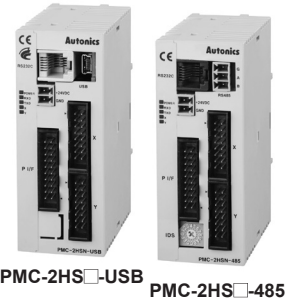


# PMC-2HSP/PMC-2HSN Series

## 2-Axis High Speed Interpolation/Normal Motion Controller

### ■ Features

- Independent 2-Axis controlling with high operating speed of max. 4Mpps
- Linear/Circular interpolation control (PMC-2HSP)
- Realizing a wide variety of operation up to 200 steps using 17 control commands combination (13 commands except circular/linear interpolation command for PMC-2HSN series)
- Various control interface available (USB, RS232C, RS485, Parallel I/F)
- Controlling up to 32 axes (16 units)  
via RS485 serial communication (Modbus RTU)
- 4 operation modes: Jog, Continuous, Index, Program mode
- Symmetrical/asymmetrical trapezoid, S-shaped de/acceleration driving function



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



(except for PMC-2HS□-485)

### ■ User Manual

- Please refer to user manual for detailed instructions and specifications.
- Visit our web site ([www.autonics.com](http://www.autonics.com)) to download user manual and software [MotionStudio].
- User manual describes installing software, setting parameter and program, operation mode, and multi-axis operation, etc. to operate motion controller.

### ■ Software (MotionStudio)

- MotionStudio is the windows software designed to operate motion control for PMC-2HSP/2HSN series.
- Compatible Microsoft Windows 98, NT, 2000, XP (32-bit, 64-bit), Vista (32-bit, 64-bit) and 7 (32-bit, 64-bit)
  - Supports 9,600, 19,200, 38,400, 57,600, 115,200 bps transmission speeds
  - Available to use on all OS supported COM ports (COM1 to COM256)
  - Multilingual support (korean, english)
  - Provides a calculator for convenience (calculates PPS, center of interpolation, end coordinates)

### ■ Ordering Information

<b>PMC</b>	<b>2HSP</b>	<b>USB</b>		
			Communication type	485 RS485 / RS232C USB USB / RS232C
			Axis/Type	2HSP 2-Axis high speed interpolation 2HSN 2-Axis high speed normal
			Item	PMC Programmable Motion Controller

### ■ Specifications

Model	PMC-2HSP-USB	PMC-2HSP-485	PMC-2HSN-USB	PMC-2HSN-485
Control axis	2-Axis			
Motor for control	Pulse string input stepper motor or servo motor			
Power supply	24VDC			
Power consumption	Max. 6W			
Inposition range	-8,388,608 to 8,388,607 (selectable absolute/relative value, available pulse-scaling function)			
Range for the drive speed	1 pps to 4 Mpps (1 to 8,000pps × Magnification 1 to 500)			
Pulse output mode	1 Pulse/2 Pulse output (line driver output)			
Operation mode	Jog / Continuous / Index / Program			
Index step numbers	64 steps per each axis			
Program function	Step	200 steps		
	Control	ABS, INC, HOM, LID <sup>※1</sup> , CID <sup>※1</sup> , FID <sup>※1</sup> , RID <sup>※1</sup> , TIM, JMP, REP, RPE, ICJ, IRD, OPC, OPT, NOP, END		
	Start	Power On program auto-start function		
Home search mode	Home search	Power On home search auto-start function		
		High speed near home search (step 1) → Low speed home search (step 2) → Encoder Z phase search (step 3) → Offset move (step 4)		
I/O	<ul style="list-style-type: none"> <li>• Parallel I/F (CN3): 13 inputs, 4 outputs</li> <li>• X-axis (CN 4) / Y-axis (CN 5): 8 inputs, 6 outputs (general-purpose I/O, two of each)</li> </ul>			
Environ-ment	Ambient temperature	0 to 45°C, storage: -15 to 70°C		
	Ambient humidity	20 to 90%RH		
Accessory	<ul style="list-style-type: none"> <li>• [Common] Power connector, I/O connector (PI/F, X-axis, Y-axis), RS232C communication cable (1.5m): 1, User Manual</li> <li>• [USB type] USB communication cable 1m: 1 •[RS485 type] RS485 connector: 1</li> </ul>			
Weight <sup>※2</sup>	Approx. 344g (approx. 101.5g)	Approx. 308.7g (approx. 101.6g)	Approx. 344g (approx. 101.5g)	Approx. 308.7g (approx. 101.6g)

※1: These commands are only for PMC-2HSP series.

※2: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing of condensation.

# 2-Axis High Speed Interpolation/Normal Motion Controller

## Standard Operation Method

There are three methods to operate the motion controller.

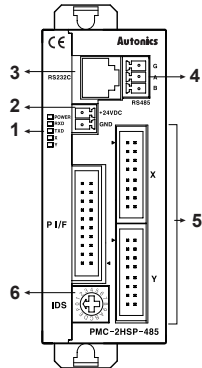
- Operation by PC  
Connect a PC and the controller with communication cable and run dedicated program (MotionStudio).
- Operation by Parallel I/F  
Connect a sequence controller or switch to Parallel I/F.
- Operation by serial communication (dedicated communication protocol)  
Using serial communication protocol, operate according to program writing by user.

## Program Commands

Command type	Code	Description
Drive commands	ABS	Move absolute position
	INC	Move relative position
	HOM	Home search
	LID	2-Axis linear interpolation <sup>※1</sup>
	CID	2-Axis CW circular interpolation <sup>※1</sup>
	FID	2-Axis CW arc interpolation <sup>※1</sup>
I/O commands	RID	2-Axis CCW arc interpolation <sup>※1</sup>
	ICJ	Jump input condition
	IRD	Stand-by external input
	OPC	ON/OFF output port
Program control commands	OPT	ON pulse from output port (period)
	JMP	Jump
	REP	Start repetition
	RPE	End repetition
Others	END	End program
	TIM	Timer
	NOP	No operation

※1: These commands are only for PMC-2HSP series.

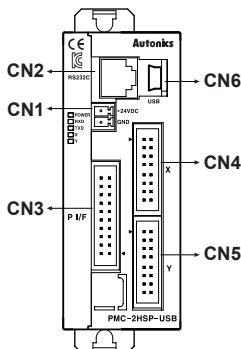
## Unit Descriptions



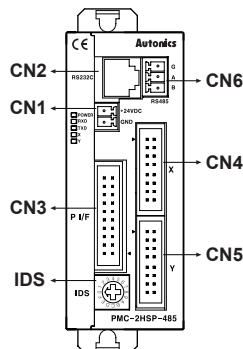
- 1. Power / Status indicator**  
Used to indicate power, controller's communication status and operation status for each axis
- 2. Power connector terminal**  
Used to connect power for controller
- 3. RS232C connector terminal**  
Used to connect RS232 serial (RJ12-DSUB9) connection cable
- 4. USB/RS485 connector terminal**  
Used to connect USB and RS485 connection cable
- 5. External I/O connector terminal**  
Used to operate various drives through input and output of Parallel I/F, X, Y
- 6. ID select switch**  
Used to set unique ID for each node in case of RS485 communication

## I/O terminal

### PMC-2HS-USB



### PMC-2HS-485



Connector No.	Description
CN1	Power connector
CN2	RS232C connector
CN3	Parallel I/F connector
CN4	X-Axis I/O connector
CN5	Y-Axis I/O connector
CN6	PMC-2HSP/2HSN-USB: USB connector PMC-2HSP/2HSN-485: RS485 connector
IDS	ID selection switch

- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
- (H) Temperature Controllers
- (I) SSRs / Power Controllers
- (J) Counters
- (K) Timers
- (L) Panel Meters
- (M) Tacho / Speed / Pulse Meters
- (N) Display Units
- (O) Sensor Controllers
- (P) Switching Mode Power Supplies
- (Q) Stepper Motors & Drivers & Controllers
- (R) Graphic/ Logic Panels
- (S) Field Network Devices
- (T) Software

# PMC-2HSP/PMC-2HSN Series

## ■ Power Connector (CN1)

Pin No.	Signal name
1	24VDC
2	GND (0V)

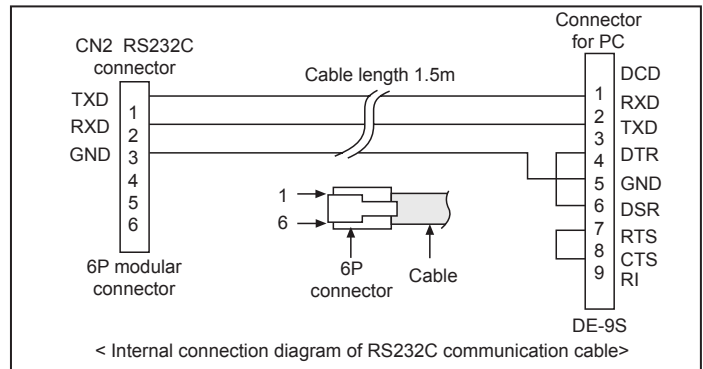
<CN3 Pin No.>

20	■	19
18	■	17
16	■	15
14	■	13
12	■	11
10	■	9
8	■	7
6	■	5
4	■	3
2	■	1

## ■ RS232C Connector (CN2)

Pin No.	Signal name	Input/Output	Description
1	TXD	Output	Receiving data
2	RXD	Input	Transmitting data
3	GND	—	Ground
4	—	—	No-connection
5	—	—	No-connection
6	—	—	No-connection

※The internal connection diagram of RS232C communication cable is shown as below.



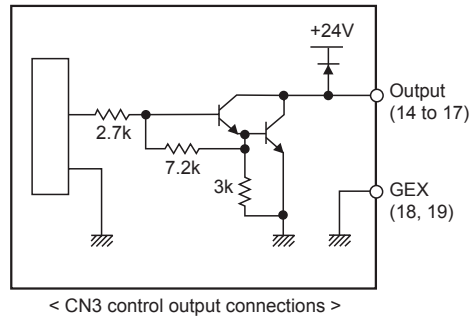
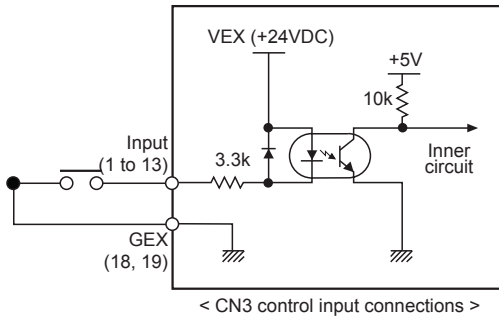
## ■ Parallel I/F Connector (CN3)

The Parallel I/F connector which is connected with a sequencer or mechanical contacts operates motion controller same as PC program. When input signal is ON, the input signal terminal and GEX terminal are connected by mechanical contacts or open collector output and open collector output transistor is ON when the output signal is ON.

Pin No.	Signal name	Input/Output	Description
1	RESET	Input	Reset
2	HOME	Input	Home search start command
3	STROBE	Input	Drive start command
4	X/JOG Y+	Input	X-axis designate/Jog Y+
5	Y/JOG Y-	Input	Y-axis designate/Jog Y-
6	STEPSL0/RUN+/JOG X+	Input	Register designate 0/Run+/Jog X+
7	STEPSL1/RUN-/JOG X-	Input	Register designate 1/Run-/Jog X-
8	STEPSL2/SPD0	Input	Register designate 2/Drive speed designate 0
9	STEPSL3/SPD1	Input	Register designate 3/Drive speed designate 1
10	STEPSL4/JOG	Input	Register designate 4/Jog designate
11	STEPSL5/STOP	Input	Register designate 5/Drive stop
12	MODE0	Input	Operation mode designate 0
13	MODE1	Input	Operation mode designate 1
14	X DRIVE/END	Output	X-axis drive/Drive end pulse
15	Y DRIVE/END	Output	Y-axis drive/Drive end pulse
16	X ERROR	Output	X-axis error
17	Y ERROR	Output	Y-axis error
18	GEX	0V	Ground
19	GEX	0V	Ground
20	VEX	+24V	Power supply for sensor (24VDC, Max. 100mA)

# 2-Axis High Speed Interpolation/Normal Motion Controller

## Input/Output Connections (CN3)



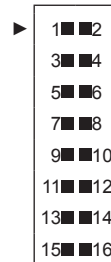
## X, Y-Axis Input/Output Connector (CN4, CN5)

CN4 and CN5 are I/O signals for X-Axis and Y-Axis respectively.

The pin arrangement of CN4 and CN5 are equal. 'n' in the table means X for CN4 and Y for CN5.

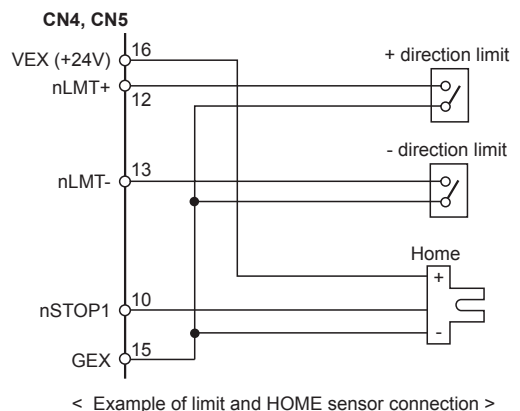
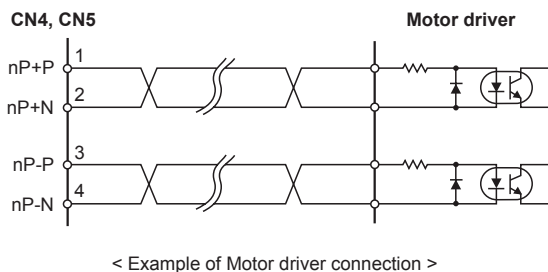
Pin No.	Signal name	Input/Output	Description
1	n P+P	Output	Drive pulse in the CW + direction
2	n P+N	Output	Drive pulse in the CW + direction
3	n P-P	Output	Drive pulse in the CCW - direction
4	n P-N	Output	Drive pulse in the CCW - direction
5	n OUT0	Output	General output 0
6	n OUT1	Output	General output 1
7	n IN0	Input	General input 0
8	n IN1	Input	General input 1
9	n STOP2	Input	Encoder Z-phase
10	n STOP1	Input	Home
11	n STOP0	Input	Near Home
12	n LMT+	Input	+ direction limit
13	n LMT-	Input	- direction limit
14	EMG	Input	Emergency stop
15	GEX	0V	Ground
16	VEX	+24V	Power supply for sensor (24VDC, Max. 100mA)

<CN4, CN5 Pin No.>



※CN4, 5 input/output is same as CN3 input/output connections.

Drive pulse output of motion controller which is inputted to motor driver is line driver output.

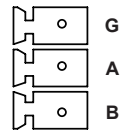


- (A) Photoelectric Sensors
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# PMC-2HSP/PMC-2HSN Series

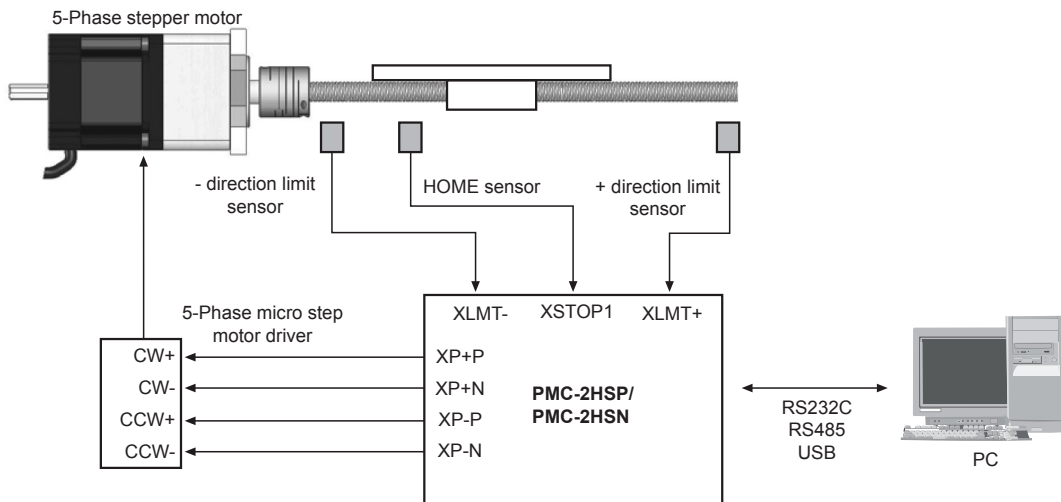
## RS485 Connector (CN6)

Pin No.1	Signal name	Input/Output	Description
1	B (-)	I/O	Transmitting / Receiving data
2	A (+)	I/O	Transmitting / Receiving data
3	G	—	※1



※1: Connect the ground when it is required depending on communication environments.

## Connections



< Basic configuration of the motion controller (Configuration only for X-axis) >

## Dimensions

(unit: mm)

