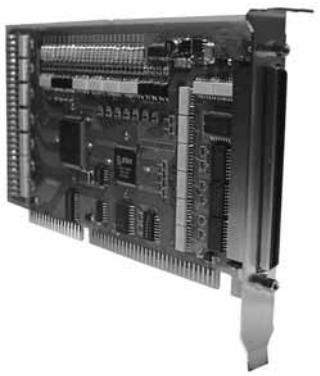
# 2-AXIS PROGRAMABLE MOTION CONTROLLER

## ▣Features

- ●Control 2-Axis independent AC servo and step motor
- ●PC-ISA Type Card
- ●Circular/Linear, various and complicated controlling by bit pattern shortcut function
- ●Output pulse Max.4Mpps
- ●Comparable the real position and counter value using Encoder input pulse
- ●Compatible with Windows 98, NT, 2000, XP
- ●Apply the library which can be operated in C++



⚠ **Please read "Caution for your safety" in operation manual before using.**

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## ▣Ordering information

**PMC** – **2B** – **ISA**

| | |
|---|---|
| 1SA | Connection type |
| 2B | 2-Axis Board Type |
| PMC | Programmable Motion Controller |

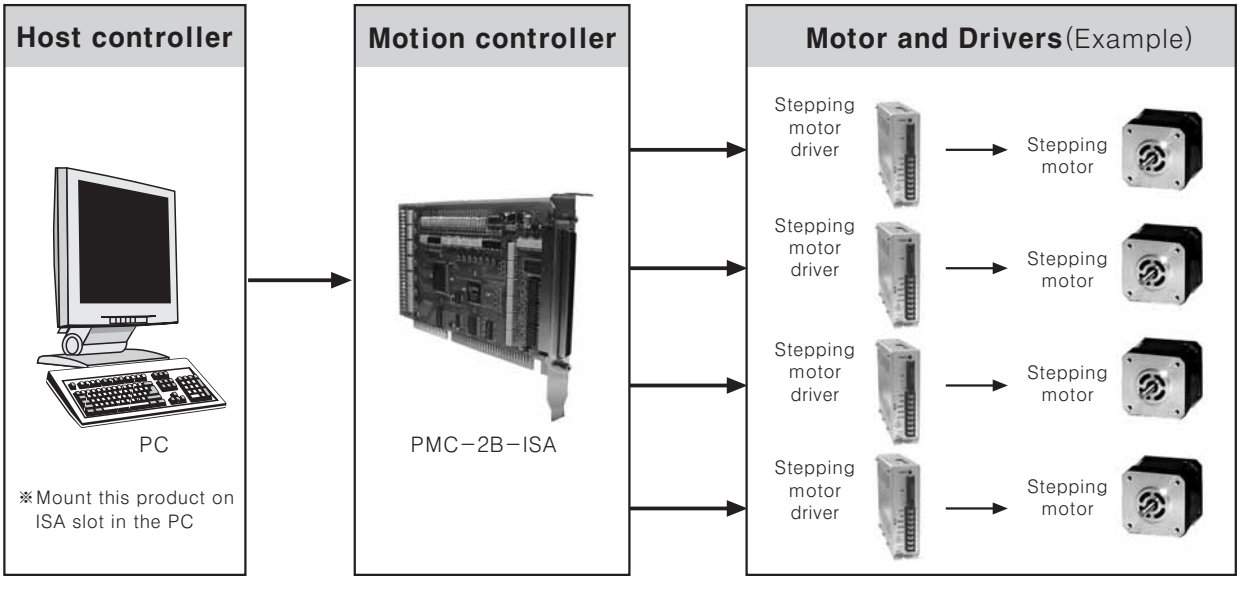
## ▣Specifications

| Model | | PMC-2B-ISA |
|---|---|---|
| Control axis | | 2-Axis |
| ISA bus interface | | Data bit width : 16 bit |
| | | I/O possession address : 16 bit |
| | | Interrupt : Available to connect IRQ 3, 4, 5, 6, 7, 10, 11, 12, 14, 15 |
| Shortcut function | 2-Axis linear shortcut | Shortcut function : Axis -8,388,607 ~ +8,388,607 |
| | | Shortcut speed : 1 ~ 4 MPPS |
| | | Shortcut position accuracy : Max. ±0.5LSB(In shortcut range) |
| | circular shortcut | Shortcut range : Axis -8,388,607 ~ +8,388,607 |
| | | Shortcut speed : 1 ~ 4 MPPS |
| | | Shortcut position accuracy : Max. ±1 LSB(In shortcut range) |
| | 2-Axis bit pattern Shortcut | Shortcut speed : 1~4MPPS(Dependent only on CPU data setup) |
| | Etc. | Regular, Linear speed, Continual shortcut, Transmit shortcut STEP(Command, External signal) |
| Driver pulse output (X, Y common specifications) | | Output circuit : Differential operating Line driver output |
| | | Output speed range : 1PPS~4MPPS |
| | | Output speed accuracy : Max ±0.1%(For setting value) |
| | | Speed rate : 1 ~ 500 |
| | | S type accelerated ascend speed : 954 ~ $62.5\times10^6$ PPS/SEC$^2$(At rate=1)<br>(Rate of increase) $477\times10^3$ ~ $31.25\times10^6$ PPS/SEC$^2$(At rate=500) |
| | | Ascend/descend : 125 ~ $1\times10^6$ PPS/SEC$^2$ (At rate=1)<br>$62.5\times10^3$ ~ $500\times10^6$ PPS/SEC$^2$ (At rate=500) |
| | | Super high speed : 1 ~ 8,000PPS (At rate=1)<br>500 ~ $4\times10^6$ PPS/SEC$^2$(At rate=500) |
| | | Drive speed : 1 ~ 8,000PPS (At rate=1)<br>500 ~ $4\times10^6$ PPS/SEC$^2$ (At rate=500) |
| | | Output pulse : 0 ~ 268,435,455 (Fixed quantity drive) |
| | | Speed curve : Fixed / Linear ascended, descended speed /<br>Parabola S type ascended, descended speed drive |
| | | Decelerate mode of fixed driveautomatic decelerate / Manual decelerate |
| | | Output pulse on Driving, Available to change drive speed |
| | | Selectable dependent 2pulse / 1pulse direction type |
| | | Selectable logic level |

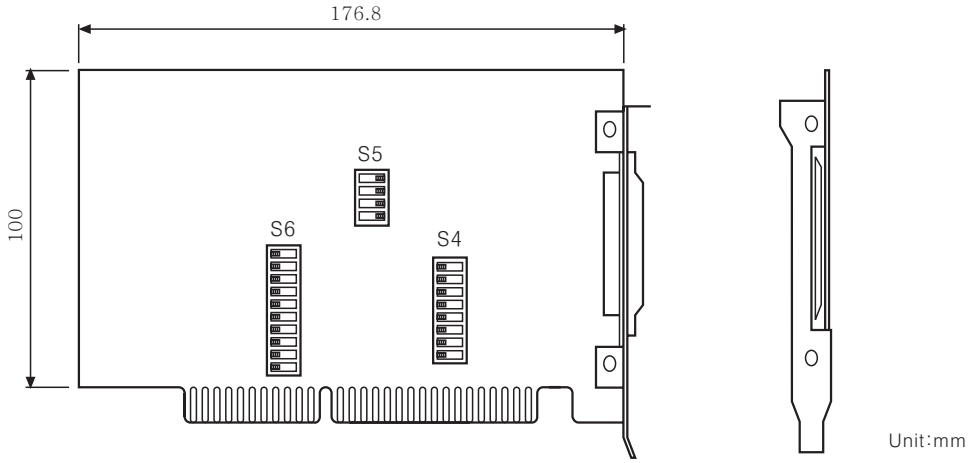
## ▣Specifications

| | |
|---|---|
| Encoder input pulse | Input circuit:High speed photo-coupler input, Able to connect with differential operating line drive |
| | 2phase pulse / Up down pulse input |
| Direction counter | Logic position counter(For output pulse) count range : -2,147,483,648 ~ +2,147,483,647 |
| | Real position counter(For input pulse) count range : -2,147,483,648 ~ +2,147,483,647 |
| Compare register | COMP+ register position campare range : -2,147,483,648 ~ +2,147,483,647 |
| | COMP- register position campare range : -2,147,483,648 ~ +2,147,483,647 |
| | Status output and signal output the magnitude with position counter |
| | Available operating as a software limit |
| Interrupt function (Except for shortcut) | 1drive pulse output<br>On changing position counter ≥ COMP-<br>On changing position counter ≥ COMP+<br>On changing position counter 〈 COMP-<br>On changing position counter 〈 COMP+<br>Starting fixed speed on ascend · descend drive<br>Completing fixed speed on ascend · descend drive<br>On drive ending |
| Drive shortcut by external signal | Able to drive fixed quantity • continual speed of +/- direction by EXPP, EXPM signal |
| | Input circuit : Photo-coupler + Integral filter circuit, Able to connect mechanical |
| E decelerate stop / Immediate stop signal | INO ~ 2square axis 3points |
| | Input circuit : Photo-coupler + Integral filter circuit |
| Input signal for Servo motor | ALARM(alarm), INPOS(Complete position set) |
| | Input circuit : Photo-coupler + CR integral filter circuit |
| Output signal for common | OUT0 ~ 5square axis 6points(Multiple 4 combines MULT CHIP shortcut signal and terminal) |
| | OUT0 ~ 7square axis 8points(Dual purpose of driver status output signal and terminal) |
| | Output circuit : Open collector output |
| Signal output on drive | DRIVE (Driver pulse output)<br>ASND(Ascend speed) CNST(Constant speed) DSND(Descend speed)<br>CMPP(Position ≥ COMP+), CMPM(Position 〈 COMP-)<br>ACASND(Accelerated ascend speed), ACDSND(Accelerated descend) |
| Overrun limit signal input | Direction +, - each one |
| | Input circuit: Photo-coupler+ CR integral filter circuit |
| Emergency stop signal input | ENGN 1point in all axis, make drive pulse of all axis immediately stop |
| | Input circuit : Photo-coupler + CR integral filter circuit |
| Etc. | Operating temp. range : 0℃ ~ 4℃ (Non-freezing and non-dew condition) |
| | Power supply : 5DCV±5% (Max. Current consumption 700mA) |

## ▣System

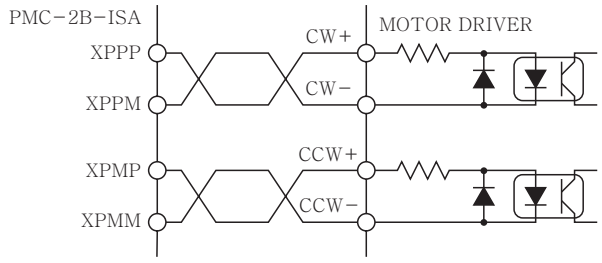


## ▣Dimensions

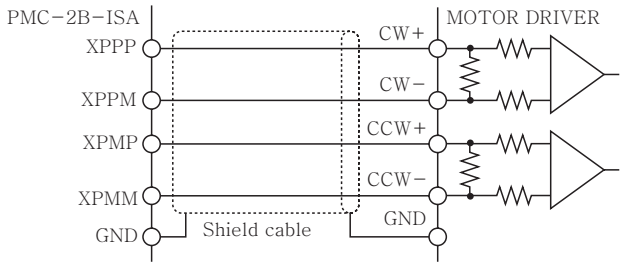



## ▣Connections

### ◎Connection of drive pulse output signal(nPPP/M, nPMP/M)

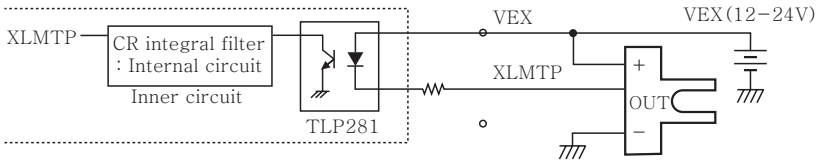



< Photo-coupler input circuit >

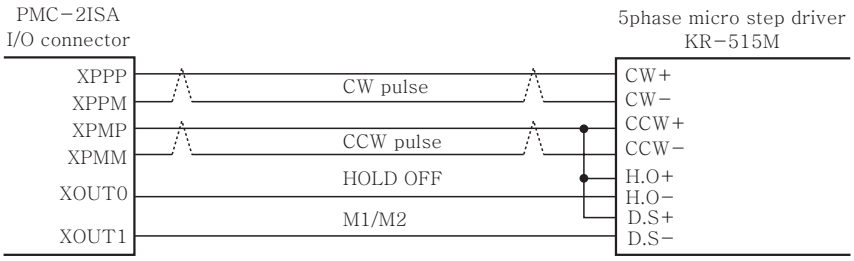



< Line receiver input circuit >

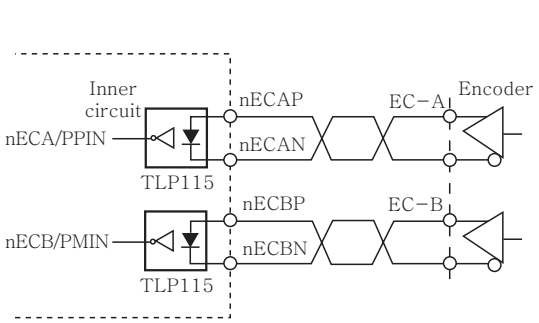
### ◎Connect limit input signal on photo-micro sensor



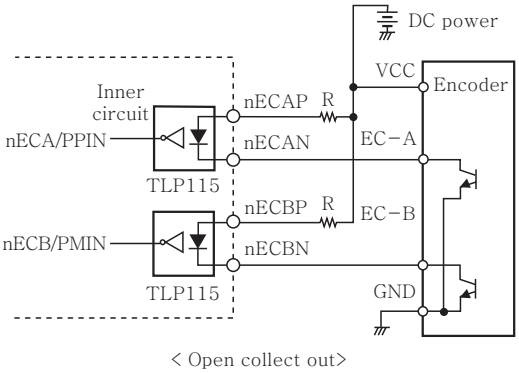

### ◎Connect with 5phase micro step driver




### ◎Connect encoder input signals(nECAP, nECAN, nECBP, nECBN)




< LINE DRIVER >




| Power supply (V) | R(Ω) |
|---|---|
| 5 | 0 |
| 12 | 820 1/4w |
| 24 | 2K 1w |

< Open collect out>

## ▣Specifications(Input/Output)

| Pin | Signal | Description | Pin | Signal | Description |
|---|---|---|---|---|---|
| 1 | VEX | External power(12-24VDC) | 51 | VEX | External power(12-24VDC) |
| 2 | GND | Ground of VEX | 52 | GND | Ground of VEX |
| 3 | EMGN | Emergency stop | 53 | EMGN | Emergency stop |
| 4 | XLMTP | Axis X +limit | 54 | YLMTP | Axis Y +limit |
| 5 | XLMTM | Axis X -limit | 55 | YLMTM | Axis Y -limit |
| 6 | XSTOP0 | Axis X descended stop/Immediate stop(nearby origin) | 56 | YSTOP0 | Axis Y descended stop/Immediate stop(nearby origin) |
| 7 | XSTOP1 | Axis X descended stop/Immediate stop(origin) | 57 | YSTOP1 | Axis Y descended stop/Immediate stop(origin) |
| 8 | XSTOP2 | Axis X descended stop/Immediate stop(nearby origin) | 58 | YSTOP2 | Axis Y descended stop/Immediate stop(nearby origin) |
| 9 | XINPOS | Axis X complete servo position | 59 | YINPOS | Axis Y complete servo position |
| 10 | XALARM | Axis X servo alarm | 60 | YALARM | Axis Y servo alarm |
| 11 | XECAP | Axis X Encoder phase A + | 61 | YECAP | Axis Y Encoder phase A + |
| 12 | XECAN | Axis X Encoder phase A - | 62 | YECAN | Axis X Encoder phase A - |
| 13 | XECBP | Axis X Encoder phase B + | 63 | YECBP | Axis X Encoder phase B + |
| 14 | XECBN | Axis X Encoder phase B - | 64 | YECBN | Axis X Encoder phase B - |
| 15 | XPPP | Axis X +direction drive pulse | 65 | YPPP | Axis Y +direction drive pulse |
| 16 | XPPM | Axis X +direction drive pulse | 66 | YPPM | Axis Y +direction drive pulse |
| 17 | XPMP | Axis X -direction drive pulse | 67 | YPMP | Axis X -direction drive pulse |
| 18 | XPMM | Axis X -direction drive pulse | 68 | YPMM | Axis X -direction drive pulse |
| 19 | XIN0 | Axis X common input 0 | 69 | YIN0 | Axis Y common input 0 |
| 20 | XIN1 | Axis X common input 1 | 70 | YIN1 | Axis Y common input 1 |
| 21 | XIN2 | Axis X common input 2 | 71 | YIN2 | Axis Y common input 2 |
| 22 | XIN3 | Axis X common input 3 | 72 | YIN3 | Axis Y common input 3 |
| 23 | XIN4 | Axis X common input 4 | 73 | YIN4 | Axis Y common input 4 |
| 24 | XIN5 | Axis X common input 5 | 74 | YIN5 | Axis Y common input 5 |
| 25 | XEXPP | Axis X +direction drive controlling | 75 | YEXPP | Axis Y +direction drive controlling |
| 26 | XEXPM | Axis X -direction drive controlling | 76 | YEXPM | Axis X -direction drive controlling |
| 27 | UIN0 | User common input 0 | 77 | UIN8 | User common input 8 |
| 28 | UIN1 | User common input 1 | 78 | UIN9 | User common input 9 |
| 29 | UIN2 | User common input 2 | 79 | UIN10 | User common input 10 |
| 30 | UIN3 | User common input 3 | 80 | UIN11 | User common input 11 |
| 31 | UIN4 | User common input 4 | 81 | UIN12 | User common input 12 |
| 32 | UIN5 | User common input 5 | 82 | UIN13 | User common input 13 |
| 33 | UIN6 | User common input 6 | 83 | UIN14 | User common input 14 |
| 34 | UIN7 | User common input 7 | 84 | UIN15 | User common input 15 |
| 35 | XOUT0 | Axis X common output 0 | 85 | YOUT0 | Axis Y common output 0 |
| 36 | XOUT1 | Axis X common output 1 | 86 | YOUT1 | Axis Y common output 1 |
| 37 | XOUT2 | Axis X common output 2 | 87 | YOUT2 | Axis Y common output 2 |
| 38 | XOUT3 | Axis X common output 3 | 88 | YOUT3 | Axis Y common output 3 |
| 39 | XOUT4 | Axis X common output 4 | 89 | YOUT4 | Axis Y common output 4 |
| 40 | XOUT5 | Axis X common output 5 | 90 | YOUT5 | Axis Y common output 5 |
| 41 | XOUT6 | Axis X common output 6 | 91 | YOUT6 | Axis Y common output 6 |
| 42 | XOUT7 | Axis X common output 7 | 92 | YOUT7 | Axis Y common output 7 |
| 43 | UOUT0 | User common output 0 | 93 | UOUT8 | User common output 8 |
| 44 | UOUT1 | User common output 1 | 94 | UOUT9 | User common output 9 |
| 45 | UOUT2 | User common output 2 | 95 | UOUT10 | User common output 10 |
| 46 | UOUT3 | User common output 3 | 96 | UOUT11 | User common output 11 |
| 47 | UOUT4 | User common output 4 | 97 | UOUT12 | User common output 12 |
| 48 | UOUT5 | User common output 5 | 98 | UOUT13 | User common output 13 |
| 49 | UOUT6 | User common output 6 | 99 | UOUT14 | User common output 14 |
| 50 | UOUT7 | User common output 7 | 100 | UOUT15 | User common output 15 |

## ▣Caution for using

### ◎Handling this product

This product is wrapped with the paper preventing static. Using this product, please remove the static in your body and clothes so that you can grip the both slice side of broad or mounting metal part.
You should not touch the terminal of connector or inserted component. If your body charged prominently contacts to the terminal of connector or component, set CMOS-IC can be destroyed. Especially setting it in winter, dry weather, requres more caution.

### ◎Setting up this product on the PC

After set the I/O port address to slide dip switch S4, S5 on board, please fill the ISA bus connector with edge connector, and jolt the mounted metal part. The setting and removing must be practiced with power OFF status.

- ●Please install this unit after considering countplan against power failure.
  It may result in human injury or product damage.
- ●The surface of product have not to be connected with metal.
  It may cause a fire, mechanical trouble and malfunction.
- ●Do not change I/O address setting switch when the power is applied.
  It may cause a mechanical trouble and malfunction.
- ●Do not change interrupt setting switch when the power is applied.
  It may cause a mechanical trouble and malfunction.

### ◎Connection of Input/Output Signal

When connecting external power or input/output signals, reversing the polarity or giving over voltage or current causes destroying the inner components and reducing the reliance.
Please check wiring before connecting.

- ●Wiring must be based on the connection diagram.
  It may cause a fire, electric shock or product injury.
- ●Even in case of trouble of external power or controller problem, please make sure the product is installed under safety protection.
  It may cause malfunction by electric shock, fire, inferior connection.
- ●Set the limit switch by all means.
  It may cause human injury or damage to product.
- ●Set the emergency stop switch by all means.
  It may cause human injury or damage to product.
- ●Do not set or wire the product when power ON.
  It may give a electric shock or result in product damage.
- ●Please check if the wires are shorted with others when setting or wiring the product.
  It may give a electric shock or result in product damage.
- ●Non-using terminal have not to be connected with other lines and not to be shorted another terminal.
  It may give a electric shock or result in product damage.

### ◎I/O cable

The length of I/O cable is 1.2m, however, the signals of 11~18 and 61~68 is a high-speed input/output signal cables(encoder input signal and pulse output signal). In this reason, the minimum length of the cable is requred not to get nearby the noise of electromagnetic induction.

- ●I/O cable must be used without noise so please separate the wires from the power cable, operating power cable, load cable.
- ●IDo not change the pin arrangement of I/O cable arbitrarily.