 */

```

Latched inputs shall be read from
(BASE+8H), (BASE+9H), (BASE+AH), and
(BASE+BH) Register.

They are updated by every enabled strobe
input and cleared by the software reset, or
the power-on hardware reset .

Table 2-8B. Latched input register bit field.

Bit	(BASE+8H)	(BASE+9H)	(BASE+AH)	(BASE+BH)
B7	Input "d07"	Input "d17"	Input "d27"	Input "d37"
B6	Input "d06"	Input "d16"	Input "d26"	Input "d36"
B5	Input "d05"	Input "d15"	Input "d25"	Input "d35"
B4	Input "d04"	Input "d14"	Input "d24"	Input "d34"
B3	Input "d03"	Input "d13"	Input "d23"	Input "d33"
B2	Input "d02"	Input "d12"	Input "d22"	Input "d32"
B1	Input "d01"	Input "d11"	Input "d21"	Input "d31"
B0	Input "d00"	Input "d10"	Input "d20"	Input "d30"

2-9. Update Output

```
outp (BASE+0x0, P0Q) ; /* Update Output Q0 to Q7 */
```

Write (BASE+0H) register updates the output Q0 to Q7. They are TTL level (74LS04) , and latched.

See section 1-4 for the circuit, and section 1-8 for assignment of the connector.

Table 2-9. Write (BASE+0H) Register Bit Field. / with setting to **Negative Logic**. /

Bit	Term	"=1" specifies	"=0" specifies	on Reset
B7	Output "Q7"	TTL " Low "	TTL " High "	<Note-1> <Note-2>
B6	Output "Q6"			
B5	Output "Q5"			
B4	Output "Q4"			
B3	Output "Q3"			
B2	Output "Q2"			
B1	Output "Q1"			
B0	Output "Q0"			

<Note-1>

Logical Polarity is set to Negative with setting the switch S-POL to "N" on shipping cause all outputs to TTL high state at the hardware reset in the power-on process. See section 1-6-3 for settings.

<Note-3>

Open collector level is also available with replace the 74LS04 to 74LS06 in the socket. Strobe output "QSTB" belongs to that.

<Note-2>

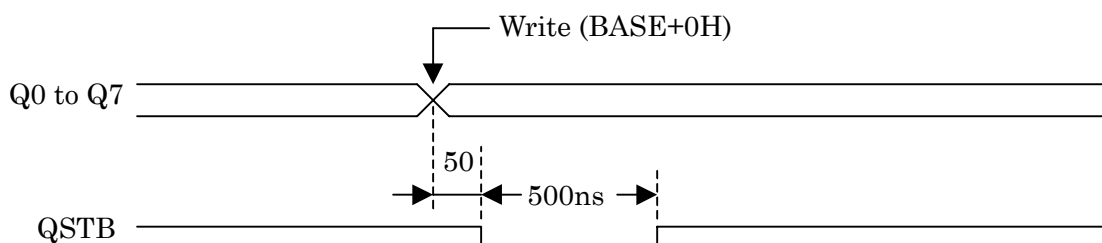
Latched output Q0 to Q7 are not cleared by the software reset command, but cleared by the hardware reset in the power-on process.

Strobe Output

Typical 500ns width strobe pulse shall be appear on the "QSTB" output at the writing (BASE+0H) register as an output update.

The Logical Polarity of strobe output is also specifies by the switch "S-POL", see section 1-6-3 for the settings.

Figure 2-9. "Q0 to Q7" and "QSTB" output timing.



Section 3. Maintenance and Appendix

3-1. Trouble Shootings

Reconfirm.

The DIO-214PC104 supplied by MICRO SCIENCE is fully inspected and tested. If it doesn't work on your system, reconfirm following issues.

- (1) Check the I/O BASE address specified by the on-board switch SW1, SW2, and SW3. On the IBM PC/AT compatible system, the I/O address must be mapped between "0H" to "3FFH" or the image of this range except for the occupied address by the other devices or the peripherals.
- (2) Debug your software or applications. For example, if the Interrupt level is correct or if occupied by any other devices.
- (3) Be careful to connect the inputs, and outputs.

What's wrong?

Fill in and send (Letter, Fax, or Email) the Q&A form to MICRO SCIENCE where you didn't find anything wrong. Although we will study about your system and answer by the letter what you should do, we don't write or debug application software. Sorry, we won't answer with any language but Japanese on the phone. Please write us Japanese or English.

Replace the Board or Repair for free.

MICRO SCIENCE will replace or repair the Board for free which are after examination disclosed to the satisfaction of MICRO SCIENCE to be thus defective, for a period within one year of shipment. This warranty shall not apply which have been subject to misuse, negligence, or accident. See "Caution/Warranty" for details in page-3.

Repair the Board.

MICRO SCIENCE will repair, calibrate, or test the Board on request. These products should have to prepaid the transportation at MICRO SCIENCE. Be sure, give us the information with the products, maybe Q&A form is useful for the report.

Then user have to pay the proper cost in few weeks according to the bill after accept the returned products.

Q & A form (in English or Japanese)

To:
 MICRO SCIENCE., Co. LTD
 Customer Support Div
 2-37-12, Nishiogi-kita,
 Suginami-ku,
 Tokyo, Japan

From:

Fax: +81-3-3301-5593
 Email: gas@microscience.co.jp

Fax:
 Email:

DIO-214PC104	serial # =	Purchase Date:
Preferences on- Board	SW1 =	JP-INT = 3, 4, 5, 6, 7, 9
	SW2 =	
	SW3 =	S-POL = N, P
Other Devices In the system	Product:	
	Occupied Resources: (I/O Address =), (Interrupt =)	
System Information	CPU:	
	OS :	
Software	Language:	
	Compiler:	

(Information)

<Note> MICR SCIENCE does not answer on phone with any language but Japanese.