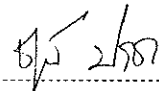


ตารางแสดงวงเงินงบประมาณที่ได้รับจัดสรรและราคากลาง (ราคาอ้างอิง)
ในการจัดซื้อจัดจ้างที่มีใช้งานก่อสร้าง

1. ชื่อโครงการ จัดซื้อ เซอร์โวมอเตอร์และอุปกรณ์ควบคุมสำหรับใช้ควบคุมการเปิด-ปิดแม่เหล็ก Multipole Wiggler จำนวน 6 รายการ (รายละเอียดตามเอกสารแนบ)
หน่วยงานเจ้าของโครงการ สังกัดฝ่ายเครื่องเร่งอนุภาค
สถาบันวิจัยแสงซินโครตรอน (องค์การมหาชน)
วิธีจัดซื้อจัดจ้าง ☐ วิธีเชิญชวน ☐ วิธีคัดเลือก ☒ วิธีเฉพาะเจาะจง
2. วงเงินงบประมาณที่ได้รับจัดสรร260,000.00.....บาท (ตามใบขอซื้อ/จ้าง พค 085/2561 ลว. 22 ม.ค. 61)
3. วันที่กำหนดราคากลาง (ราคาอ้างอิง) 2 กุมภาพันธ์ 2561เป็นเงิน 245,041.29บาท
ราคา/หน่วย (ถ้ามี).....(ตามตารางแนบท้าย).....(ราคาดังกล่าวเป็นราคาเฉพาะราคาสินค้าเท่านั้น)
4. แหล่งที่มาของราคากลาง (ราคาอ้างอิง)
 - 4.1 ใบเสนอราคา บริษัท ออโตเฟล็กซ์เบิ้ล แอดวานซ์ เอ็นจิเนียริง จำกัด
 - 4.2 ใบเสนอราคา บริษัท ฟินิกส์ วิชั่น แอนด์ ออโตเมชัน จำกัด
5. รายชื่อเจ้าหน้าที่ผู้กำหนดราคากลาง (ราคาอ้างอิง) ทุกคน นายชัยยุทธ ปรีชา ()

หมายเหตุ :

แหล่งที่มาของราคากลาง (ราคาอ้างอิง) กำหนดราคากลาง โดยพิจารณาจากใบเสนอราคาตามท้องตลาดซึ่งมีผู้เสนอราคามา จำนวน 2 ราย มีคุณสมบัติตรงตามสถาบันฯ กำหนด



รายละเอียดคุณลักษณะพัสดุ มอเตอร์และอุปกรณ์ควบคุมจำนวน 6 รายการ

ลำดับ	รายการที่ต้องการขอซื้อ/จ้าง	จำนวน	หน่วยนับ	รายละเอียดคุณสมบัติ	
				หัวข้อหลัก	คุณสมบัติ
1	เซอร์โวมอเตอร์	1	ตัว	Frame size :	100 mm.
				Model :	230 VAC
				Max AC Voltage :	240 VAC.
				Rated speed :	4782 rpm.
				Stall torque :	4.56 Nm.
				Peak torque :	12.69 Nm.
				Rated torque :	3.10 Nm.
				Shaft :	Keyway
				Feedback :	Heidenhain absolute encoder
				Feedback Data Communication Type :	EnDat
				Electrically Released Brake :	24 V failsafe spring brake
				Weight :	9.78 kg.
				มีคุณสมบัติเทียบเท่าหรือสูงกว่า :	
				Parker รุ่น MPP1002D8D-KPSB (Servo Motor)	



ลำดับ	รายการที่ต้องการขอซื้อ/จ้าง	จำนวน	หน่วยนับ	รายละเอียดคุณสมบัติ	
				หัวข้อหลัก	คุณสมบัติ
2	เซอร์โวมอเตอร์ดีร์เวอร์	1	ตัว	Motor Output Power :	3500 Watts
				Drive Output Power :	
				Continuous Current (RMS) :	16.7 A
				Peak Current (RMS) :	50.1 A
				Bus Voltage :	340 VDC
				Drive Input Voltage :	230 VAC, 1/3Ø, 50/60Hz
				Drive Control Voltage :	230 VAC, 1Ø, 50/60Hz
				Performance :	
				Servo update :	62.5µ seconds
				Accuracy :	± 1 encoder count ; encoder dependent
				Commutation :	Sinusoidal
				Control :	
				Indexer Function :	64 user defined profiles, relative/absolute moves, registration, sequences and I/O selection

เอกสารประกอบการพิจารณาราคา

เอกสารแนบท้ายจากต้นเรื่อง



ลำดับ	รายการที่ต้องการซื้อ/จ้าง	จำนวน	หน่วยนับ	รายละเอียดคุณสมบัติ	
				หัวข้อหลัก	คุณสมบัติ
				Position Control :	Step and direction, CW and CCW
				Speed Control :	+/- 10V, 1:5000
				Torque Control :	+/- 10V
				Feedback :	
				Encoder Input :	Quadrature Incremental encoder, BiSS-C (absolute) encoder, EnDAT 2.2, SinCos
				Encoder Output :	RS-422 compatible differential driver
				I/O :	
				Digital input :	16-channel, +24V common, user selectable functions
				Digital output :	8-channel, Differential (isolated), user selectable functions
				Analog input :	2-channel, ±10V (max.), 12bits
				Analog output :	2-channel, ±10V (max.), selectable, 12bits
				Communications :	
				USB :	USB 2.0 for firmware upload and drive configuration

เอกสารประกอบการพิจารณาราคากลาง

เอกสารแนบท้ายจากต้นเรื่อง



ลำดับ	รายการที่ต้องการซื้อ/จ้าง	จำนวน	หน่วยนับ	รายละเอียดคุณสมบัติ	
				หัวข้อหลัก	คุณสมบัติ
				Serial :	RS422 for PC or HMI interface, MODBUS-RTU
				Built-in Functions :	
				Display :	7 Segments, 5 digits for Status and Alarms
				Node Selection :	3 dip switches, 1 rotary for address 0-31
				Dynamic Braking :	Built-in, user selectable reaction
				Internal Regeneration :	12.6Ohm, 150W
				External Regeneration :	30Ohm, 600W
				มีคุณสมบัติเทียบเท่าหรือสูงกว่า : Parker รุ่น PD-35P (P SERIES SERVO DRIVE)	
3	สายสัญญาณป้อนกลับ	1	เส้น	Length :	40 feet.
				มีคุณสมบัติเทียบเท่าหรือสูงกว่า : Parker F-4A1-40 (FEEDBACK CABLE)	
4	สายสัญญาณสำหรับมอเตอร์	1	เส้น	Length :	40 feet.
				มีคุณสมบัติเทียบเท่าหรือสูงกว่า : Parker P-3B1-40 (POWER CABLE)	
5	คอนเนกเตอร์สำหรับสายสัญญาณป้อนกลับ	1	ชุด	มีคุณสมบัติเทียบเท่าหรือสูงกว่า : APC-CN3NINA	



ลำดับ	รายการที่ต้องการขอซื้อ/จ้าง	จำนวน	หน่วยนับ	รายละเอียดคุณสมบัติ	
				หัวข้อหลัก	คุณสมบัติ
6	คอนเนกเตอร์สำหรับควบคุมมอเตอร์	1	ชุด	มีคุณสมบัติเทียบเท่าหรือสูงกว่า : APC-CN1NNA	

1. What is the purpose of the study?

1. $\frac{1}{2} \frac{d}{dt} \int_{\mathbb{R}^n} |u|^2 dx = \int_{\mathbb{R}^n} u \Delta u dx$

D. ๒๐๑๖-๒๐๑๗

ทพ. สกานต์ สัตตังคังคัง ๑ ๓๖

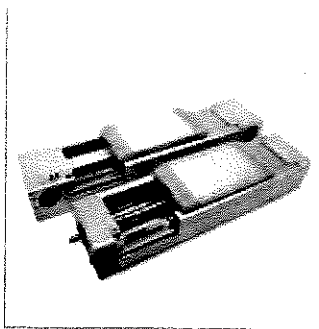
3. สันนิษฐานว่าคนในทีมจะซื้อสินค้าที่มีราคาถูกกว่าคนอื่นหรือไม่

КРАМЕРОВИЦА

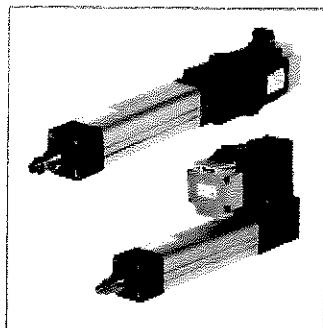
23/5/20

(1947-1948)

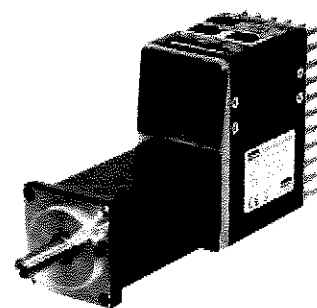
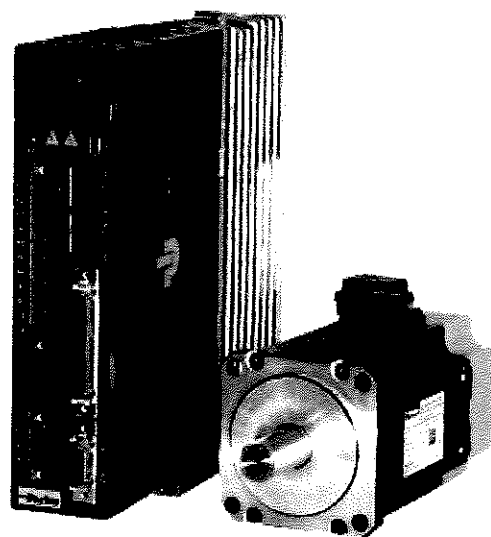
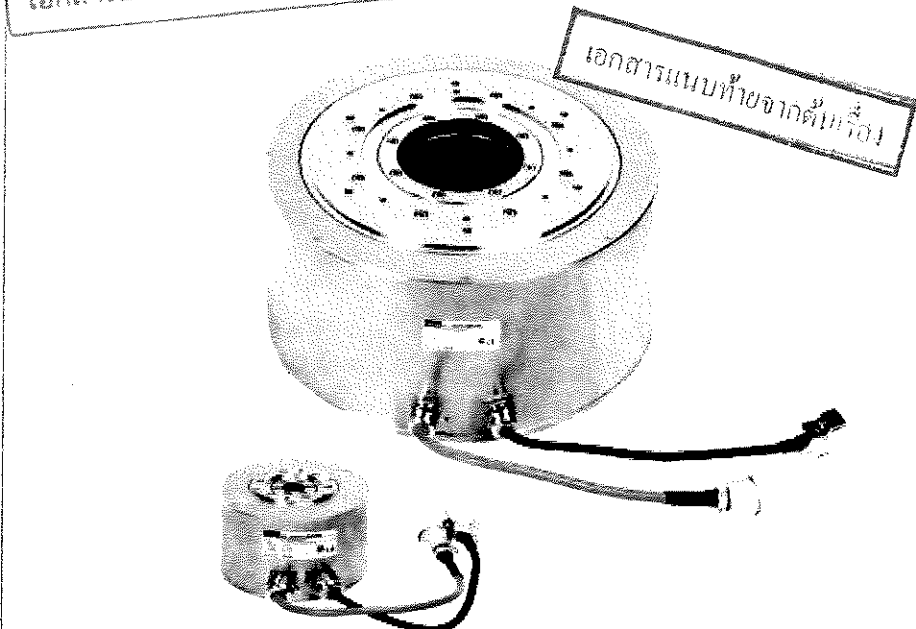
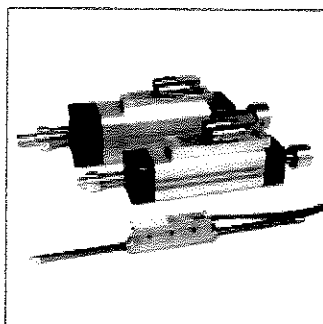
ลงชื่อผู้ขอซื้อจ้าง
(นายชัยยงต์ ปรีชา)



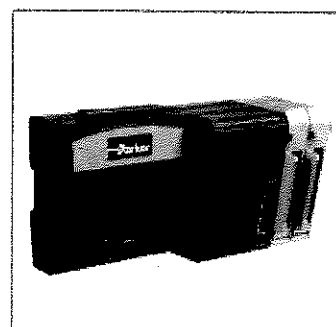
เอกสารประกอบการพิจารณาเราดากกลาง



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Parker Servo system P series complete catalog

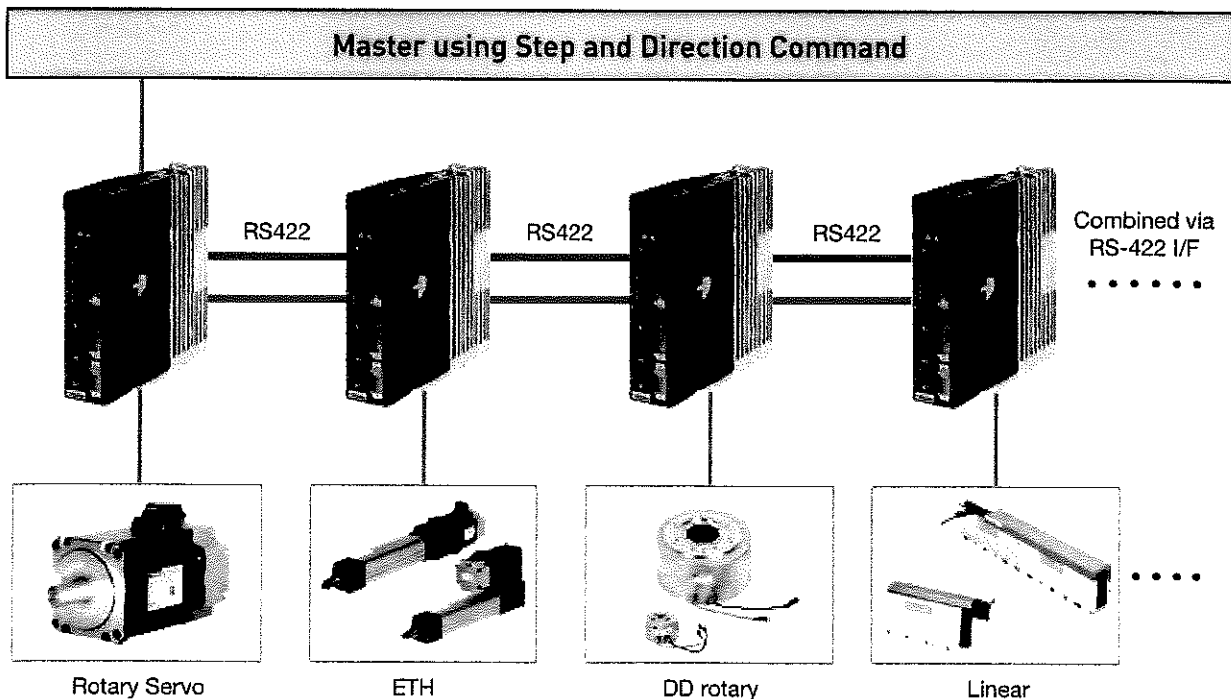
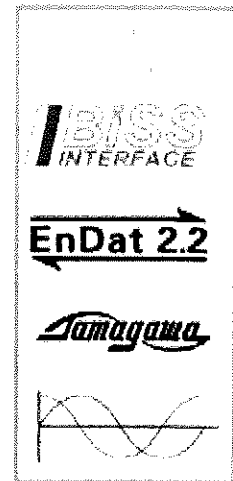


ENGINEERING YOUR SUCCESS.

Powerful servo solution

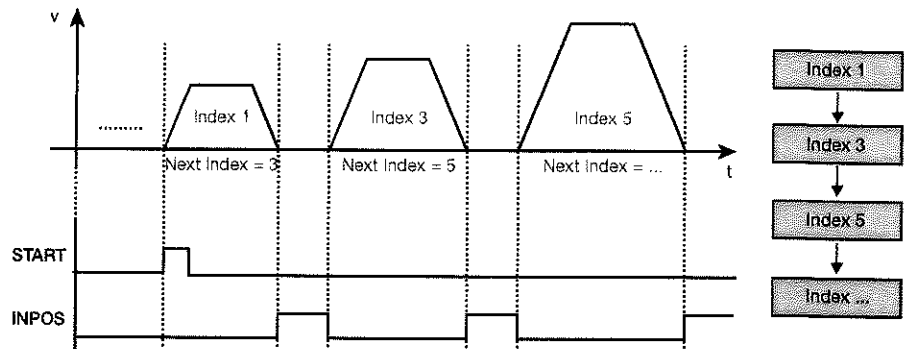
Main features

- Auto configuration (BiSS-C base)
- Multiple feedback interface
 - Serial(BiSS-C, EnDAT2.2, Tamagawa), Quadrature, SinCos
- User-friendly drive software
 - Step by step easy configuration
 - Pre-defined profile function
 - Auto tuning (real-time)
 - Various homing mode
 - Jog mode & Point to Point movement
 - 4 channel oscilloscope
 - Easy firmware update
- Programmable I/O
 - 1ms update rate
 - 16 channel digital input, 8 channel digital output
 - 2 channel analog input/output
- Various compatibility and application
 - ETH, ETT, OSPE
 - Rotary, Linear, DD servo motors and more



• Loop method

- Go to Next Index
- Wait for Start
- Stop

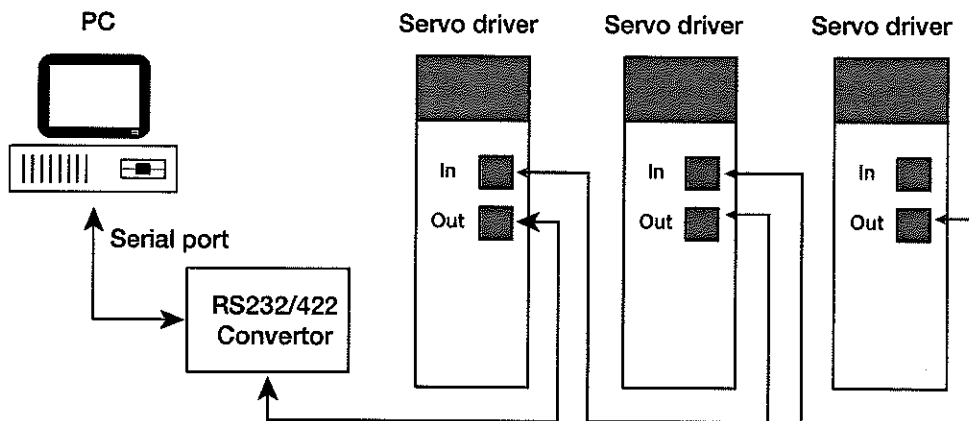


• I/O control

- Start, Stop, REG, EOS
- I/O0~5(Index number selecting & monitoring)

• Multi-drop connection

- RS422 serial communication interface for tasking ,test driving, gain turning, parameter setting and pre-defined position mode.
- This interface can be used for bus Interface by using the multi-drop. (Max 32 axes)



- The maximum packet size of MODBUS-RTU is 256 Byte

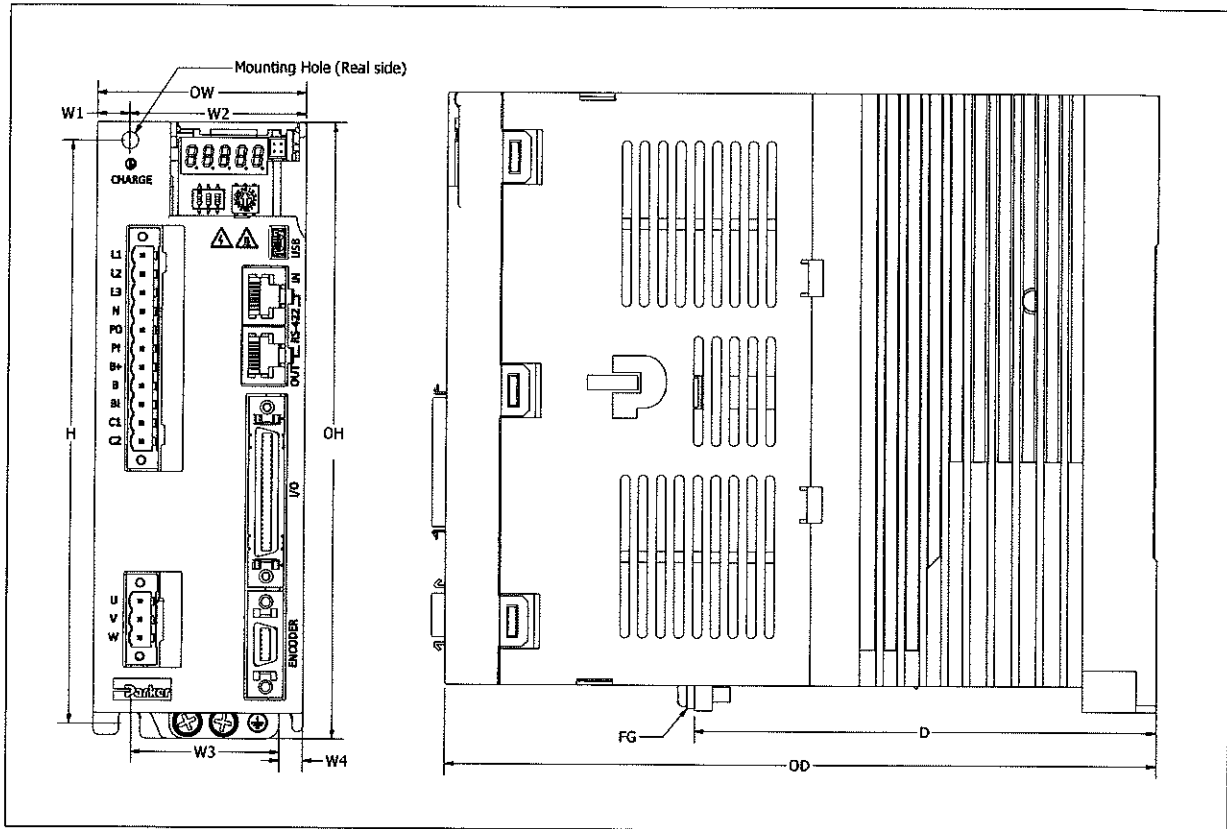
Item		Specification
Communication rule		ANSI/TIA/EIA-422 Standard
Communication protocol		MODBUS-RTU
Data Type	Data bit	8 bit
	Stop bit	1 bit
	Parity	None
Synchronous method		Asynchronous
Baud rate		9600/19200/38400/57600/115200 bit for second
Available distance		Max. 200m
Current consumption		Under 100mA

P Series Servo Drive

Pulse Drive Specifications

Motor Output Power		PD-04P	PD-10P	PD-35P
Shaft Power @ Continuous Current		400 Watts	1000 Watts	3500 Watts
Shaft Power @ Peak Current		1200 Watts	3000 Watts	10500 Watts
Drive Output Power				
Continuous Current (RMS)		3.0 Amps	6.75 Amps	16.7 Amps
Peak Current (RMS)		9.0 Amps	20.25 Amps	50.1 Amps
Bus Voltage			340VDC	
Drive Input Voltage		100-120VAC 50/60Hz 230 VAC, 1/3Ø, 50/60Hz	230 VAC, 1/3Ø, 50/60Hz	
Drive Control Voltage		100-120VAC 50/60Hz 230 VAC, 1Ø, 50/60Hz	230 VAC, 1Ø, 50/60Hz	230 VAC, 1Ø, 50/60Hz
Performance				
Servo update		62.5µ seconds		
Accuracy		± 1 encoder count ; encoder dependent		
Commutation		Sinusoidal		
Control				
Indexer Function		64 user defined profiles, relative/absolute moves, registration, sequences and I/O selection		
Position Control		Step and direction, CW and CCW		
Speed Control		+/- 10V, 1:5000		
Torque Control		+/- 10V		
Feedback				
Encoder Input		Quadrature Incremental encoder, BiSS-C (absolute) encoder, EnDAT 2.2, SinCos		
Encoder Output		RS-422 compatible differential driver		
I/O				
Digital Input		16-channel, +24V common, user selectable functions		
Digital output		8-channel, Differential (Isolated), user selectable functions		
Analog Input		2-channel, ±10V (max.), 12bits		
Analog output		2-channel, ±10V (max.), selectable, 12bits		
Communications				
USB		USB 2.0 for firmware upload and drive configuration		
Serial		RS422 for PC or HMI interface, MODBUS-RTU		
Standard		ANSI/ TIA/ EIA-422 standard		
Baud Rate		9,600/ 19,200/ 38,400/ 57,600/ 115,200 bps		
Configuration Software		Drive Support Tool		
Standards		CE (EMC, LVD) UL/cUL recognized	CE (EMC, LVD) UL/cUL listed	CE (EMC, LVD) UL/cUL listed
Built-in Functions				
Display		7 Segments, 5 digits for Status and Alarms		
Mode Selection		3 dip switches, 1 rotary for address 0-31		
Dynamic Braking		Built-in, user selectable reaction		
Internal Regeneration		100ohm, 50W	40ohm, 100W	12.6Ohm, 150W
External Regeneration		50ohm, 140W	30ohm, 300W	30Ohm, 600W
Environmental				
Temperature		0 - 50 °C (32 - 122 °F)		
Humidity		0 - 90% non-condensing		
Shock / Vibration		15g, 11msec half sign / 10-2,000Hz @ 2g		

Dimensions



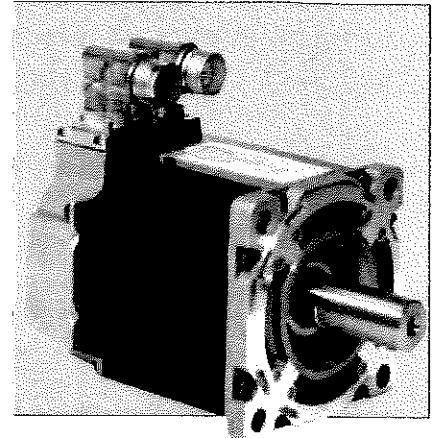
(Unit: mm)

		PD-04P	PD-10P	PD-35P
H	Height	158	158	158
OH	Overall Height	169	169	169
OW	Overall Width	38	58	88
W1	Width 1	6	10	44
W2	Width 2	26	48	44
W3	Width 3	32	42	78
W4	Width 4	6	6	5
D	Depth	107.7	127.7	112.5
OD	Overall Depth	173	197	198

Solid Models Available for Download http://solutions.parker.com/AUG_EM

MPP/MPJ Series

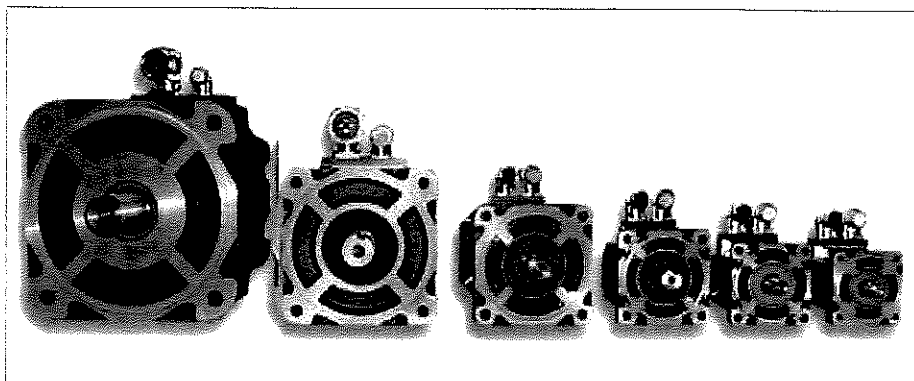
Low & High Inertia Rotary Servo Motors



The MPP/MPJ family of brushless servo motors redefines performance, flexibility, and reliability.

The MPP (MaxPlusPlus) Series is the industry's highest performing servo motor. Utilizing eight-pole segmented lamination technology, the MPP produces more torque in a shorter package. Use MPP motors for higher torque applications, customization options, or when high performance is required.

The MPJ (MaxPlus-J) Series of rotary servo motors from Parker features the same design characteristics as the MPP, but with 3 - 8 times the inertia of the standard MPP. This is a perfect solution for your applications requiring a high inertia servo motor.



The MPP Series features a new design that offers lower inertia and higher power, all in a smaller motor package. These brushless servo motors are designed for the demanding applications found in today's high-performance servo systems.

The MPP motors feature segmented core technology, which can yield up to 40% higher torque per unit size than conventionally wound servo motors. "Potted" stators improve heat transfer for better thermal efficiency, resulting in increased torque at the motor shaft. High-energy neodymium magnets are employed for higher rates of acceleration.

Parker will customize any MPP/MPJ motor to meet your specific system requirements. Parker does customs like no one else. We are specialists at customs, offering unrivaled custom motor solutions and support.

Common Customized Options:

- Shafts (longer, shorter, diameter change, hollow shafts)
- Front flange (bolt circle, pilot, NEMA dimensions)
- Motors coatings (white, PTFE, steel-it grey)
- Non-standard feedback devices
- Special connectors
- Special stator windings

Contact Information:

Parker Hannifin Corporation
Electromechanical Automation Division
5500 Business Park Drive
Rohnert Park, CA 94928

phone: 800.358.9068 / 707.584.7558

fax: 707.584.8015

email: emn_support@parker.com

www.parkermotion.com



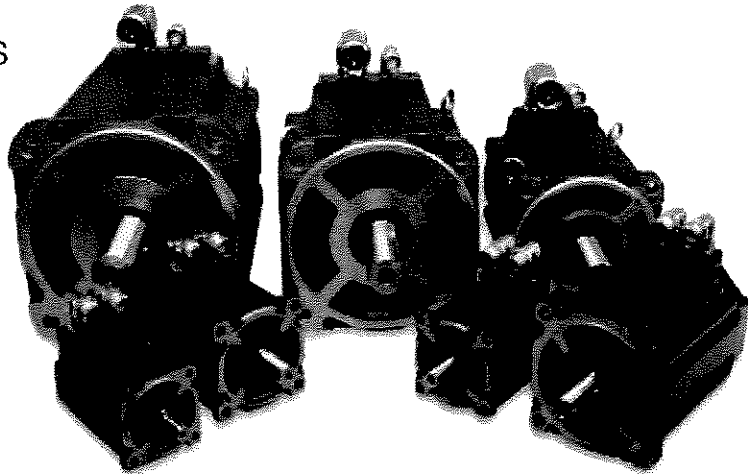
ENGINEERING YOUR SUCCESS.

MPP/MPJ Series Servo Motors

Low & High Inertia
Rotary Servo Motors

MPP/MPJ Motor Features

- Segmented core technology – very high torque-to-inertia ratio – 40% higher torque
- Potted stator design for improved thermal efficiency
- MPP available in 92, 100, 115, 142, 190 and 270 frame sizes
- MPJ available in 92, 100, 115 and 142 frame sizes
- Continuous stall torque: 1.5 Nm (14 lb-in) to 157 Nm (1396 lb-in)
- Peak torque: 5 Nm (44 lb-in) to 513 Nm (4540 lb-in)
- Brushless construction
- High-performance neodymium magnets
- Thermistor protection
- Resolver, incremental encoder, or single- or multi-turn absolute encoders
- 24 volt failsafe brake (optional)
- Right-angle rotatable PS-style connectors
- IP64 standard, IP65 optional shaft seal
- Best-in-class lead-time, two year warranty
- CE and UL



MPP/MPJ Common Specifications by Frame Size

Series			MPP/MPJ	MPP/MPJ	MPP/MPJ	MPP/MPJ	MPP	MPP
Frame Size (mm)			092	100	115	142	190	270
Max DC Bus Voltage ¹								
230 VAC Models	V _{mbus}	VDC			340			650
460 VAC Models					650			
Max AC Voltage ¹								
230 VAC Models	V _s	VAC			240			460
460 VAC Models					460			
Ambient Temp at Rating	T _{amb}	°C				25		
Max Winding Temp	T _{max}	°C				155		
Winding Temp at Rating ²	T _{wr}	°C				125		
Number of Rotor Magnet Poles	Np	# poles				8		
Motor UL Class	F	UL class				H		
Environmental Protection Rating ²	IP					IP40 – IP65		

⁶ Reference only

⁷ The winding temperature at the motor rated speed may be lower than the winding maximum due to feedback or amplifier limitations.

⁸ Refer to the product part number configurator for the IP rating character. All servo motors with a "V" designator in the part number for the shaft seal option are rated IP65. All other motors are rated for IP64, provided the feedback device is encased in an aluminum housing. Motors that have exposed feedback devices are rated at IP40.

	Rotor Inertia											Cont.	
	Rated Speed	kW	HP	MPP		MPJ		Stall Torque		Peak Torque		Cont. Stall Current (RMS)	Peak Current (RMS)
				lb-in-sec ²	Kg-m ²	lb-in-sec ²	Kg-m ²	Nm	lb-in	Nm	lb-in		
230 VAC Models													
0921B	3793.57	0.52	0.69	3.90 ⁻⁰⁴	4.41 ⁻⁰⁵	3.45 ⁻⁰³	3.90 ⁻⁰⁴	1.55	13.72	4.32	38.22	1.83	5.78
0921C	4947.33	0.61	0.81	3.90 ⁻⁰⁴	4.41 ⁻⁰⁵	3.45 ⁻⁰³	3.90 ⁻⁰⁴	1.58	13.97	4.38	38.79	2.86	9.02
0922C	4287.68	1.08	1.44	6.90 ⁻⁰⁴	7.80 ⁻⁰⁵	6.11 ⁻⁰³	6.90 ⁻⁰⁴	2.94	25.99	8.29	73.33	3.72	11.77
0922D	4947.33	1.24	1.65	6.90 ⁻⁰⁴	7.80 ⁻⁰⁵	6.11 ⁻⁰³	6.90 ⁻⁰⁴	3.11	27.51	8.67	76.76	5.59	17.66
0923D	4947.33	1.55	2.07	1.00 ⁻⁰³	1.13 ⁻⁰⁴	—	—	4.03	35.63	11.55	102.23	7.23	22.85
1002D	4782.42	1.55	2.07	2.30 ⁻⁰³	2.60 ⁻⁰⁴	7.29 ⁻⁰³	8.24 ⁻⁰⁴	4.56	40.34	12.69	112.32	7.87	24.87
1003C	4153.31	1.77	2.36	3.30 ⁻⁰³	3.73 ⁻⁰⁴	—	—	6.03	53.35	17.25	152.67	7.21	22.80
1003D	4177.74	1.76	2.34	3.30 ⁻⁰³	3.73 ⁻⁰⁴	—	—	5.99	53.00	17.16	151.84	10.28	32.49
1152C	4067.80	1.63	2.18	2.40 ⁻⁰³	2.71 ⁻⁰⁴	9.01 ⁻⁰³	1.02 ⁻⁰³	5.68	50.24	15.69	138.86	8.45	26.71
1152D	4067.80	1.67	2.22	2.40 ⁻⁰³	2.71 ⁻⁰⁴	9.01 ⁻⁰³	1.02 ⁻⁰³	5.79	51.22	15.93	141.00	10.45	33.02
1153B	3505.88	2.20	2.93	3.60 ⁻⁰³	4.07 ⁻⁰⁴	1.00 ⁻⁰²	1.13 ⁻⁰³	7.91	70.02	22.23	196.71	7.74	24.46
1153C	4012.83	2.29	3.06	3.60 ⁻⁰³	4.07 ⁻⁰⁴	1.00 ⁻⁰²	1.13 ⁻⁰³	8.04	71.16	22.52	199.29	12.10	38.25
1154A	1903.70	1.79	2.39	4.60 ⁻⁰³	5.20 ⁻⁰⁴	—	—	9.85	87.18	28.01	247.92	5.36	16.94
1154B	3852.24	2.69	3.59	4.60 ⁻⁰³	5.20 ⁻⁰⁴	—	—	9.86	87.28	28.04	248.16	10.73	33.91
1422C	4342.65	3.40	4.53	6.90 ⁻⁰³	7.80 ⁻⁰⁴	6.38 ⁻⁰²	7.20 ⁻⁰³	10.89	96.37	28.08	248.48	14.62	46.20
1424B	3599.33	5.18	6.90	1.30 ⁻⁰²	1.47 ⁻⁰³	6.98 ⁻⁰²	7.88 ⁻⁰³	19.20	169.90	52.20	461.99	19.35	61.16
1424C	3750.33	5.22	6.96	1.30 ⁻⁰²	1.47 ⁻⁰³	6.98 ⁻⁰²	7.88 ⁻⁰³	19.28	170.62	52.35	463.33	24.30	76.78
1426B	3386.17	6.27	8.36	1.90 ⁻⁰²	2.15 ⁻⁰³	7.38 ⁻⁰²	8.34 ⁻⁰³	25.73	227.73	72.30	639.88	26.18	82.72
1906B	2898.29	10.00	13.33	5.55 ⁻⁰²	6.27 ⁻⁰³	—	—	45.87	405.92	121.42	1074.53	36.22	114.44
460 VAC Models													
0921R	4947.33	0.61	0.81	3.90 ⁻⁰⁴	4.41 ⁻⁰⁵	3.45 ⁻⁰³	3.90 ⁻⁰⁴	1.58	13.96	4.38	38.75	1.43	4.51
0922R	4947.33	1.24	1.65	6.90 ⁻⁰⁴	7.80 ⁻⁰⁵	6.11 ⁻⁰³	6.90 ⁻⁰⁴	3.11	27.48	8.67	76.69	2.79	8.82
0923R	4947.33	1.55	2.07	1.00 ⁻⁰³	1.13 ⁻⁰⁴	—	—	4.02	35.59	11.54	102.13	3.61	11.41
1002R	4782.42	1.55	2.07	2.30 ⁻⁰³	2.60 ⁻⁰⁴	7.29 ⁻⁰³	8.24 ⁻⁰⁴	4.55	40.29	12.68	112.22	3.93	12.42
1003Q	4155.75	1.85	2.46	3.30 ⁻⁰³	3.73 ⁻⁰⁴	—	—	6.28	55.60	17.84	157.89	3.88	12.25
1003R	4177.74	1.86	2.49	3.30 ⁻⁰³	3.73 ⁻⁰⁴	—	—	6.34	56.08	17.97	159.01	5.44	17.20
1152R	4067.80	1.57	2.09	2.40 ⁻⁰³	2.71 ⁻⁰⁴	9.01 ⁻⁰³	1.02 ⁻⁰³	5.46	48.35	15.22	134.67	4.92	15.56
1153P	3314.71	2.28	3.03	3.60 ⁻⁰³	4.07 ⁻⁰⁴	1.00 ⁻⁰²	1.13 ⁻⁰³	8.36	74.03	23.24	205.71	4.10	12.94
1153R	4012.83	2.29	3.06	3.60 ⁻⁰³	4.07 ⁻⁰⁴	1.00 ⁻⁰²	1.13 ⁻⁰³	8.03	71.08	22.50	199.11	6.04	19.10
1154P	3839.27	2.69	3.59	4.60 ⁻⁰³	5.20 ⁻⁰⁴	—	—	9.85	87.18	28.01	247.92	5.36	16.94
1422R	4342.65	3.39	4.53	6.90 ⁻⁰³	7.80 ⁻⁰⁴	6.38 ⁻⁰²	7.20 ⁻⁰³	10.88	96.26	28.05	248.27	7.30	23.07
1424R	3779.98	5.21	6.95	1.30 ⁻⁰²	1.47 ⁻⁰³	6.98 ⁻⁰²	7.88 ⁻⁰³	19.26	170.42	52.31	462.97	12.13	38.34
1426P	3371.51	6.26	8.35	1.90 ⁻⁰²	2.15 ⁻⁰³	7.38 ⁻⁰²	8.34 ⁻⁰³	25.70	227.47	72.25	639.38	13.07	41.31
1428P	2950.07	6.98	9.30	2.30 ⁻⁰²	2.60 ⁻⁰³	—	—	32.97	291.80	93.75	829.70	16.75	52.93
1428Q	2924.42	7.01	9.35	2.30 ⁻⁰²	2.60 ⁻⁰³	—	—	33.11	293.05	94.04	832.22	21.03	66.46
1904P	3377.62	8.31	11.09	4.00 ⁻⁰²	4.52 ⁻⁰³	—	—	34.18	302.47	89.06	788.19	18.14	57.31
1906P	3035.58	9.76	13.01	5.55 ⁻⁰²	6.27 ⁻⁰³	—	—	44.63	395.02	118.71	1050.56	23.45	74.11
1908N	2365.44	11.63	15.51	6.85 ⁻⁰²	7.74 ⁻⁰³	—	—	60.61	536.39	160.81	1423.13	20.60	65.08
1908P	2781.50	11.66	15.54	6.85 ⁻⁰²	7.74 ⁻⁰³	—	—	58.46	517.35	156.09	1381.38	30.31	95.77
2706M	1264.85	14.15	18.87	2.42 ⁻⁰¹	2.73 ⁻⁰²	—	—	121.25	1073.1	306.63	2713.65	24.70	78.06
2706N	1775.31	17.12	22.83	2.42 ⁻⁰¹	2.73 ⁻⁰²	—	—	117.08	1036.11	298.90	2645.25	32.36	102.25
2706P	2126.16	18.02	24.03	2.42 ⁻⁰¹	2.73 ⁻⁰²	—	—	117.77	1042.24	300.19	2656.70	40.54	128.10
2708L	1048.86	15.69	20.92	3.13 ⁻⁰¹	3.54 ⁻⁰²	—	—	157.74	1395.99	402.31	3560.46	26.44	83.56
2708M	1680.77	20.74	27.65	3.13 ⁻⁰¹	3.54 ⁻⁰²	—	—	152.15	1346.51	391.75	3467.01	38.93	123.01
2708N	1961.51	21.13	28.17	3.13 ⁻⁰¹	3.54 ⁻⁰²	—	—	149.65	1324.37	386.95	3424.50	49.96	157.89

MPP/MPJ Size 100 Specifications

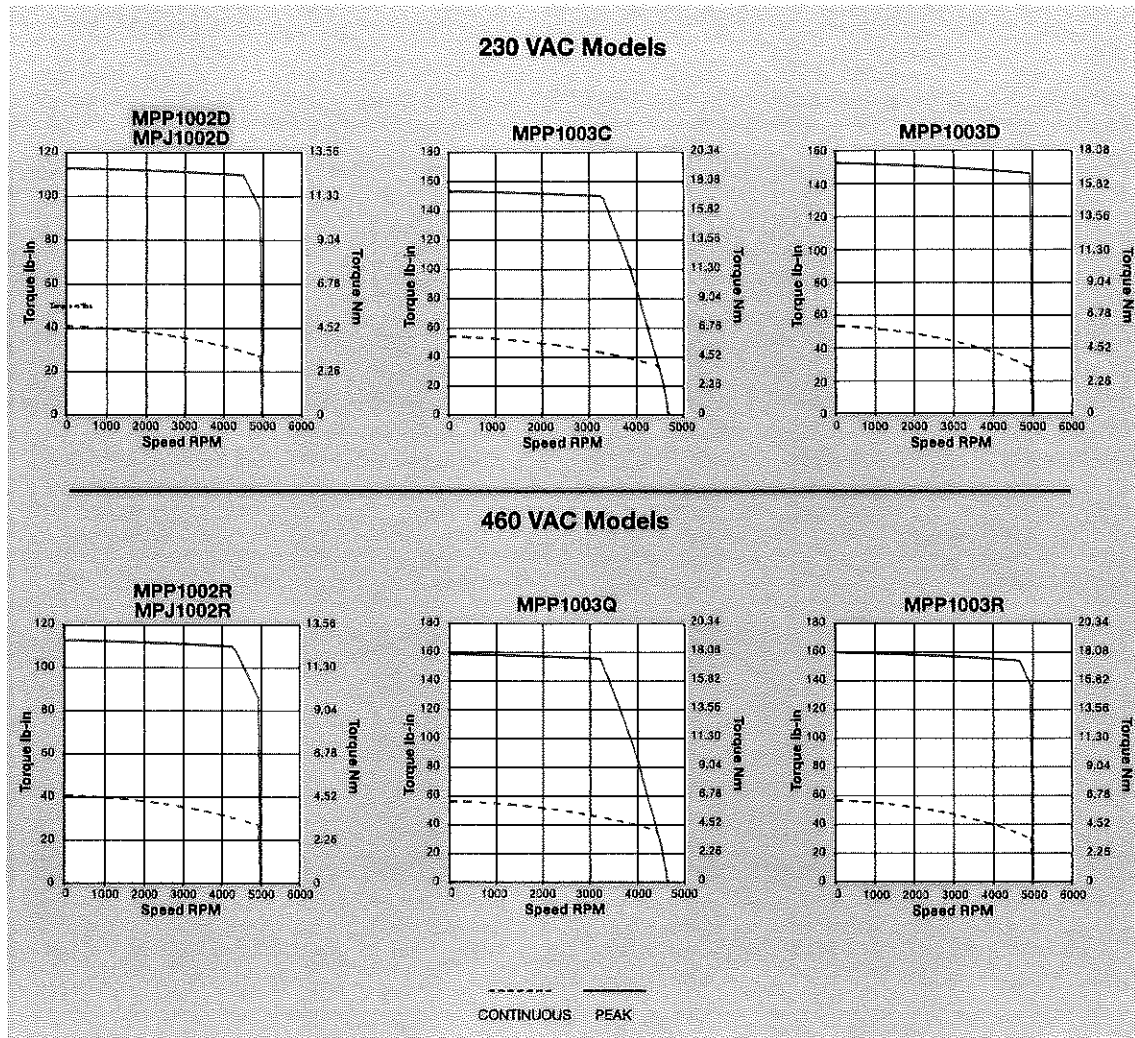
230 VAC Models

Parameter	Symbol	Units	MPP/MPJ 1002D	MPP 1003C	MPP 1003D
Stall Torque Continuous ^{1,2,3}	T_{CS}	Nm in-lb	4.56 40.3	6.03 53.4	5.99 53.0
Stall Current Continuous ^{1,2,3}	$I_{CS}(rms)$	Arms	7.9	7.2	10.3
Peak Torque	T_{pk}	Nm in-lb	12.69 112.3	17.25 152.7	17.16 151.8
Peak Current	$I_{pk}(rms)$	Arms	24.9	22.8	32.5
Rated Speed ^{1,2,3}	S_r	rpm	4782	4153	4178
Rated Torque ^{1,2,3}	T_r	Nm in-lb	3.10 27.4	4.07 36.0	4.01 35.5
Rated Shaft Output Power ^{1,2,3}	P_{out}	kW	1.55	1.77	1.76
Current at Rated Speed ^{1,2,3}	I_r	Arms	5.58	5.09	7.22
Voltage Constant ⁴	K_e	V_{rms}/k_{rpm}	35.36	50.92	35.49
Torque Constant ⁴	$K_t(sine)$	Nm/A_{rms}	0.585	0.842	0.587
Resistance ^{3,4}	R	ohm	0.96	1.30	0.64
Inductance ^{3,5}	L	mH	4	6	3
MPP Rotor Inertia ⁶	J	$kg\cdot m^2$ $in\cdot lb\cdot sec^2$	2.599^{-4} 2.300^{-3}	3.729^{-4} 3.300^{-3}	3.729^{-4} 3.300^{-3}
MPJ Rotor Inertia ⁶	J	$kg\cdot m^2$ $in\cdot lb\cdot sec^2$	8.236^{-4} 7.290^{-3}	NA NA	NA NA
Motor Weight ⁶		kg lb	4.29 9.46	5.49 12.10	5.49 12.10

460 VAC Models

Parameter	Symbol	Units	MPP/MPJ 1002R	MPP 1003Q	MPP 1003R
Stall Torque Continuous ^{1,2,3}	T_{CS}	Nm in-lb	4.55 40.3	6.28 55.6	6.34 56.1
Stall Current Continuous ^{1,2,3}	$I_{CS}(rms)$	Arms	3.9	3.9	5.4
Peak Torque	T_{pk}	Nm in-lb	12.68 112.2	17.84 157.9	17.97 159.0
Peak Current	$I_{pk}(rms)$	Arms	12.4	12.3	17.2
Rated Speed ^{1,2,3}	S_r	rpm	4782	4156	4178
Rated Torque ^{1,2,3}	T_r	Nm in-lb	3.09 27.4	4.24 37.6	4.26 37.7
Rated Shaft Output Power ^{1,2,3}	P_{out}	kW	1.55	1.85	1.86
Current at Rated Speed ^{1,2,3}	I_r	Arms	2.79	2.73	3.82
Voltage Constant ⁴	K_e	V_{rms}/k_{rpm}	70.72	98.76	70.98
Torque Constant ⁴	$K_t(sine)$	Nm/A_{rms}	1.170	1.633	1.174
Resistance ^{3,4}	R	ohm	3.85	4.50	2.28
Inductance ^{3,5}	L	mH	17	21	11
MPP Rotor Inertia ⁶	J	$kg\cdot m^2$ $in\cdot lb\cdot sec^2$	2.599^{-4} 2.300^{-3}	3.729^{-4} 3.300^{-3}	3.729^{-4} 3.300^{-3}
MPJ Rotor Inertia ⁶	J	$kg\cdot m^2$ $in\cdot lb\cdot sec^2$	8.236^{-4} 7.290^{-3}	NA NA	NA NA
Motor Weight ⁶		kg lb	4.29 9.46	5.49 12.10	5.49 12.10

MPP/MPJ Size 100 Speed-Torque Performance



- 1 Assumes motor is mounted to an aluminum plate with dimensions of 12" x 12" x 1/2" for 100 mm motor frames.
- 2 Maximum winding temperature is 155 °C. Thermal protection device threshold may be at a lower temperature.
- 3 These ratings are valid for Parker drives. Other drives may not achieve the same ratings.
- 4 ±10%
- 5 ±30% @ 1kHz
- 6 Reference only

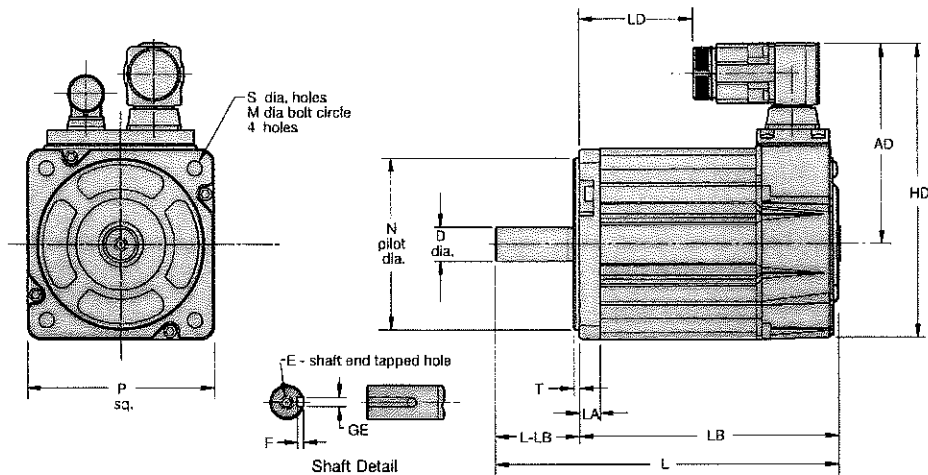
Note: These specifications are based on theoretical motor performance and are not specific to any amplifier.



MPP/MPJ Dimensions

Frame Sizes 92 – 142

Dimensions – mm (in)



Model Number	AD	HD	T	LA	LD*	L*	LB*	L-LB
MPP0921	92.0 (3.62)	136.4 (5.37)	2.9 (0.11)	9.9 (0.39)	64.2 (2.52)	167.0 (6.57)	127.2 (5.01)	40.1 (1.58)
MPP0922/MPJ0921					90.2 (3.55)	193.0 (7.59)	152.6 (6.01)	
MPP0923/MPJ0922					115.2 (4.53)	218.0 (8.58)	178.0 (7.01)	
MPP1002	94.9 (3.73)	143.8 (5.66)	2.9 (0.11)	10.2 (0.40)	86.2 (3.39)	189.2 (7.45)	149.1 (5.87)	40.2 (1.58)
MPP1003/MPJ1002					111.2 (4.37)	219.2 (8.63)	174.5 (6.87)	
MPP1152	102.5 (4.04)	159.0 (6.26)	3.4 (0.13)	12.2 (0.48)	89.2 (3.51)	202.6 (7.97)	152.4 (6.00)	50.6 (1.99)
MPP1153/MPJ1152					115.2 (4.53)	228.6 (9.00)	177.8 (7.00)	
MPP1154/MPJ1153					140.2 (5.52)	253.6 (9.98)	203.2 (8.00)	
MPP1422	117.45 (4.62)	188.8 (7.45)	3.4 (0.13)	14.0 (0.55)	109.9 (4.32)	233.4 (9.18)	172.9 (6.81)	60.4 (2.38)
MPP1424/MPJ1422					160.8 (6.33)	284.4 (11.19)	223.7 (8.81)	
MPP1426/MPJ1424					211.9 (8.34)	335.4 (13.21)	274.5 (10.81)	
MPP1428/MPJ1426					261.9 (10.31)	385.8 (15.19)	325.3 (12.81)	

Model Number	D	M	S	N	P	F	GE	E
MPP0921	16.007 (0.6302) 15.996 (0.6298)	100.0 (3.940)	7.0 (0.28)	80.012 (3.1501) 79.993 (3.1493)	88.8 (3.50)	3.0 (0.12)	5.0 (0.20)	M5 X 0.8 12.5 dp.
MPP0922/MPJ0921								
MPP0923/MPJ0922								
MPP1002	19.006 (0.7483) 18.996 (0.7489)	115.0 (4.528)	10.0 (0.41)	95.013 (3.7407) 94.991 (3.7398)	97.8 (3.85)	3.5 (0.14)	6.0 (0.24)	M6 X 1.0 16 dp.
MPP1003/MPJ1002								
MPP1152	24.005 (0.9451) 23.997 (0.9448)	130.0 (5.118)	10.0 (0.41)	110.013 (4.3312) 109.991 (4.3303)	113.0 (4.45)	4.0 (0.15)	8.0 (0.31)	M8 X 1.25 19 dp.
MPP1153/MPJ1152								
MPP1154/MPJ1153								
MPP1422	28.006 (1.1026) 27.998 (1.1023)	165.0 (6.496)	12.0 (0.48)	130.014 (5.1187) 129.989 (5.1178)	142.7 (5.62)	4.1 (0.16)	8.0 (0.13)	M10 X 1.56 22 dp.
MPP1424/MPJ1422								
MPP1426/MPJ1424								
MPP1428/MPJ1426								

*LD, L, and LB dimensions increase by the following with brake option "B": MPP/MPJ092x 34.5 (1.36"); MPP/MPJ100x 48.5 (1.91"); MPP/MPJ115x 48.5 (1.91"); MPP/MPJ142x 51.6 (2.03")

MPP/MPJ Options

Motor/Drive Compatibility

Motor Model Number	Cont. Stall Current Amps-rms	Current Rating by Drive Model															
		Aries Drive Models								Compax3 Drive Models							
		AR01AE	AR02AE	AR04AE	AR08AE	AR13AE	AR20AE	AR30AE	S025-V2	S063-V2	S100-V2	S150-V2	S038V4	S075-V4	S150-V4	S300-V4	S050-V4
		1.0	1.75	3.0	4.5	6.3	10.0	16.0	2.5	6.3	10.0	15.0	3.8	7.5	15.0	30.0	50.0
MPP/MPJ0921B	1.8		●						●								
MPP/MPJ0921C	2.9			●						●							
MPP0921R	1.4		●						●				●				
MPP/MPJ0922C	3.7				●					●							
MPP/MPJ0922D	5.6					●				●							
MPP/MPJ0922R	2.8			●						●			●				
MPP0923D	7.2						●				●						
MPP0923R	3.6				●					●			●				
MPP/MPJ1002D	7.9						●				●						
MPP1002R	3.9				●					●			●				
MPP1003C	7.2						●				●						
MPP1003D	10.3							●				●					
MPP1003Q	3.9				●					●			●				
MPP1003R	5.4					●				●				●			
MPP/MPJ1152C	8.5						●				●						
MPP/MPJ1152D	10.4							●				●					
MPP/MPJ1152R	4.9					●				●				●			
MPP/MPJ1153B	7.7						●				●				●		
MPP/MPJ1153C	12.1							●				●					
MPP/MPJ1153P	4.1				●					●					●		
MPP/MPJ1153R	6.0					●				●				●			
MPP1154A	5.4					●				●							
MPP1154B	10.7							●				●					
MPP1154P	5.4					●				●				●			
MPP/MPJ1422C	14.6							●				●					
MPP/MPJ1422R	7.3						●				●			●			
MPP/MPJ1424B	19.4															●	
MPP/MPJ1424C	24.3															●	
MPP/MPJ1424R	12.1							●				●			●		
MPP/MPJ1426B	26.2															●	
MPP/MPJ1426P	13.1							●				●			●		
MPP1428P	16.8														●		
MPP1428Q	21.0															●	
MPP1904P	18.1															●	●
MPP1906B	36.2																●
MPP1906P	23.5																●
MPP1908N	20.6																●
MPP1908P	30.3																●
MPP2706M	24.7																●
MPP2706N	32.4																●
MPP2706P	40.5																●
MPP2708L	26.4															●	
MPP2708M	38.9																●
MPP2708N	50.0																●

● Ideal Motor / Drive combination

● These motors are rated for 460 volts AC. This combination, with the 230 volt drive, will result in motor running at 1/2 its rated speed

● These motors are only rated for 230 volts. The drive in this combination must be run at 230 volts AC. Running drive at 460 volts will damage the motor.

Motor Feedback Drive Compatibility

MPP/MPJ Feedback Option	Order Code	Drive Compatibility			
		Aries	Compax3	Gemini	Vix
Encoder	1E	•	•	•	•
Serial Encoder	3E	•			
Resolver	41	•	•	•	•
Stegmann Absolute Encoder	6S/9S		•		
Heidenhain Absolute Encoder	7D	•	•*		

*Compax3 with firmware version 5-2, hardware version CPT17 or newer.

Motor Feedback Cables

Drive	Feedback Type	Part Number
Aries	Encoder - Incremental	F-1A1-xx
	Heidenhain Absolute	F-1A2-xx
Compax3	Resolver	F-2B1-xx
	Encoder - Incremental	F-2C1-xx
	Stegmann Absolute	F-2B1-xx
	Heidenhain Absolute	F-2A2-xx

-xx denotes cable length in feet. Motor power and feedback cables available in standard lengths of 10,25,50 feet. Other lengths also available.

Power Cables

Model Number	Motor Current	Part Number ^{1,2}
MPP/MPJ0921B	Up to 6 A rms;	P-1A1-xx
MPP/MPJ0921C	230 V only	
MPP0921R	0 – 20 A rms;	P-3B1-xx
	230 or 460 V	
MPP/MPJ0922C	Up to 6 A rms;	P-1A1-xx
MPP/MPJ0922D	230 V only	
MPP/MPJ0922R	0 – 20 A rms;	P-3B1-xx
MPP0923D	230 or 460 V	
MPP0923R		
MPP/MPJ1002D		P-3B1-xx
MPP1002R		
MPP1003C	0 – 20 A rms;	P-3B1-xx
MPP1003D	230 or 460 V	
MPP1003Q		
MPP1003R		
MPP/MPJ1152C		P-3B1-xx
MPP/MPJ1152D		
MPP/MPJ1152R		
MPP/MPJ1153B		
MPP/MPJ1153C	0 – 20 A rms;	P-3B1-xx
MPP/MPJ1153P	230 or 460 V	
MPP/MPJ1153R		
MPP1154A		
MPP1154B		
MPP1154P		

Model Number	Motor Current	Part Number ^{1,2}
MPP/MPJ1422C		P-3B1-xx
MPP/MPJ1422R		
MPP/MPJ1424B		P-4B1-xx
MPP/MPJ1424C	0 – 20 A rms;	
MPP/MPJ1424R	230 or 460 V	P-3B1-xx
MPP/MPJ1426B		P-4B1-xx
MPP/MPJ1426P		P-3B1-xx
MPP1428P		
MPP1428Q		P-4B1-xx
MPP1904P	0 – 20 A rms;	P-4B2-xx
	230 or 460 V	
MPP1906B	30 – 50 A rms;	P-6B2-xx
	230 or 460 V	
MPP1906P		P-4B2-xx
MPP1908N	0 – 20 A rms;	
MPP1908P	230 or 460 V	
MPP2706M	0 – 20 A rms;	P-4B2-xx
	230 or 460 V	
MPP2706N	30 – 50 A rms;	P-6B2-xx
MPP2706P	230 or 460 V	
MPP2708L	0 – 20 A rms;	P-4B2-xx
	230 or 460 V	
MPP2708M	30 – 50 A rms;	P-6B2-xx
MPP2708N	230 or 460 V	

¹ Motor sizes 92 – 142 use size 1.0 PS Connector; sizes 190 – 270 use size 1.5 PS Connector

² -xx denotes cable length in feet. Motor power and feedback cables available in standard lengths of 10, 25, 50 feet. Other lengths are available. Drive current values are default values. When running Drive PWM frequency at values other than default, current output values will change. Please consult drive manual for current values, and select motor power cable accordingly.

MPP/MPJ Options

“PS” Connectors (all motor sizes)

The PS connector option for MPP/MPJ motors feature high-quality Hypertac - Interconnectron circular connectors mounted to the motor body. These connectors are a right-angle mount and can be fully rotated. This allows for greater cable routing options. Mating cables are specified and ordered separately. The PS option joins the motor phase wires and brake leads into a one connector. The second connector has motor feedback signals, Hall effect signals, and thermistor signals.

Motor Power/Brake

Designation	Size 1.0 Connector Pin Number	Size 1.5 Connector Pin Number
Phase A	1	U
Phase B	2	V
Phase C	6	W
Ground	3	±
Shield	3	±
Brake	4	+
Brake	5	-

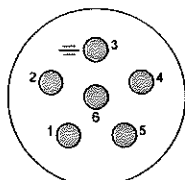
Resolver Feedback (Order Code 41)

Designation	Motor Feedback Connector Pin Number
Sin+	2
Sin -	1
Cos+	11
Cos -	12
Ref+	14
Ref -	17
Temp	9
Temp	13

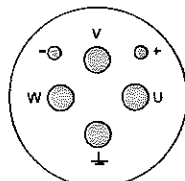
Absolute Encoder - Heidenhain EnDat (Order Code 7D)

Designation	Motor Feedback Connector Pin Number
Vcc	14
Ground	7
CH A+	2
CH A-	1
CH B+	11
CH B-	12
Data +	15
Data -	16
Temp	13
Temp	9
Gnd	7
+5	8
CLK+	4
CLK-	5

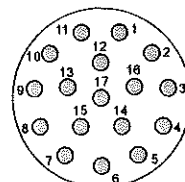
Connector Pin Assignments



Size 1.0 Motor Connector
43-024091-01
(Mating Conn.# 43-021859-01)



Size 1.5 Motor Connector
43-025366-01
(Mating Conn.# 43-025495-01)



Feedback Connector
43-025367-01
(Mating Conn.# 43-021860-01)

Incremental Encoder/Hall Feedback (Order Code 1E, 3E)

Encoder (or Smart Encoder) Designation	Motor Feedback Connector Pin Number
Vcc	8
Ground	7
CH A+	2
CH A-	1
CH B+	11
CH B-	12
Index + (or Data +)	15
Index - (or Data -)	16
Temperature Sensor	
Temp	13
Temp	9
Hall Gnd*	7
Hall +5*	8
Hall 1 (or CLK+)	4
Hall 2 (or CLK-)	5
Hall 3*	6

*Not applicable with serial interface encoder
(order code 3E)

Absolute Encoder - Stegmann Hiperface® (Order Code 6S, 9S)

Designation	Motor Feedback Connector Pin Number
Ref Sin	1
Sin +	2
Data +	5
Data-	6
Temp+	9
Cos+	11
Ref Cos	12
Temp	13
+5	14
Gnd	17

Incremental Encoder Specifications
(Order Code 1E, 3E)

Parameter	Value
Accuracy	±2 min of arc
Input power	5 VDC ±5%, 180 mA
Operating frequency	250 kHz max
Output device	26LS31
Sink/Source, nominal	20 mA
Suggested user interface	26LS32

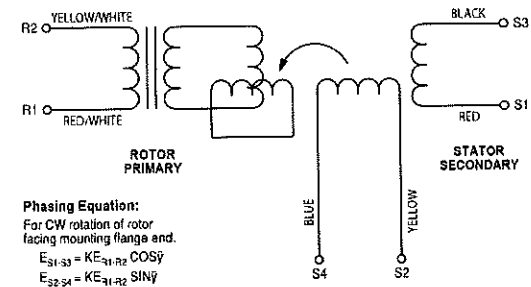
Hall Effect Specifications

Parameter	Value
Input power	5 VDC ±5%, 80 mA
Output device - open collector	LM339
Maximu pull-up	12 VDC
Sink	16 mA

Resolver Specifications
(Order Code 41)

Parameter	Value
Input voltage @ 2 kHz	4 V rms
Input current, max	55 mA
Input power, nominal	0.045 watts
Impedance ZSO (@ 90°)	260 ohms
Impedance ZRO	150 ohms
Impedance ZRS	135 ohms
Transformation ratio	.5 ±10%
Output voltage	2.0 ±10%
DC rotor resistance	31 ±10%
DC stator resistance	126 ±10%
Sensitivity	35 mV/degree
Max error from EZ	±10 minutes
Phase shift, open circuit	20° leading ±10°
Null voltage, total	20 mV rms
Impedance ZSS	240 ohms
Inertia	Incl. with motor spec.

Resolver Schematic Diagram



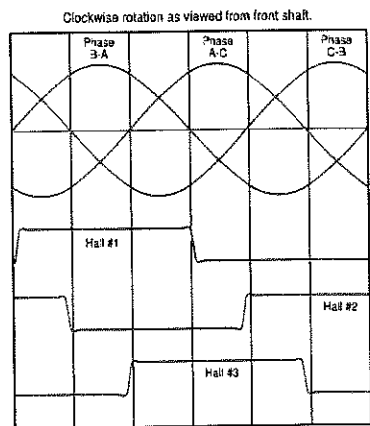
Heidenhain Absolute Encoder Specifications
(Order Code 7D)

Parameter	Multi Turn (7D)
Absolute Position Values	
Position values/rev.	524,288 (19 bits)
Distinguishable rev.	4096 (12 bits)
Part Number	EQI 1331

Stegmann Hiperface Absolute Encoder Specifications
(Order Code (6S, 9S))

Parameter	Single Turn (6S)	Multi Turn (9S)
Absolute Position Values		
Position values/rev.	32768 (15 bits)	32768 (15 bits)
Distinguishable rev.	n/a	4096 (12 bits)
Part Number	SRS 50	SRM 50

Commutation Chart



MPP/MPJ Options

Electrically Released Brake

Parameter	Units	MPP/MPJ 092	MPP/MPJ 100	MPP/MPJ 115	MPP/MPJ 142
Static Rated Torque	Nm (lb-in)	4.18 (37)	10.2 (90)	10.2 (90)	28.3 (250)
Coil Current @ 24 VDC	amps	0.50	0.70	0.70	1.28
Maximum Backlash	(minutes)	45	37	37	25
Engage/Disengage	mSec	50/20	110/25	110/25	70/50
Avg. Rotor Inertia*	Kg-M ² (lb-in-s ²)	0.00001 (0.00009)	0.00004 (0.00036)	0.00004 (0.00036)	0.00011 (0.00098)
Avg. Weight*	Kg (lb)	1 (2.2)	1.7 (3.7)	1.76 (3.89)	2.85 (6.27)

Parameter	Units	MPP190	MPP270
Static Rated Torque	Nm (lb-in)	70(619)	153 (1350)
Coil Current @ 24 VDC	amps	2.19**	4.7**
Maximum Backlash	(minutes)	25	25
Engage/Disengage	mSec	200/120	300/200
Avg. Rotor Inertia*	Kg-M ² (lb-in-s ²)	0.00033 (0.00294)	0.00210 (0.01875)
Avg. Weight*	Kg (lb)	9.70 (21.23)	17.75 (39.1)

* Consult factory for exact weights and inertia for specific motor.

**Verify current capability of amplifier's brake circuitry.

MPP/MPJ Ordering Information

Fill in an order code from each of the numbered fields to create a complete model order code.

Order Example:

①	②	③	④	⑤	⑥	⑦	⑧
MPJ	092	2	C	3E	-	N	PS B

①	②	③	④		⑤	⑥	⑦	⑧
Series	Frame Size	Stack	Winding		Feedback Type	Shaft	Connectors	Options
			230 V	460 V				
MPP/MPJ	092	1	B, C	R				
		2	C, D	R				
		3*	D	R				
	100	2	D	R	1E	K		
		3*	C, D	Q, R	3E	N		
		2	C, D	R	41			
	115	3	B, C	P, R	8D			
		4*	A, B	P	6S			
						9S		
	142	2	C	R			PS	N
		4	B, C	R		K		B
		6	B	P				V
MPP	190	8*	—	P, Q				
		4	—	P				
		6	B	P				
	270	8	—	N, P	41	K		
		6	—	M, N, P	6S			
		8	—	L, M, N	9S			

Codes:

Feedback Type	1E	2000-line incremental encoder
	3E	2000-line incremental encoder with serial interface
	41	Single speed resolver
	8D	Multi-turn high-resolution absolute encoder - Heidenhain EnDat
	6S	Multi-turn high-resolution absolute encoder - Stegmann Hiperface®
Shaft	9S	Single-turn high-resolution absolute encoder - Stegmann Hiperface®
	N	Smooth shaft
Connectors	K	Keyway
	PS	Parker-style right angle rotatable
Options	N	None
	B	24 volt failsafe spring brake
	V	Shaft seal - IP65

EM Sales Offices

Australia

Parker Hannifin (Australia) Pty Ltd.
9 Carrington Road
Castle Hill NSW 2154
Australia
Tel: +61 (0) 2 9634-7777
Fax: +61 (0) 2 9634 3749

Brazil

Parker Hannifin Ind. Com Ltda.
Av. Lucas Nogueira Garcez 2181
Esperança
12325-900 Jacareí, SP
Tel: 12 3954 5100
Fax: 12 3954 5262
Email: automation.brazil@parker.com

Canada

Parker Hannifin (Canada) Inc.
160 Chisholm Dr
Milton, Ontario L9T 3G9
Tel: 905-693-3000
Fax: 905-876-1958
Email: miltoncustservice@parker.com

China

Parker Hannifin Motion & Control
(Shanghai) Co., Ltd
280 Yunqiao Rd. Jin Qiao Export
Processing Zone
Shanghai 201206, China
Tel: (86-21) 50312525
Fax: (86-21) 64459717

France

Parker SSD Parvex
8 avenue du Lac
B.P. 249
F-21007 Dijon Cedex
Tel: +33 (0) 3 80 42 41 40
Fax: +33 (0) 3 80 42 41 23

Germany

Electromechanical Europe
Parker Hannifin GmbH & Co KG
Robert-Bosch-Strasse 22
D-77656 Offenburg
Germany
Tel: +49 (0) 781 509 0
Fax: +49 (0) 781 509 98176

India

Parker Hannifin India Pvt. Ltd
Automation Group-SSD Drives Div.
133 & 151 Developed Plots Estate
Perungudi, Chennai 600 096
Tel: 044-4391-0799
Fax: 044-4391-0700

Italy

Parker Hannifin SpA
Via Gounod 1
20092 Cinisello Balsamo
Milano, Italy
Tel: +39 02 361081
Fax: +39 02 36108400

Korea

Parker Hannifin Korea
9th Floor KAMCO Yangjae Tower
949-3 Dogok 1-dong Gangnam-gu
Seoul 135-860, Korea
Tel: 82-2-559-0454
Fax: 82-2-556-8187

Mexico

Parker Hannifin de Mexico
Eje uno Norte No.100
Parque Industrial Toluca 2000
Toluca, CP 50100 México
Tel: 52-722-275-4200
Fax: 52-722-279-0316

Singapore

Parker Hannifin Singapore Pte Ltd
11, Fourth Chin Bee Road
Singapore 619702
Tel: (65) 6887 6300
Fax: (65) 6265 5125/6261 4929

Taiwan

Parker Hannifin Taiwan Co., Ltd
No. 40, Wuchiuan 3rd Road
Wuku Industrial Park
Taipei County, Taiwan 248
ROC
Tel: 886 2 2298 8987
Fax: 886 2 2298 8982

Thailand

Parker Hannifin (Thailand) Co., Ltd.
1023, 3rd Floor, TPS Building,
Pattanakarn Road,
Suanluang, Bangkok 10250
Thailand
Tel: (66) 02717 8140
Fax: (66) 02717 8148

UK

Parker Hannifin Ltd.
Tachbrook Park Drive
Tachbrook Park
Warwick CV34 6TU
Tel: +44 (0) 1926 317970
Fax: +44 (0) 1926 317980

USA

Parker Hannifin Electromechanical
Automation Division Main Office/
Compumotor/CTC
5500 Business Park Drive
Rohnert Park, CA 94928 USA
Tel: 707-584-7558
800-358-9070
Fax: 707-584-8015
Email: emn_support@parker.com

Parker Hannifin Electromechanical
Automation Division/Daedal
1140 Sandy Hill Road
Irwin, PA 15642
Tel: 724-861-8200
800-245-6903
Fax: 724-861-3330
Email: ddcat@parker.com

