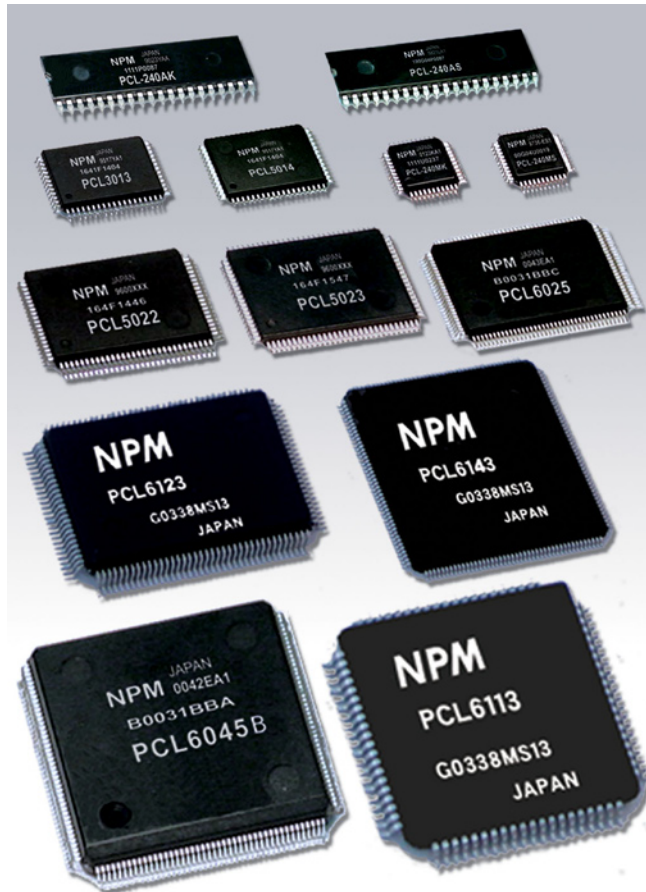


Nippon Pulse Motor

Programmable Pulse Generators

PCL/PCD Series



PCL/PCD series programmable pulse generators are motion chips that will simplify controller design, make the board smaller, and unburden the microprocessor. High output pulse frequencies (6.5MHz Max), which are compatible with either stepper or servomotor systems, offer the design engineer a variety of cost and performance choices. The major applications are semiconductor manufacturing and inspection equipment, robots, analyzers, medical examination equipment and automatic handling machines.

Nippon Pulse Motor Co., Ltd. offers various controllers, drivers, motors, and communication chips to cover almost any stepper application.

Please visit our website at www.nipponpulse.com for information about all the products we offer.

NPM

2-16-13, Hongo, Bunkyo-ku
Tokyo 113-0033, Japan
Phone: 81-3-3813-8841
Fax: 81-3-3813-2940
E-mail: int-l@npm.co.jp

Chip Number	PCL-240AK PCL-240MK	PCL-240AS PCL-240MS	PCL5023	PCL6025
Specifications				
Reference Clock	4.9152MHz	4.9152MHz	19.6608MHz	19.6608MHz
Max. Output Speed	240Kpps	2.4Mpps	4.9Mpps	6.5Mpps
Pulse Rate Resistors	FL, FH1, FH2	FL, FH1, FH2	FL, FH	FL, FH, FA (Correction Speed) per each axis
Pulse Rate Resolution	1 ~ 8,191 (13-bit)	1 ~ 8,191 (13-bit)	1 ~ 32,767 (15-bit)	1 ~ 65,535 (16-bit)
Pulse Rate Multiplication	0.01x ~ 30x	0.01x ~ 300x	0.05x - 75x	0.1x ~ 100x
Accel/Decel Setting Range	2 ~ 16,383*	1 ~ 65,535*	1 ~ 65,535	1 ~ 65,535 (16-bit)
Positioning Pulse Setting Range	1 ~ 16,777,215 (24-bit)	1, 16,777,215 (24-bit)	0 ~ 268,435,455 (28-bit)	-134,217,728 ~ +134,217,727 (28-bit)
Ramping Down Pulse Setting Range	1 ~ 1,048,575	1 ~ 16,777,215	0 ~ 16,777,215	0 ~ 16,777,215 (24-bit)
Extra Provisions				
Up/Down Counter	24-bit x 1	24-bit x 1	28-bit x 2	28-bit x 3 (per axis with 16-bit deviation counter)
Comparator	—	—	—	28-bit x 5 (per axis)
Encoder Input (up to 4x multiplication)	Yes	Yes	Yes	Yes
Multi-Purpose Input/ Output Pin(s)	1 / 1	1 / 2	8	8
CPU Interface	8-bit bus	8-bit bus	8-bit / 16-bit bus	8-bit / 16-bit bus
Additional Functions				
S-Curve Accel/Decel Control	—	Yes	Yes (S-curve / S-curve w/ Linear)	Yes (S-curve / S-curve w/ Linear)
Prebuffers for Continuous Positioning Control	—	—	—	—
Microsteps	—	—	Yes (1 ~ 1/16)	Yes
Present Position Counter Reset	—	—	—	Yes
Origin Return with Encoder Connected	Yes	Yes	Yes	Yes
Origin Search/Escape Function	—	—	—	—
1-Pulse Output	—	—	Yes	—
Idling Pulse(s) Output	—	—	Yes (0 ~ 7)	Yes (0~7)
Repeat Function	—	—	—	—
Pulser Input	—	—	Yes	Yes
Out-of-Step Detector	—	—	Yes	Yes
Interpolation Function	—	—	Yes (Linear)	Linear, Circulation
Number of Controllable Axes per Chip	1	1	2	2
Exciting Signal Output	—	—	—	—
Applicable Motor				
DC/AC Servomotor	Yes	Yes	Yes	Yes
Linear Motor	Yes	Yes	Yes	Yes
Direct Drive Motor	—	—	Yes	Yes
Number of Pins (Package)	240AK: 40 (DIP 600mil) 240MK: 44 (QFP)	240AS: 40 (DIP 600mil) 240AK: 44 (QFP)	100 (QFP)	128 (QFP)

*Note: Accel and decel are set separately from each other on the PCL240AK, PCL240MK, PCL-240AS, and the PCL-240MS .

Chip Number	PCL6045x	PCL6113	PCL6123	PCL6143
Specifications				
Reference Clock	19.6608MHz	19.6608MHz	19.6608MHz	19.6608MHz
Max. Output Speed	6.5Mpps	9.8 Mpps at 19.6608MHz (15 Mpps at 30MHz)	9.8 Mpps at 19.6608MHz (15 Mpps at 30MHz)	9.8 Mpps at 19.6608MHz (15 Mpps at 30MHz)
Pulse Rate Resistors	FL, FH, FA (Correction Speed) per each axis	FL, FH	FL, FH	FL, FH
Pulse Rate Resolution	1 ~ 65,535 (16-bit)	1 to 16,383 (14-bits)	1 to 16,383 (14-bits)	1 to 16,383 (14-bits)
Pulse Rate Multiplication	0.1x ~ 100x	0.1 to 600x	0.1 to 600x	0.1 to 600x
Accel/Decel Setting Range	1 ~ 65,535 (16-bit)	1 to 16,383 (14-bits)	1 to 16,383 (14-bits)	1 to 16,383 (14-bits)
Positioning Pulse Setting Range	-134,217,728 ~ +134,217,727 (28-bit)	-134,217,728 ~ +134,217,727 (28-bits)	-134,217,728 ~ +134,217,727 (28-bits)	-134,217,728 ~ +134,217,727 (28-bits)
Ramping Down Pulse Setting Range	0 ~16,777,215 (24-bit)	0 ~ 16,777,215 (24-bits)	0 ~ 16,777,215 (24-bits)	0 ~ 16,777,215 (24-bits)
Extra Provisions				
Up/Down Counter	28-bit x 3 (per axis with 16-bit deviation counter)	28-bit x 3 (per axis with 16-bit deviation counter)	28-bit x 3 (per axis with 16-bit deviation counter)	28-bit x 3 (per axis with 16-bit deviation counter)
Comparator	28-bit x 5 (per axis)	28-bit x 2 (per axis)	28-bit x 2 (per axis)	28-bit x 2 (per axis)
Encoder Input (up to 4x multiplication)	Yes	Yes	Yes	Yes
Multi-Pupose Input/ Output Pin(s)	8			
CPU Interface	8-bit / 16-bit bus	8-bit / 16-bit bus	8-bit / 16-bit bus	8-bit / 16-bit bus
Additional Functions				
S-Curve Accel/Decel Control	Yes (S-curve / S-curve w/ Linear)	Yes (S-curve / S-curve w/ Linear)	Yes (S-curve / S-curve w/ Linear)	Yes (S-curve / S-curve w/ Linear)
Prebuffers for Continuous Positioning Control	Linear, S-Curve	Linear, S-Curve	Linear, S-Curve	Linear, S-Curve
Microsteps	Yes	Yes	Yes	Yes
Present Position Counter Reset	Yes	Yes	Yes	Yes
Origin Return with Encoder Connected	Yes	Yes	Yes	Yes
Origin Search/Escape Function	—	—	—	—
1-Pulse Output	—	—	—	—
Idling Pulse(s) Output	Yes (0~7)	—	—	—
Repeat Function	—	—	—	—
Pulser Input	Yes	—	—	—
Out-of-Step Detector	Yes			
Interpolation Function	Linear, Circulation	Yes	Linear	Linear
Number of Controllable Axes per Chip	4	1	2	4
Exciting Signal Output	—	—	—	—
Applicable Motor				
DC/AC Servomotor	Yes			
Linear Motor	Yes			
Direct Drive Motor	Yes			
Number of Pins (Package)	176 (QFP)	80 (QFP)	128 (QFP)	176 (QFP)

Chip Number	PCD4500	PCD4511	PCD4521	PCD4541
Specifications				
Reference Clock	4.9152MHz	4.9152MHz	4.9152MHz	4.9152MHz
Max. Output Speed	400Kpps	400Kpps	400Kpps	400Kpps
Pulse Rate Resistors	2 (FL, FH)	2 (FL, FH)	2 (FL, FH) per axis	2 (FL, FH) per axis
Pulse Rate Resolution	1 ~ 8,191 (13-bit)	1 ~ 8,191 (13-bit)	1 ~ 8,191 (13-bit)	1 ~ 8,191 (13-bit)
Pulse Rate Multiplication	1x ~ 50x	1x ~ 50x	1x ~ 50x	1x ~ 50x
Accel/Decel Setting Range	2 ~ 1,023	2 ~ 1,023	2 ~ 1,023	2 ~ 1,023
Positioning Pulse Setting Range	1 ~ 262,143 (18-bit)	1 ~ 262,143 (18-bit)	1 ~ 262,143 (18-bit)	1 ~ 262,143 (18-bit)
Ramping Down Pulse Setting Range	1 ~ 65,535	1 ~ 65,535	1 ~ 65,535	1 ~ 65,535
Extra Provisions				
Up/Down Counter	—	—	—	—
Comparator	—	—	—	—
Encoder Input (up to 4x multiplication)	—	—	—	—
Multi-Purpose Input/Output Pin(s)	1 output	1 output	2 output	4 output
CPU Interface	8-bit bus	8-bit bus	8-bit bus	8-bit bus
Additional Functions				
S-Curve Accel/Decel Control	—	Yes	Yes	Yes
Prebuffers for Continuous Positioning Control	—	—	—	—
Microsteps	—	—	—	—
Present Position Counter Reset	—	—	—	—
Origin Return with Encoder Connected	—	—	—	—
Origin Search/Escape Function	—	—	—	—
1-Pulse Output	—	—	—	—
Idling Pulse(s) Output	Yes (0 ~ 7)	Yes (0 ~ 7)	Yes (0 ~ 7)	Yes (0 ~ 7)
Repeat Function	—	—	—	—
Pulser Input	—	—	—	—
Out-of-Step Detector	—	—	—	—
Interpolation Function	—	—	—	—
Number of Controllable Axes per Chip	1	1	2	4
Exciting Signal Output	Yes (bipolar and unipolar)	Yes (bipolar and unipolar)	Yes (bipolar and unipolar)	Yes (bipolar and unipolar)
Applicable Motor				
DC/AC Servomotor	—	—	—	—
Linear Motor	—	—	—	—
Direct Drive Motor	—	—	—	—
Number of Pins (Package)	44 (QFP)	44 (QFP)	64 (QFP)	100 (QFP)