



aerospace
climate control
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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



Parker Servo Systems

P Series



The new Parker P Series servo system combines compact, flexible, advanced functionality drives with high performance motors for a superior servo system, providing unique value to machine builders.

The P-Series drives operate with a variety of machine control architectures and offer sophisticated servo capability. A number of different feedback types are supported to drive a wide range of linear and rotary servo motors. The best matches are the P-Series motors, which include absolute encoders and populate motor nameplate data back to the drives for simplified commissioning.

Accurate and easy to use inertia detection leads to fast set-up of tuning parameters and minimal settling time. Advanced filtering and vibration suppression features can be used to increase throughput and improve positioning performance.

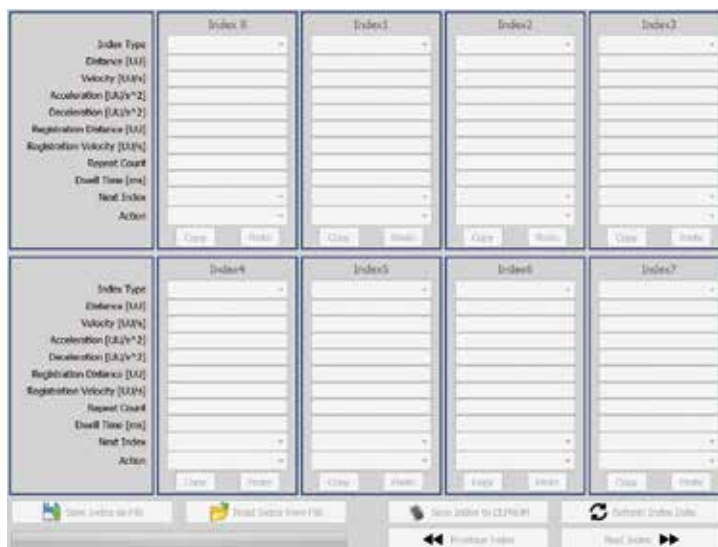
For high speed, real-time network applications, the P-Series is available with EtherCAT, the fastest growing, most flexible industrial Ethernet



EtherCAT®

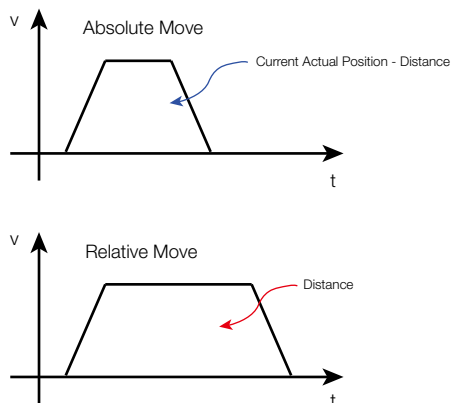
Pre-defined profile function

- Available 64 profiles

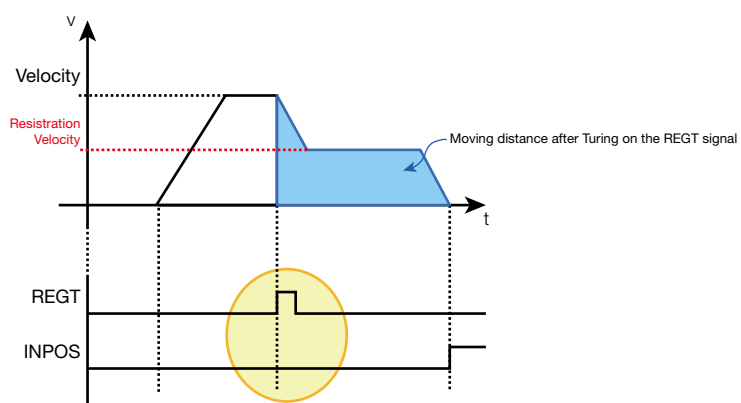


- Variable profile mode

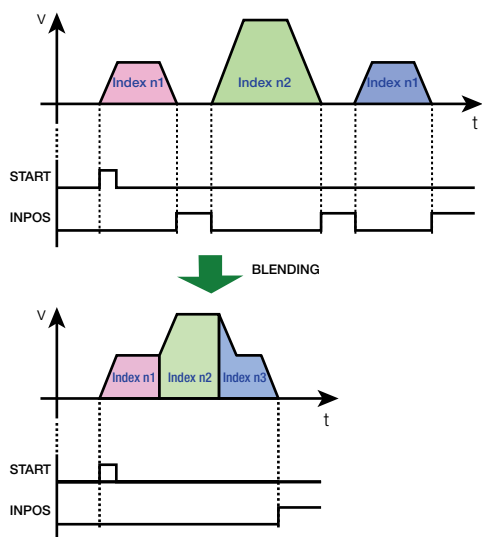
- Absolute/Relative move



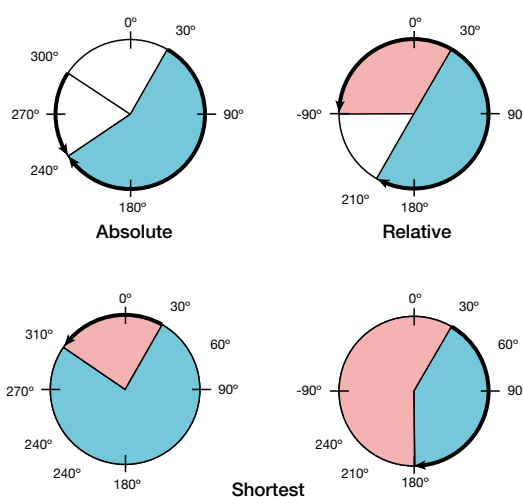
- Registration Absolute/Relative move



- Blending Absolute/Relative move

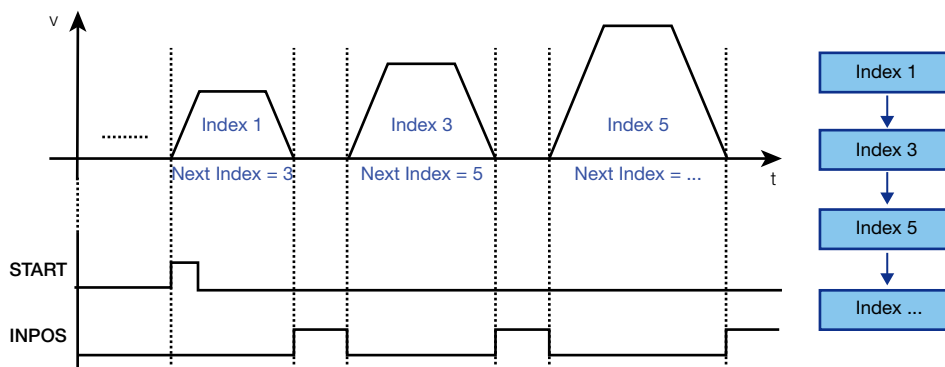


- Rotary Absolute/Relative/Shortest move



• Loop method

- Go to Next Index
- Wait for Start
- Stop

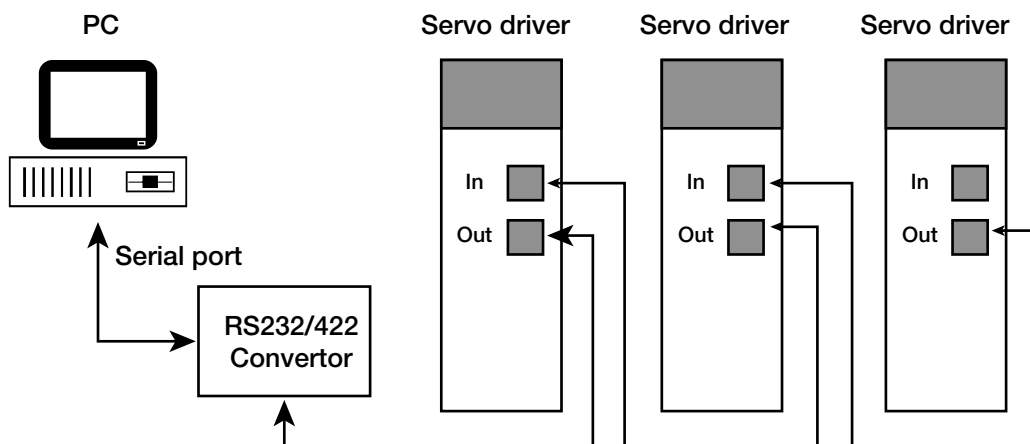


• I/O control

- 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

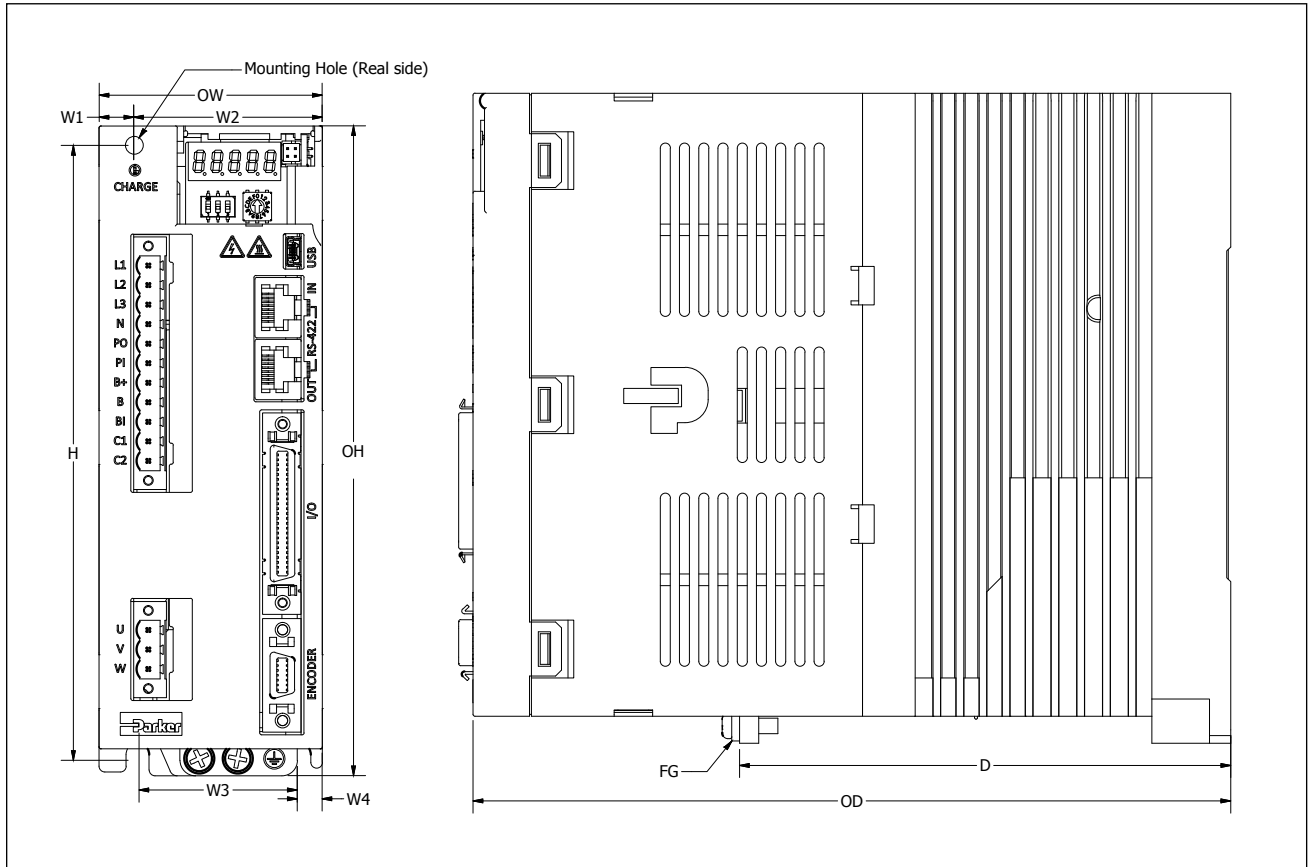
Item		Specification
Communication rule		ANSI/TIA/EIA-422 Standard
Communication protocol		MODBUS-RTU
Data Type	Data bit	8 bit
	Stop bit	1 bit
	Parity	None
Synchronous method		Asynchronous
Baud rate		9600/19200/38400/57600/115200 bit for second
Available distance		Max. 200m
Current consumption		Under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

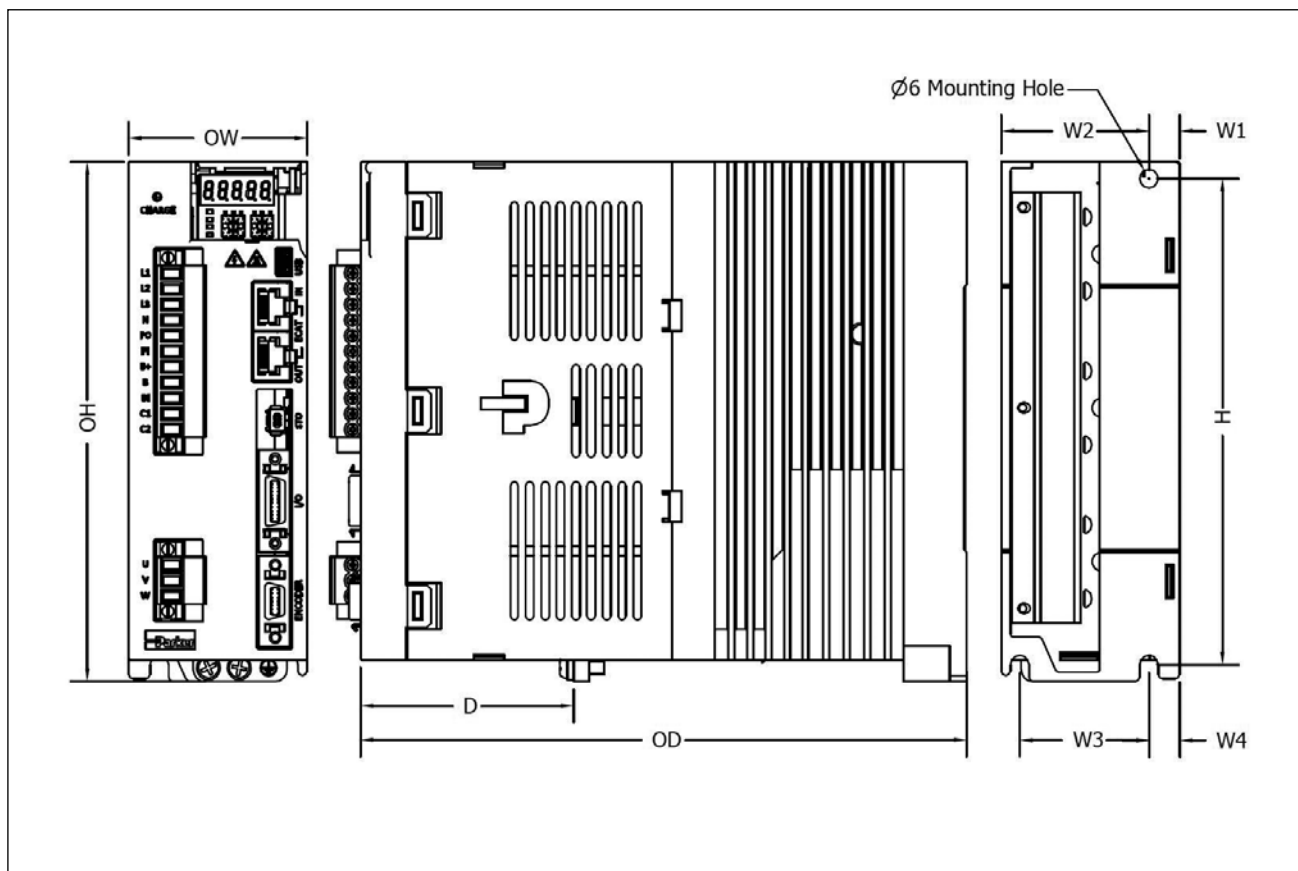
P Series Servo Drive

EtherCAT Drive Specifications



Motor Output Power	PD-04C	PD-10C	PD-35C
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		
EtherCAT			
Supported Protocols	CoE, EoE, FoE		
Drive Modes	Position Profile, Profile Velocity, Profile Torque, Interpolated Position, Homing Cyclic Synchronous Position, Velocity and Torque		
Feedback			
Encoder Input	Quadrature Incremental encoder, BiSS-C (absolute) encoder, EnDAT 2.2, SinCos		
I/O			
Digital input	8-channel, +24V common, user selectable functions		
Digital output	4-channel, Differential (Isolated), user selectable functions		
Safety	Safe Torque Off (STO) IEC61508		
Communications			
USB	USB 2.0 for firmware upload and drive configuration		
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		
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		

EtherCAT Drive Dimensions



(Unit: mm)

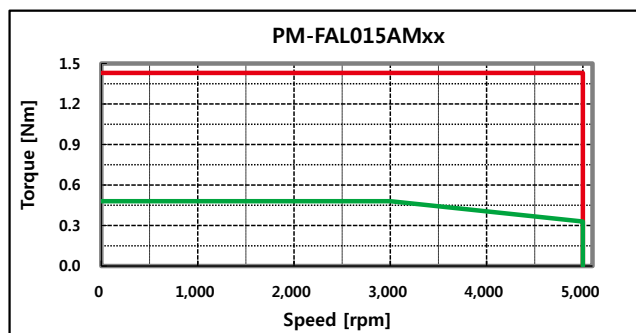
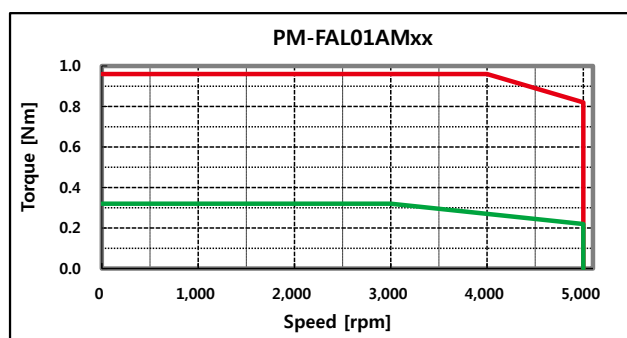
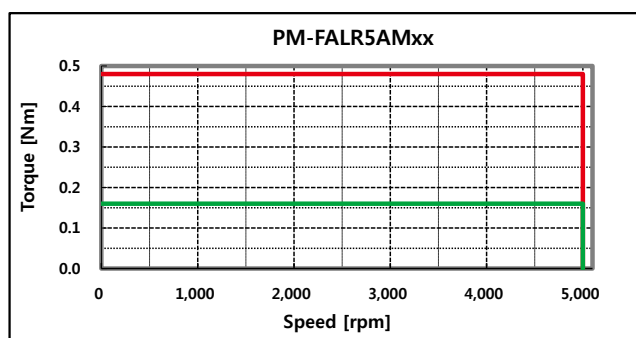
		PD-04C	PD-10C	PD-35C
H	Height	158	158	158
OH	Overall Height	169	169	169
OW	Overall Width	38	58	88
W1	Width 1	6	10	44
W2	Width 2	26	48	44
W3	Width 3	32	42	78
W4	Width 4	6	6	5
D	Depth	107.7	127.7	112.5
OD	Overall Depth	173	197	198

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

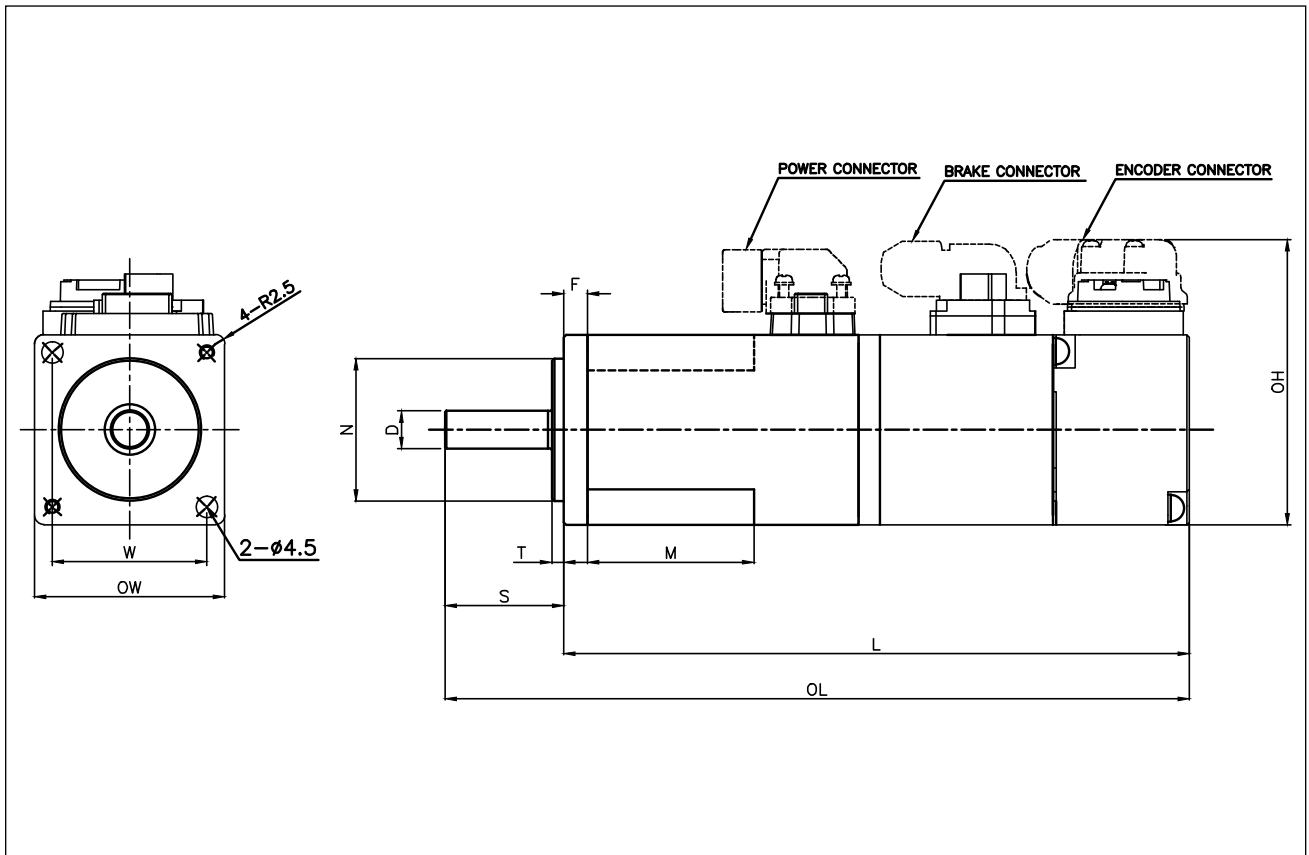
P Series Servo Motors

FAL Specifications

		PM-FALR5AM8	PM-FAL01AM8	PM-FAL015AM8
Rated Output Power	Watts	50	100	150
Rated Torque	N-m	0.16	0.32	0.48
	in-lb	1.4	2.8	4.2
Instantaneous Peak Torque	N-m	0.48	0.96	1.43
	in-lb	4.2	8.5	12.7
Rated Speed	rpm	3000	3000	3000
Peak Speed	rpm	5000	5000	5000
Rated Current	Arms	0.95	1.25	1.73
Peak Current	Arms	2.85	3.75	5.19
Inductance	mH	4.42	5.08	3.89
Resistance	ohms	5.57	4.64	3.52
Torque Constant	Nm/Arms	0.18	0.27	0.30
Moment of Inertia	kg-m ² x 10 ⁻⁴	0.02	0.05	0.06
	in-lb-sec ² x 10 ⁻⁴	0.18	0.44	0.53
Allowable Moment of Load Inertia		Motor Inertia x 30		x 20
Position Feedback		BiSS-C Interface – 18bit 262,144ppr		4096 revs
Weight	kg	0.4	0.5	0.7
	lb	0.8	1.1	1.5
Standards		CE (EMC, LVD), UL (pending)		
Environmental				
	Temperature	0 - 40 °C		
	Humidity	20-80% non-condensing		
	Shock / Vibration	5G (49m/s ²)		



FAL Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	M	S	T
PM-FALR5AM8N	40	60	103.2	78.2	30	32.5**	8	5	23	25	2.5
PM-FAL01AM8N			120.2	95.2					35		
PM-FAL015AM8N			140.2	115.2					35		
PM-FAL01AM8N2*			156.6	131.6					35		

Notes

- FAL series does not include keyway

* Includes Static Brake

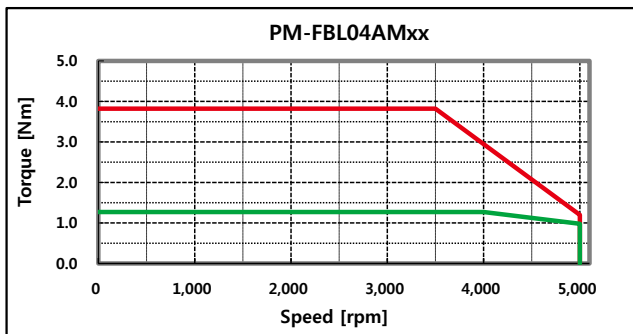
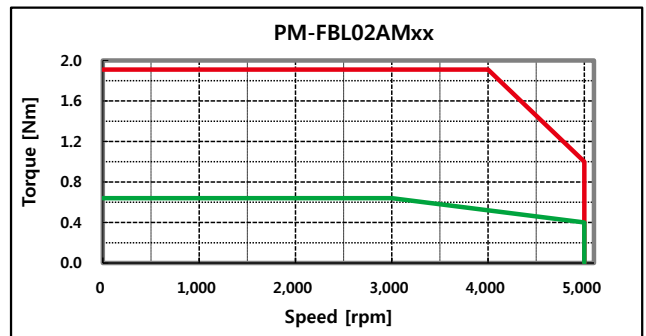
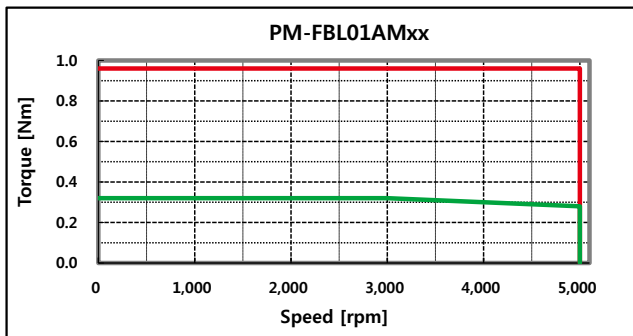
**Bolt Circle Diameter =46mm

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

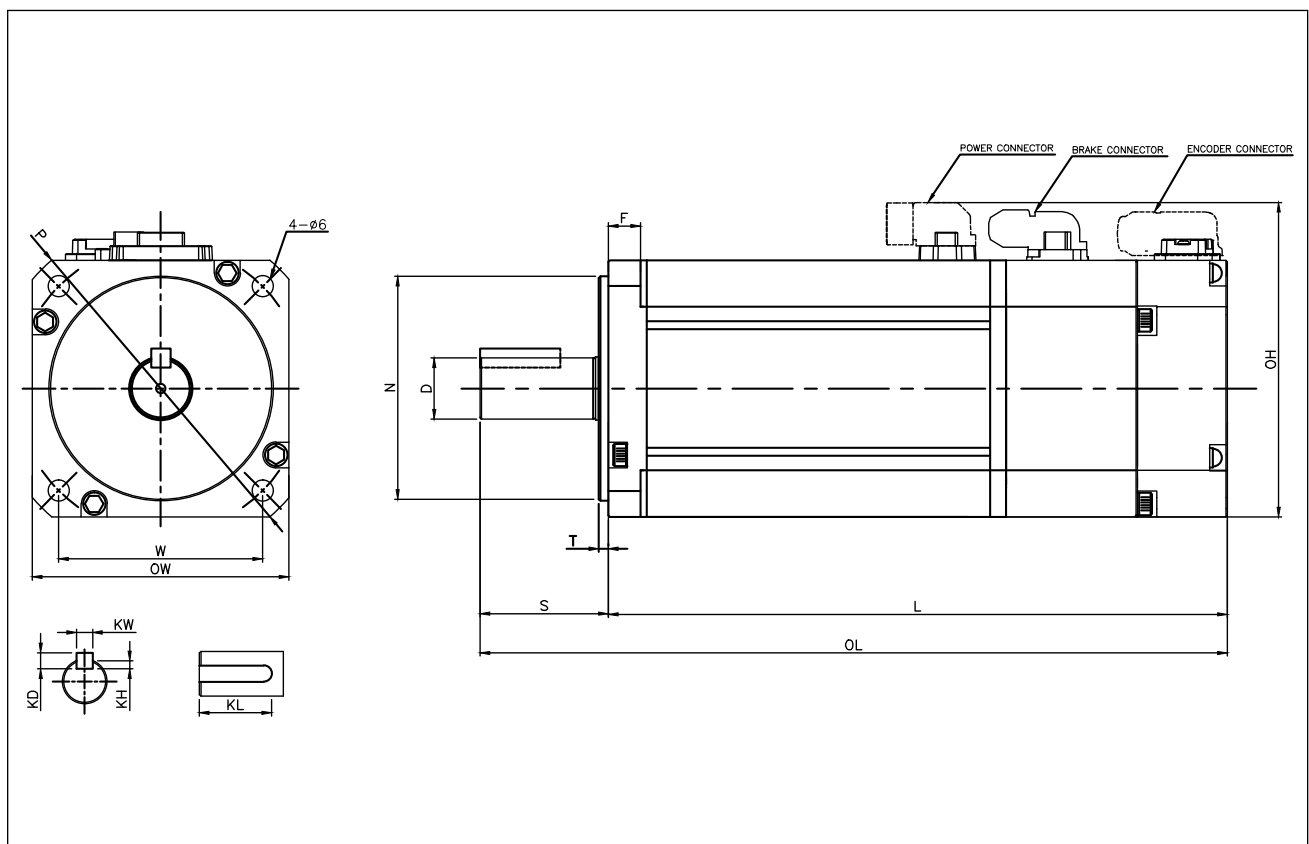
P Series Servo Motors

FBL Specifications

		PM-FBL01AM	PM-FBL02AM	PM-FBL04AM
Rated Output Power	Watts	100	200	400
Rated Torque	N-m	0.32	0.64	1.27
	in-lb	2.8	5.7	11.2
Instantaneous Peak Torque	N-m	0.96	1.91	3.82
	in-lb	8.5	16.9	33.8
Rated Speed	rpm	3000	3000	3000
Peak Speed	rpm	5000	5000	5000
Rated Current	Arms	0.95	1.45	2.60
Peak Current	Arms	2.86	4.35	7.80
Inductance	mH	10.46	9.03	5.68
Resistance	ohms	4.33	2.59	1.33
Torque Constant	Nm/Arms	0.36	0.47	0.52
Moment of Inertia	kg-m ² x 10 ⁻⁴	0.09	0.15	0.25
	in-lb-sec ² x 10 ⁻⁴	0.8	1.33	2.21
Allowable Moment of Load Inertia	Motor Inertia x 20			
Position Feedback	BiSS-C Interface – 19bit 524,288ppr 4096 revs			
Weight	kg	0.72	0.94	1.32
	lb	1.6	2.1	2.9
Standards	CE (EMC, LVD), UL (pending)			
Protection	IP67 (body and connectors, not shaft)			
Environmental				
Temperature	0 - 40 °C			
Humidity	20-80% non-condensing			
Shock / Vibration	5G (49m/s ²)			



FBL Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	S	T	KW	KH	KD	KL	P
PM-FBL01AMK	62	80	107.2	77.2	50	49.5**	14	6	30	3	5	3	5	22.5	80
PM-FBL02AMK			118.2	88.2											
PM-FBL04AMK			138.2	108.2											
PM-FBL01AMK2*			147.2	117.2											
PM-FBL02AMK2*			158.2	128.2											
PM-FBL04AMK2*			178.2	148.2											

Note

* Includes Static Brake

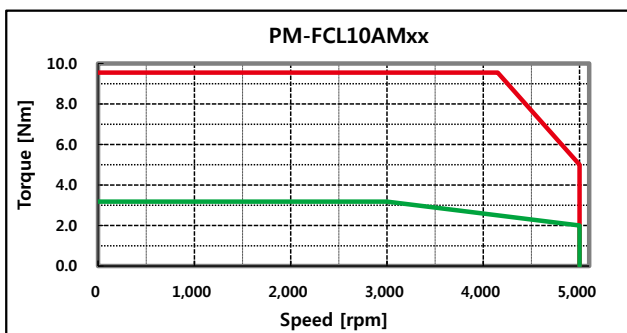
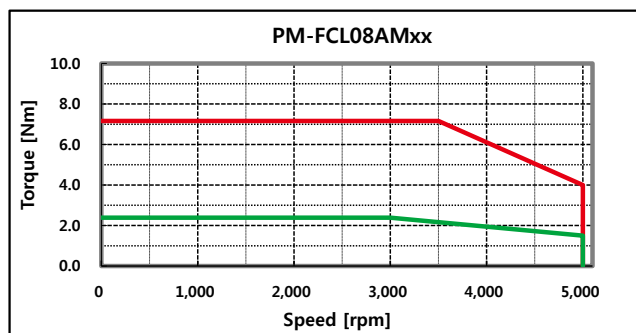
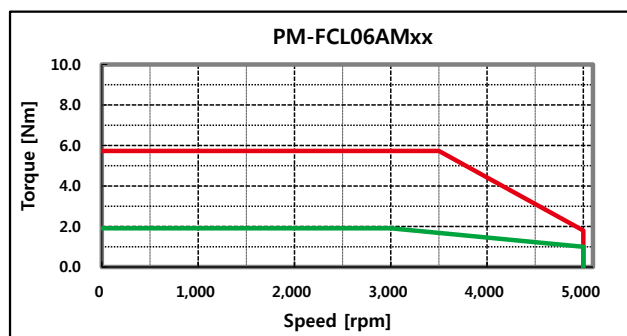
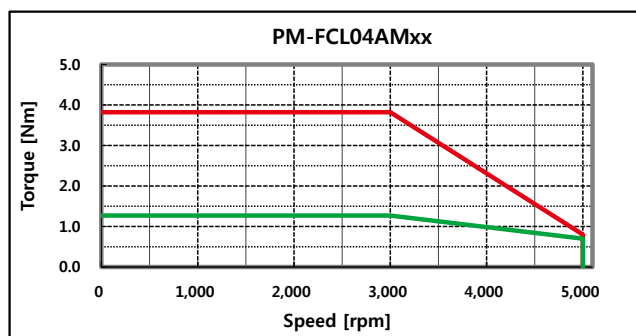
**Bolt Circle Diameter =70mm

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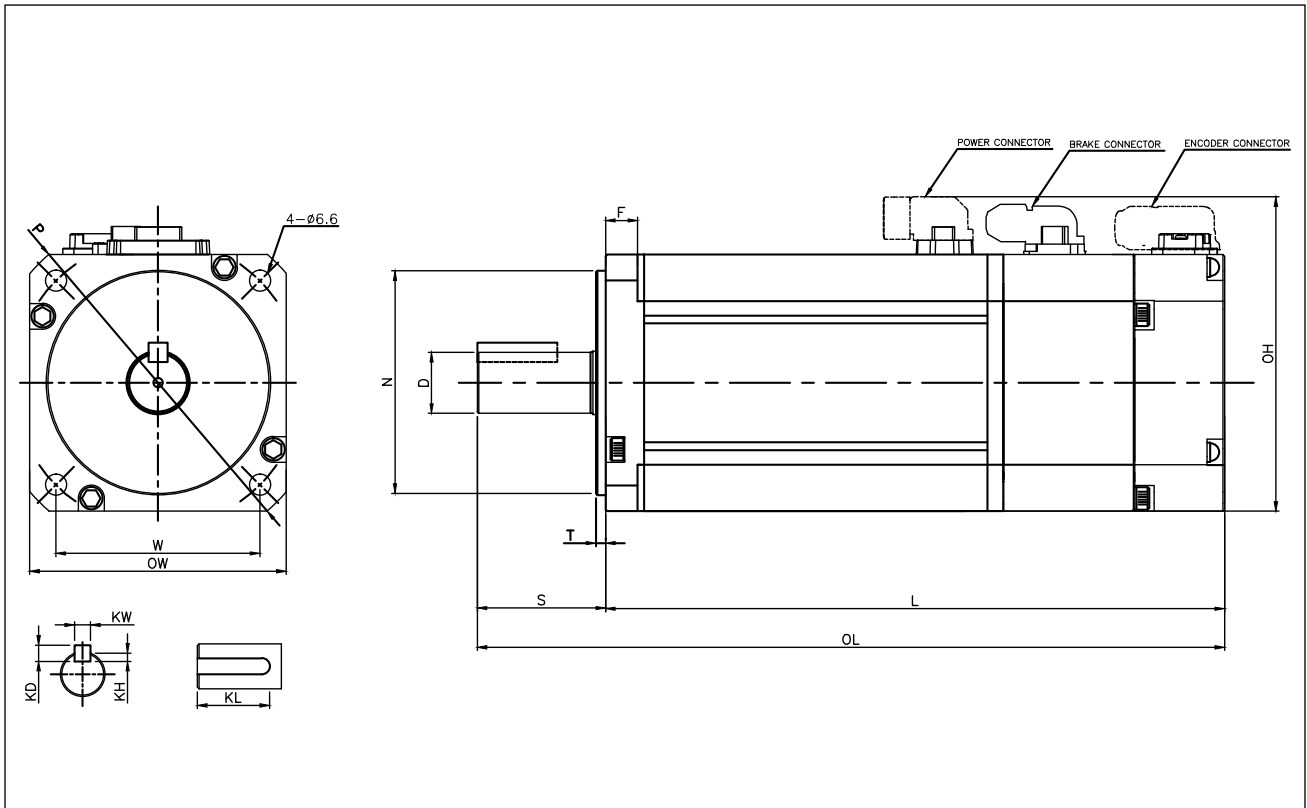
P Series Servo Motors

FCL Specifications

		PM-FCL04AM	PM-FCL06AM	PM-FCL08AM	PM-FCL10AM
Rated Output Power	Watts	400	600	800	1000
Rated Torque	N-m	1.27	1.91	2.39	3.18
	in-lb	11.2	16.9	21.2	28.1
Instantaneous Peak Torque	N-m	3.82	5.73	7.16	9.55
	in-lb	33.8	50.7	63.4	84.5
Rated Speed	rpm	3000	3000	3000	3000
Peak Speed	rpm	5000	5000	5000	5000
Rated Current	Arms	2.58	3.81	5.02	5.83
Peak Current	Arms	7.75	11.42	15.07	17.50
Inductance	mH	7.45	3.86	2.31	2.28
Resistance	ohms	1.75	0.66	0.40	0.33
Torque Constant	Nm/Arms	0.52	0.53	0.50	0.58
Moment of Inertia	kg-m ² x 10 ⁻⁴	0.5	0.88	1.25	1.62
	in-lb-sec ² x 10 ⁻⁴	4.4	7.8	11.1	14.3
Allowable Moment of Load Inertia	Motor Inertia x 15				
Position Feedback	BiSS-C Interface – 19bit 524,288ppr 4096 revs				
Weight	kg	1.56	2.18	2.72	3.8
	lb	3.4	4.8	6.0	8.4
Standards	CE (EMC, LVD), UL (pending)				
Protection	IP67 (body and connectors, not shaft)				
Environmental					
Temperature	0 - 40 °C				
Humidity	20-80% non-condensing				
Shock / Vibration	5G (49m/s ²)				



FCL Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	S	T	KW	KH	KD	KL	P
PM-FCL04AMK	80	98	138.7	98.7	70	63.6**	14	10	40	3	5	3	5	25	105
PM-FCL06AMK			156.7	116.7			19				6	3.5	6		
PM-FCL08AMK			174.7	134.7			19				6	3.5	6		
PM-FCL10AMK			192.7	152.7			19				6	3.5	6		
PM-FCL04AMK2*			179	139			14				5	3	5		
PM-FCL06AMK2*			197	157			14				5	3	5		
PM-FCL08AMK2*			215	175			19				6	3.5	6		
PM-FCL10AMK2*			233	193			19				6	3.5	6		

Note

* Includes Static Brake

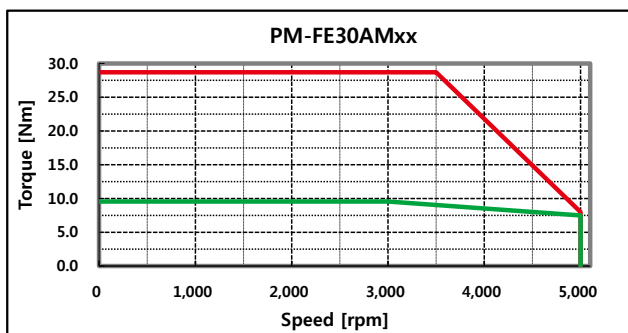
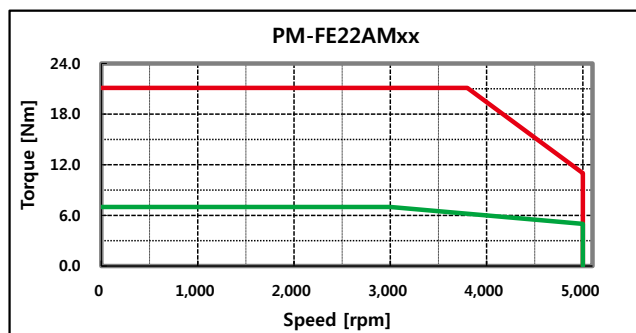
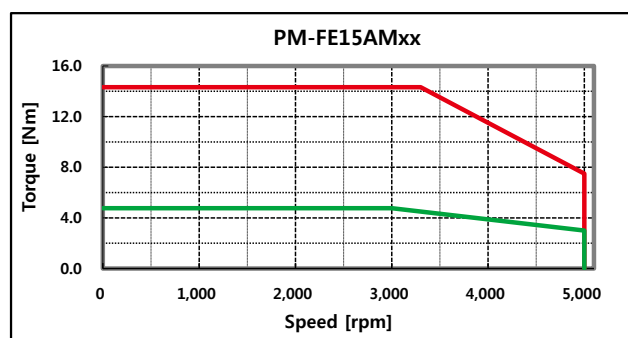
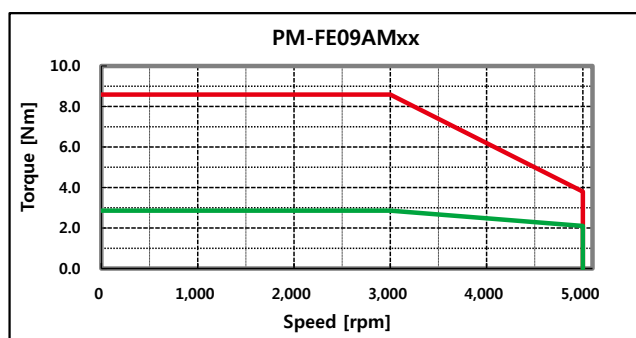
**Bolt Circle Diameter =90mm

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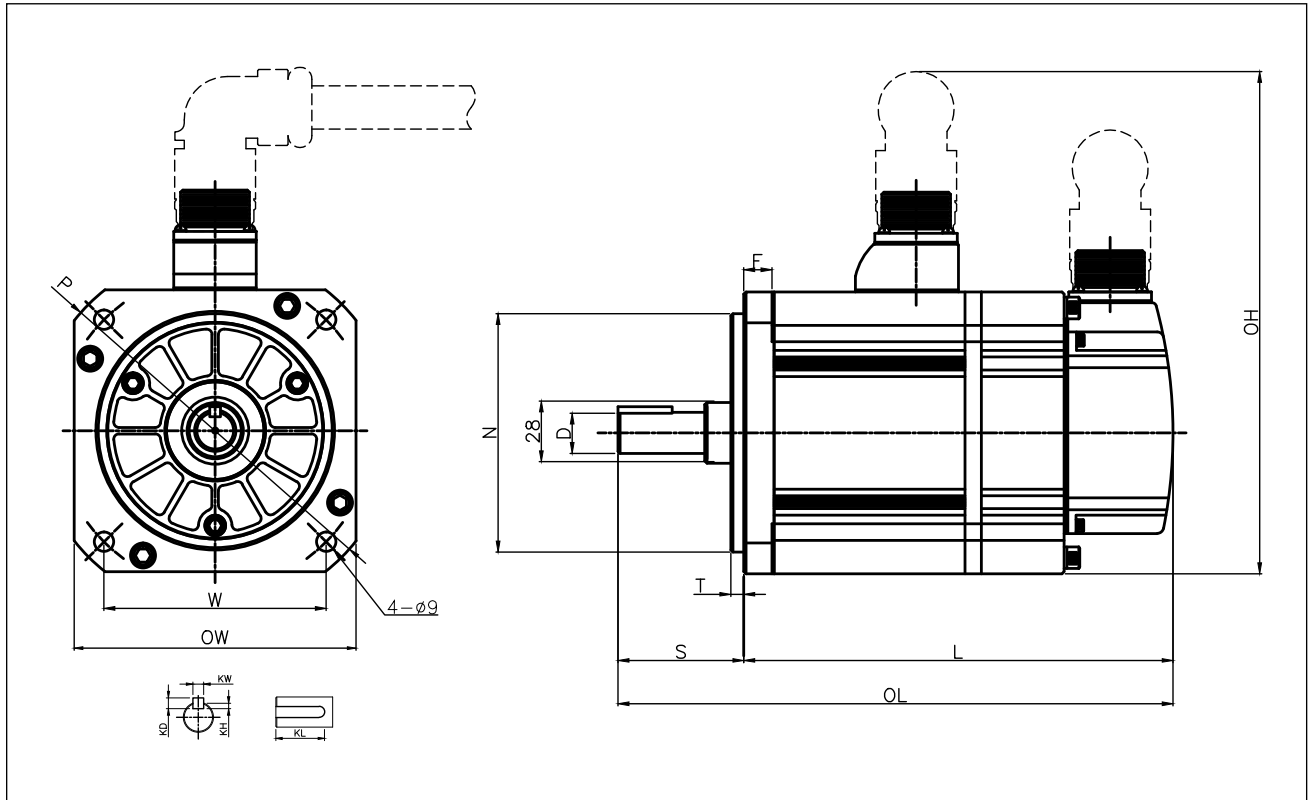
P Series Servo Motors

FE Specifications

		PM-FE09AM	PM-FE15AM	PM-FE22AM	PM-FE30AM
Rated Output Power	Watts	900	1500	2200	3000
Rated Torque	N-m	2.86	4.77	7.00	9.55
	in-lb	25.3	42.2	61.9	84.5
Instantaneous Peak Torque	N-m	8.59	14.32	21.01	28.65
	in-lb	76.0	126.7	185.9	253.5
Rated Speed	rpm	3000	3000	3000	3000
Peak Speed	rpm	5000	5000	5000	5000
Rated Current	Arms	6.45	9.15	13.24	16.09
Peak Current	Arms	19.35	27.45	39.72	48.27
Inductance	mH	2.33	1.52	0.98	0.93
Resistance	ohms	0.31	0.16	0.09	0.09
Torque Constant	Nm/Arms	0.44	0.52	0.53	0.59
Moment of Inertia	kg-m ² x 10 ⁻⁴	5.66	10.18	14.62	19.04
	in-lb-sec ² x 10 ⁻⁴	49.8	89.6	128.7	167.6
Available Moment of Load Inertia	Motor Inertia x 10				
Position Feedback	BiSS-C Interface – 19bit 524,288ppr 4096revs				
Weight	kg	5	6.7	8.5	10.1
	lb	11.0	14.8	18.7	22.3
Standards	CE (EMC, LVD), UL (pending)				
Protection	IP67 (body and connectors, not shaft)				
Environmental					
	Temperature	0 - 40 °C			
	Humidity	20-80% non-condensing			
	Shock / Vibration	5G (49m/s ²)			



FE Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	S	T	KW	KH	KD	KL	P
PM-FE03MMK PM-FE05GMK PM-FE06DMK PM-FE09AMK	130	231.7	197.3	139.3	110	102.5	19	13	58	6	5	3	5	25	165
PM-FE06MMK PM-FE09GMK PM-FE11DMK PM-FE15AMK			217.3	159.3											
PM-FE09MMK PM-FE13GMK PM-FE16DMK PM-FE22AMK			237.3	179.3											
PM-FE12MMK PM-FE17GMK PM-FE22DMK PM-FE30AMK			255.3	197.3											
PM-FE03MMK2 PM-FE05GMK2 PM-FE06DMK2 PM-FE09AMK2			235.3	177.3											
PM-FE06MMK2 PM-FE09GMK2 PM-FE11DMK2 PM-FE15AMK2			255.3	197.3											
PM-FE09MMK2 PM-FE13GMK2 PM-FE16DMK2 PM-FE22AMK2			275.3	217.3											
PM-FE12MMK2 PM-FE17GMK2 PM-FE22DMK2 PM-FE30AMK2			293.3	235.3											

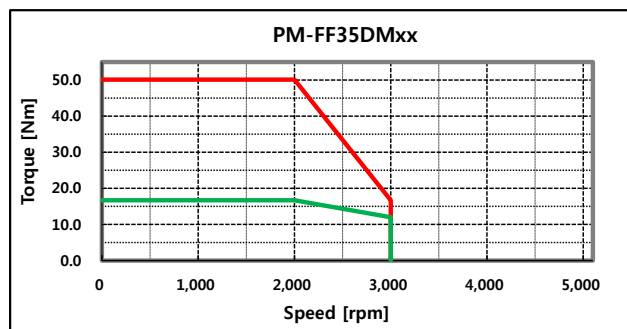
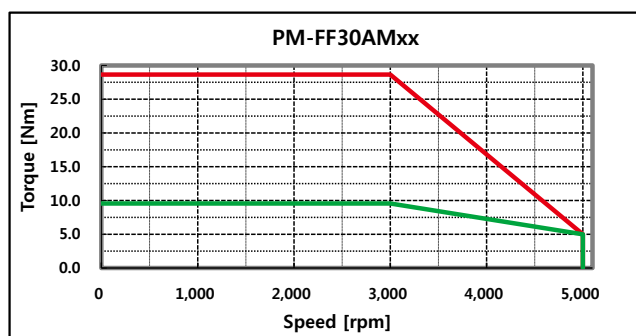
Note)

- Detail drawings and N-T curves are available at http://solutions.parker.com/AUG_EM
- Specification subject to change without notice.

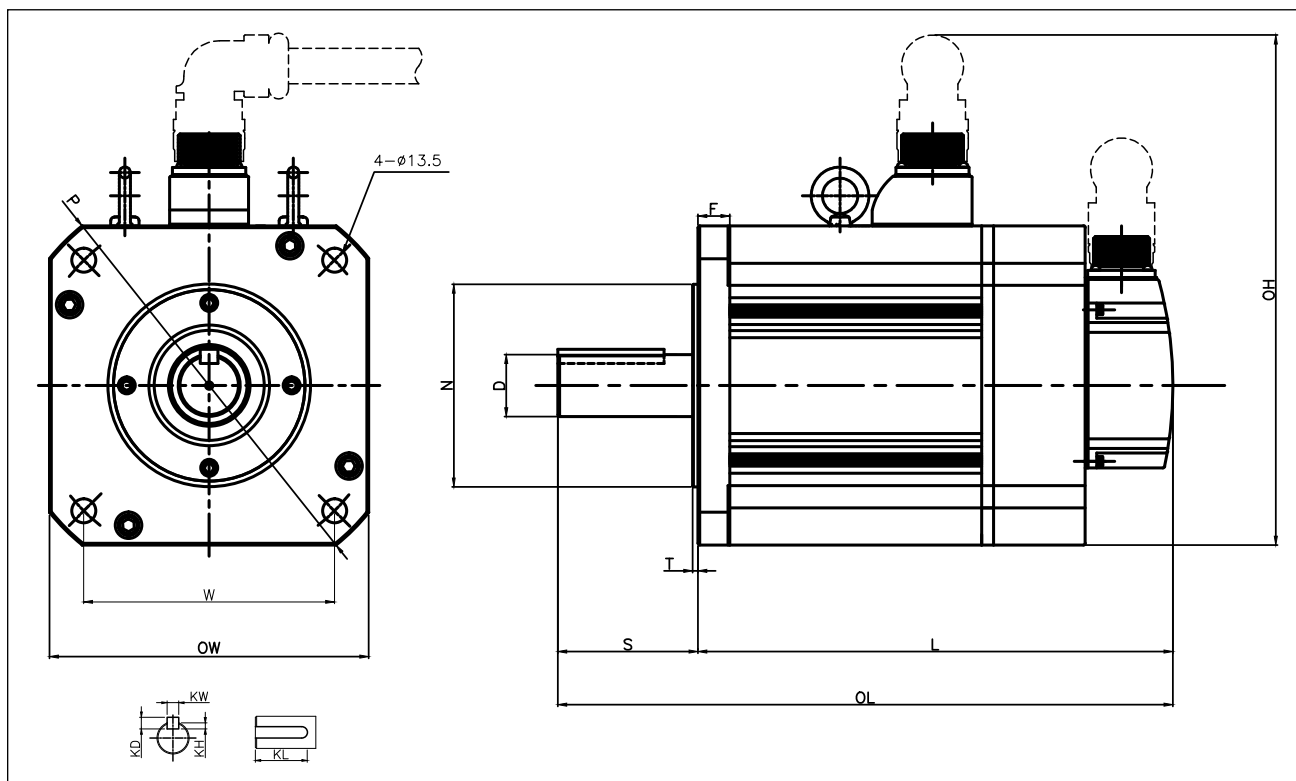
P Series Servo Motors

FF Specifications

		PM-FF30AM	PM-FF35DM
Rated Output Power	Watts	3000	3500
Rated Torque	N-m	9.55	16.70
	in-lb	84.5	147.8
Instantaneous Peak Torque	N-m	28.65	50.10
	in-lb	253.5	443.3
Rated Speed	rpm	3000	2000
Peak Speed	rpm	5000	3000
Rated Current	Arms	15.26	16.48
Peak Current	Arms	45.78	49.44
Inductance	mH	1.04	1.42
Resistance	ohms	0.07	0.09
Torque Constant	Nm/Arms	0.63	1.01
Moment of Inertia	kg-m ² x 10 ⁻⁴	27.96	46.56
	in-lb-sec ² x 10 ⁻⁴	246.0	409.7
Available Moment of Load Inertia	Motor Inertia x 5		
Position Feedback	BiSS-C Interface – 19bit 524,288ppr 4096revs		
Weight	kg	12.5	17.4
	lb	27.6	38.4
Standards	CE (EMC, LVD), UL(pending)		
Protection	IP67 (body and connectors, not shaft)		
Environmental			
	Temperature	0 - 40 ° C	
	Humidity	20-80% non-condensing	
	Shock / Vibration	5G (49m/s ²)	



FF Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	S	T	KW	KH	KD	KL	P
PM-FF12MMK PM-FF20GMK PM-FF22DMK PM-FF30AMK	180	287.7	257.5	178.5	114.3	141.4	35	17	79	3	10	5	8	60	230
PM-FF20MMK PM-FF30GMK PM-FF35DMK			287.5	208.5											
PM-FF30MMK			331.5	252.5											
PM-FF12MMK2 PM-FF20GMK2 PM-FF22DMK2 PM-FF30AMK2			308.9	229.9											
PM-FF20MMK2 PM-FF30GMK2 PM-FF35DMK2			338.9	259.9											
PM-FF30MMK2			382.9	303.9											

Note)

- Detail drawings and N-T curves are available at http://solutions.parker.com/AUG_EM
- Specification subject to change without notice.

P Series Ordering Information

Select an option from each numbered field to create a complete model order code.

Drive

Order Example : ① ② ③

	PD	-	04	C
--	-----------	----------	-----------	----------

①	②	③
Series	Frame Size	Interface
PD	04 - 400W	C - EtherCAT P - Pulse/Indexer
	10 - 1000W	
	35 - 3500W	

Motor

Order Example : ① ② ③ ④ ⑤ ⑥ ⑦

PM	-	FBL	04	A	M	K	2
-----------	----------	------------	-----------	----------	----------	----------	----------

①	②	③	④	⑤	⑥	⑦			
Series	Frame Size	Rated Power	Winding	Feedback	Key	Options			
PM	FAL - 40mm	R5 -50W	A - 3000rpm	M8 -18bit BiSS-C	N - none	[] - None			
		01 -100W				[] - None			
		15 -150W				2 - Brake			
	FBL - 62mm	01 -100W				A-3000rpm	M - 19bit BiSS-C	K - keyway	[] - None
		02 -200W							2 - Brake
		04 -400W							[] - None
		04 -400W	[] - None						
	FCL - 80mm	06 -600W	D-2000rpm	M - 19bit BiSS-C	K - keyway	[] - None			
		08 -800W				2 - Brake			
		10 -1kW				[] - None			
		09-900W				G-1500rpm	M - 19bit BiSS-C	K - keyway	[] - None
		15-1.5kW							2 - Brake
	22-2.2kW	[] - None							
	FE - 130mm	30-3.0kW	A-3000rpm	M - 19bit BiSS-C	K - keyway	[] - None			
		06-600W				2 - Brake			
		11-1.1kW	D-2000rpm	M - 19bit BiSS-C	K - keyway	[] - None			
		16-1.6kW				2 - Brake			
		22-2.2kW	G-1500rpm	M - 19bit BiSS-C	K - keyway	[] - None			
		05-500W				2 - Brake			
		09-900W				[] - None			
FF - 180mm		13-1.3kW	A-3000rpm	M - 19bit BiSS-C	K - keyway	[] - None			
	17-1.7kW	2 - Brake							
	30-3.0kW	D-2000rpm	M - 19bit BiSS-C	K - keyway	[] - None				
	22-2.2kW				2 - Brake				
	35-3.5kW	G-1500rpm	M - 19bit BiSS-C	K - keyway	[] - None				
20-2.0kW	2 - Brake								
30-3.0kW	[] - None								

Accessories

	Part Number	Description
Motor Power Cables	APCS-PN03LS	Motor Power Cable, 3 meters
	APCS-PNxxLS	xx=Length in meters : 05, 10, 20
Encoder Cables	APCS-EN03ES	Encoder Cable, 3meters
	APCS-ENxxES	xx=Length in meters : 05, 10, 20
	APCS-EN03ES1	Encoder Cable, Multi-Turn w/Battery, 3 meters
	APCS-ENxxES1	xx=Length in meters : 05, 10, 20
Brake Cables	APCS-BN03QS	Brake Cable, 3 meters (Motor power cable is required)
	APCS-BNxxQS	xx=Length in meters : 05, 10, 20
Connectors and I/O Cables	APC-CN102A	I/O Cable, 50-pin,Flying Lead, 2m long for PD-xxP
	APC-CN105A	I/O Cable, 50-pin,Flying Lead, 5m long for PD-xxP
	APCS-CN102A	I/O Cable, 20-pin,Flying Lead, 2m long for PD-xxC
	APCS-CN105A	I/O Cable, 20-pin,Flying Lead, 5m long for PD-xxC
	APC-CN1NNA	I/O Connector, 50-pin for PD-xxP
	APC-CN2NNA	I/O Connector, 20-pin for PD-xxC
	APC-CN3NNA	Drive Feedback Connector, 14-pin
	APCS-CN6J	STO Jumper, 8-pin
	APC-VSCN1T	I/O Breakout Board, 50-pin for PD-xxP
	APCS-CN5L7U	USB Communication Cable
Brake Resistors	APCS-140R50	Brake Resistor 400W
	APCS-300R30	Brake Resistor 1kW
	APC-600R30	Brake Resistor 3.5kW

Notes:

Brake Cables are separate from the motor power cables.

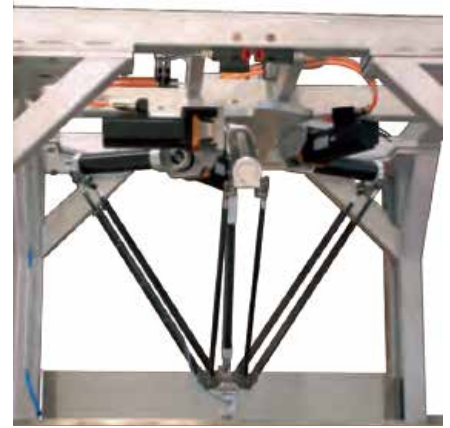
Cables exit toward the front of the motor. Rear exit cables are also possible, consult factory for availability.

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



iPM Series

Economic, Flexible,
Complete Control Solution



iPM overview

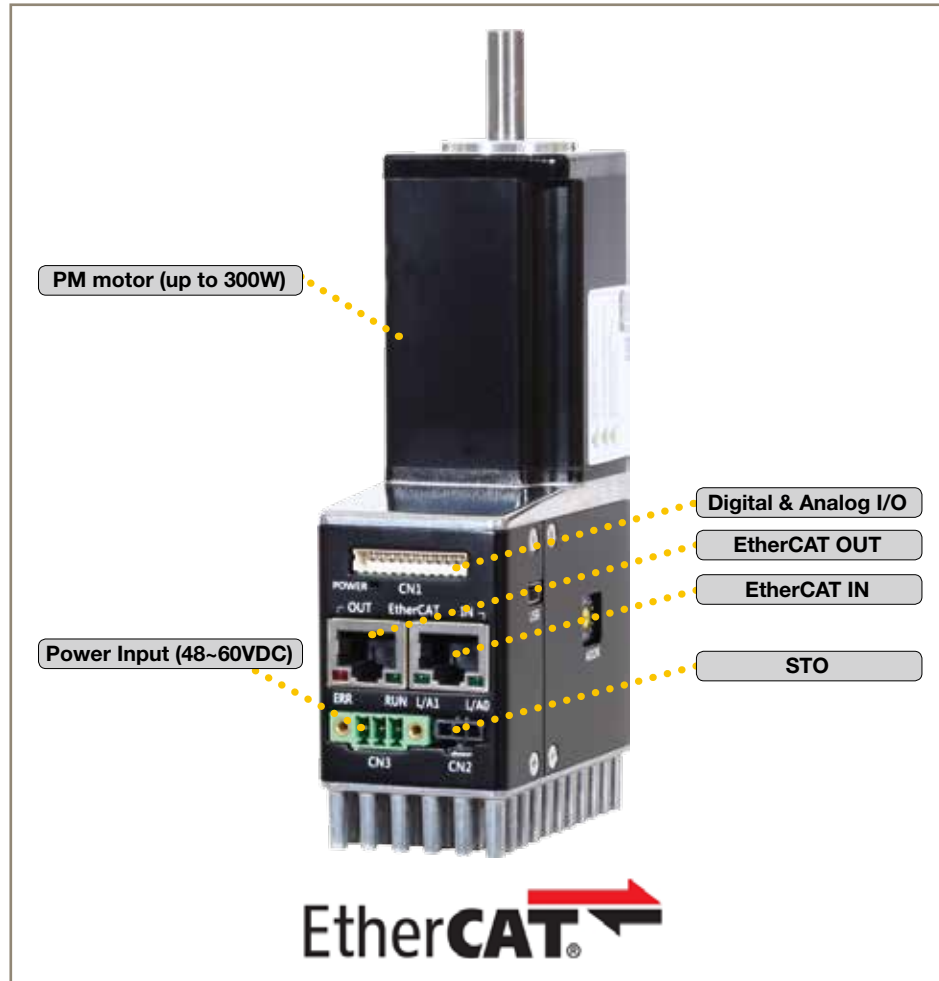
iPM(integrated Parker Motor) series is a compact integrated EtherCAT drive and PM series servo motor(up to 300W, 3000rpm).

Key features of iPM includes the following:

- Simplified wiring
- simple machine configuration and efficient power control via shared external DC bus voltage for multi-axes systems
- Reduced control panel space
- iPM is based on EtherCAT field bus protocol for complete connectivity to the Global Parker Automation Controller (PAC) or any other 3rd party EtherCAT masters to offer various solutions in synchronous and multi-axes motion control applications

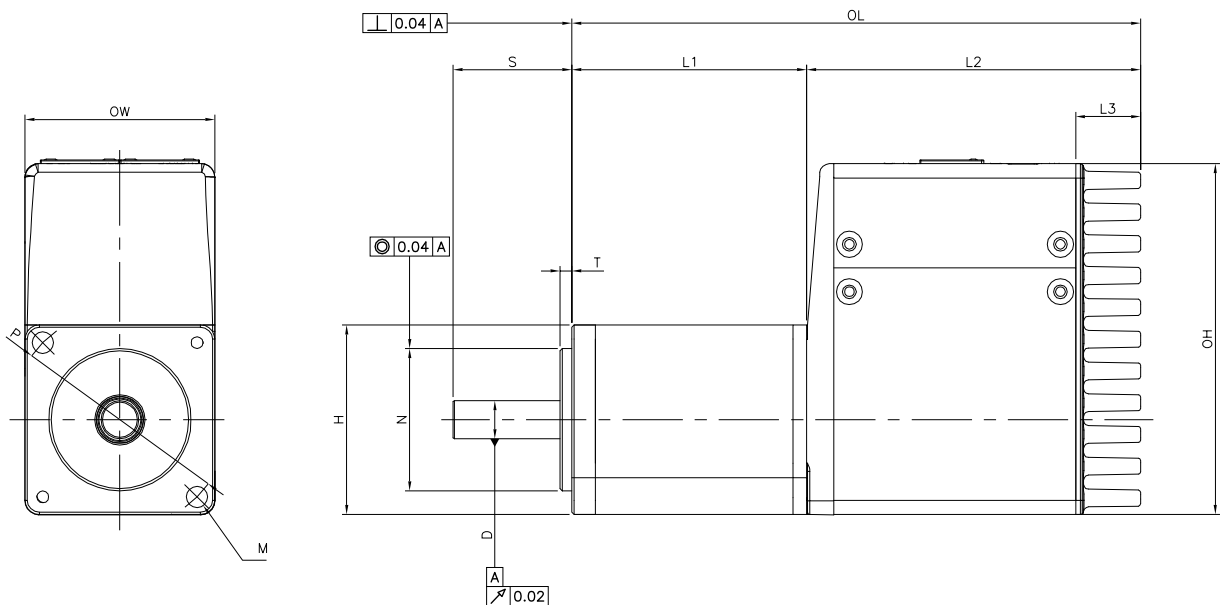
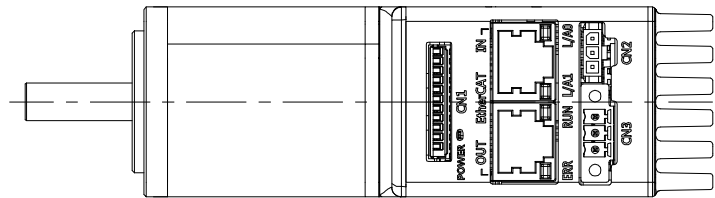
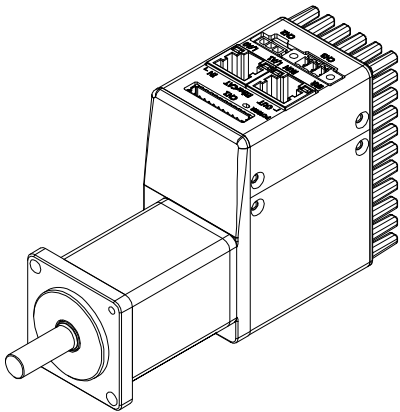
Markets/Applications:

- Packaging
- Food & Beverage
- General Automation
- Robot Application
- Medical Equipment



- 40/60mm frame (50~300W)
- 4096ppr, rated speed 3000rpm
- Auto-configuration
- Auto-tuning
- Safety function
- 4 Digital Input / 2 Digital Output
- 1 Analog Output
- CAN-open over EtherCAT (CoE)
- Ethernet over EtherCAT (EoE)
- File access over EtherCAT (FoE)

Dimensions



unit: mm

		iPM-AR5A-MA	iPM-A01A-MA	iPM-B01A-MA	iPM-B02A-MA	iPM-B03A-MA
OH	Overall Height	74				
OW	Overall Width	40		62		
OL	Overall Length	119.9±0.5	136.9±0.5	132.3±0.5	146.3±0.5	174.3±0.5
H	Height	40			62	
D	Shaft Diameter	8 h6			14 h6	
S	Shaft Length	25			30	
L1	Motor Length	49.5	66.5	52.3	66.3	94.3
L2	Drive Length	70.4	70.4	80	80	80
L3	Heat sink	13.7	13.7	23.3	23.3	23.3
N	Pilot Diameter	30 h7			50 h7	
T	Pilot Depth	2.5			3	
M	Mounting Hole	Ø 4.5			Ø 6	
P	PCD	46			70	

Note) Detail drawings are available at http://solutions.parker.com/AUG_EM

iPM Series

Technical Specifications



Drive

Rated values	iPM-AR5A	iPM-A01A	iPM-B01A	iPM-B02A	iPM-B03A
Continuous output current [Arms]	1.77	2.38	3.62	5	6.8
Maximum output current [Arms]	3.54	3.57	7.24	10	13.6
Input voltage	DC+48 V - DC +60 V				

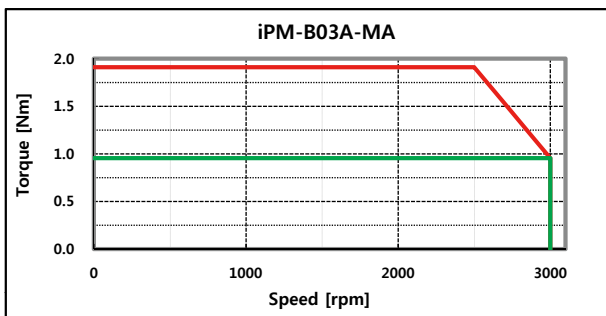
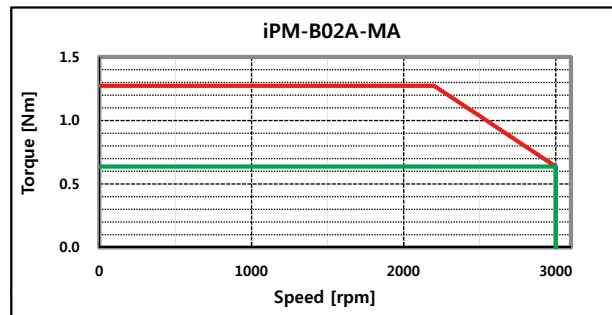
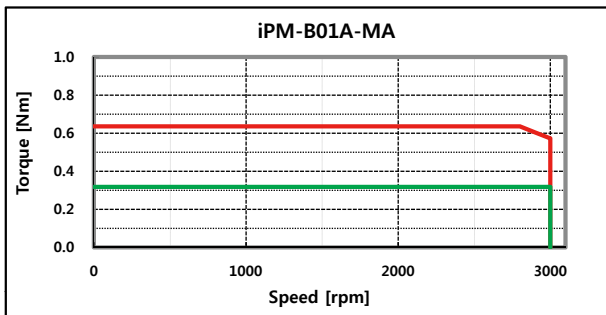
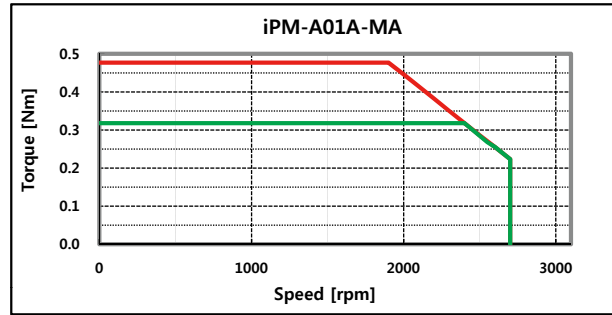
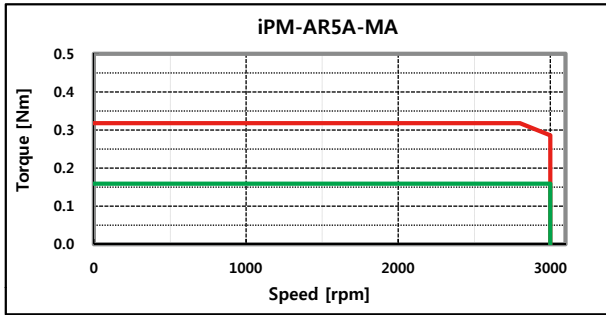
Motor

Category	Unit	iPM-AR5A	iPM-A01A	iPM-B01A	iPM-B02A	iPM-B03A
Rated Torque	[Kgf cm]	1.62	3.25	3.25	6.50	9.74
Max. Torque	[Kgf cm]	3.24	4.88	6.50	13.0	19.48
Rated Speed	[rpm]	3000	2400	3000	3000	3000
Max Speed	[rpm]	3000	3000	3000	3000	3000
Inertia	[Kgm ² x 10 ⁻⁴]	0.0240	0.0450	0.114	0.182	0.321

Control

Category		Details
Input/output signal	Input signal	Input voltage range: DC 12 V - DC 30 V The 4-channel input signal can be assigned to 12 functions: POT, NOT, HOME, STOP, PCON, GAIN2, PCL, NCL, PROBE1, PROB2, EMG, and ARST.
	Output signal	Rated voltage and current: DC 24 V ± 10%, 120 [mA] The 2-channel output signal can be assigned to 11 functions: BRAKE, ALARM, RDY, ZSPD, INPOS1, TLMT, VLMT, INSPD, WARN, TGON, and INPOS2.
Analog monitor		Number of channels: 1 Output voltage range: ±4V Angular resolution: 12 bits Stabilization time: 15 us
Protection functions		Overcurrent, overload, current limit, overheat, overvoltage, under voltage, over speed, encoder error, position follow error, etc.
Auxiliary functions		Gain adjustment, alarm history, JOG drive, programmed JOG drive, etc.
Safety functions	Input	STO1 and STO2
	Compatible standard	TBD

N-T Curve



Ordering Code

Order Example : ① iPM — ② A ③ R5 ④ A — ⑤ MA

Select an option from each numbered field to create a complete model order code.

① **Series**
iPM Integrated Parker Motor

② **Frame size**
A 40mm
B 60mm

③ **Interface**
R5 50W
01 100W
02 200W
03 300W

④ **Rated speed**
A 3000rpm^{*1)}

⑤ **Feedback**
MA Magnetic Encoder 12bit
MB Magnetic Encoder 17bit(optional)

^{*1)} Rated speed of iPM-A01A-MA is 2700rpm.

Powerful Direct Drive Motors



Easy configuration

- once the motor is connected to P series drive it will automatically recognize the motor

Various control option

- Predefined Profile mode provides ideal indexing feature for your machine
- EtherCAT gives high speed communication for multi-axis solutions

SERVO DRIVE

Ideal direct drive solution for P series drive

- 100~400W : PD-04P & 04C
- 400~1kW : PD-10P & 10C
- 1kW~3.5kW : PD-35P & 35C



BEARING

Low vibration and outstanding mechanical accuracy by improved bearing design

ENCODER

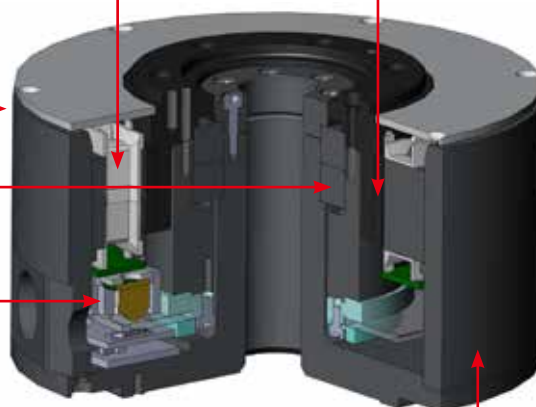
High resolution absolute feedback as standard (20 bit BiSS-C)

WINDING

Optimized winging structure

MAGNET

High torque density by using highest class rated Neodymium permanent magnet



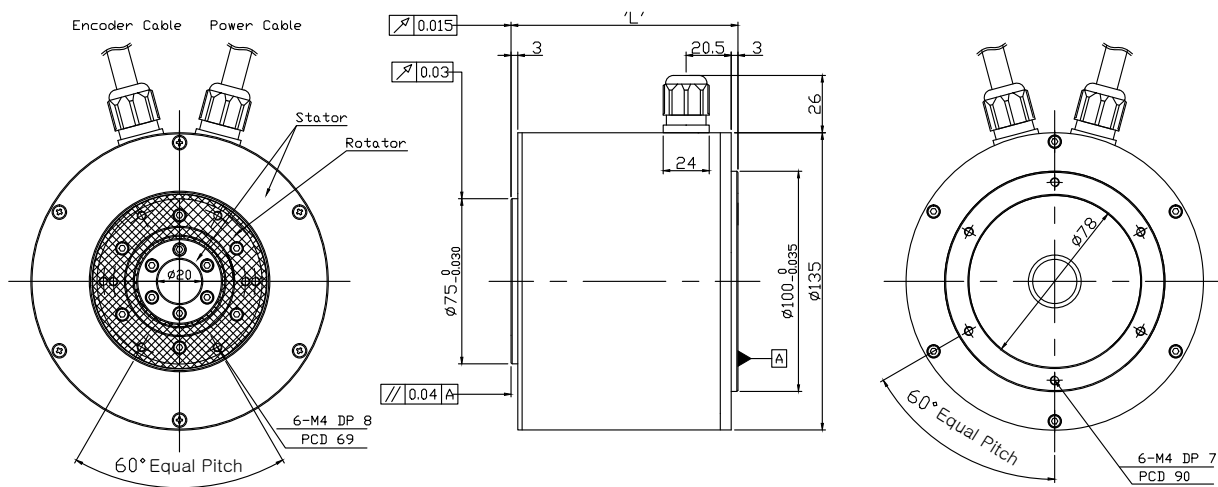
FRAME

5 frame size - 135mm/175mm/230mm/290mm/360mm
various height is available as custom option
Rated speed : 200RPM / 150RPM

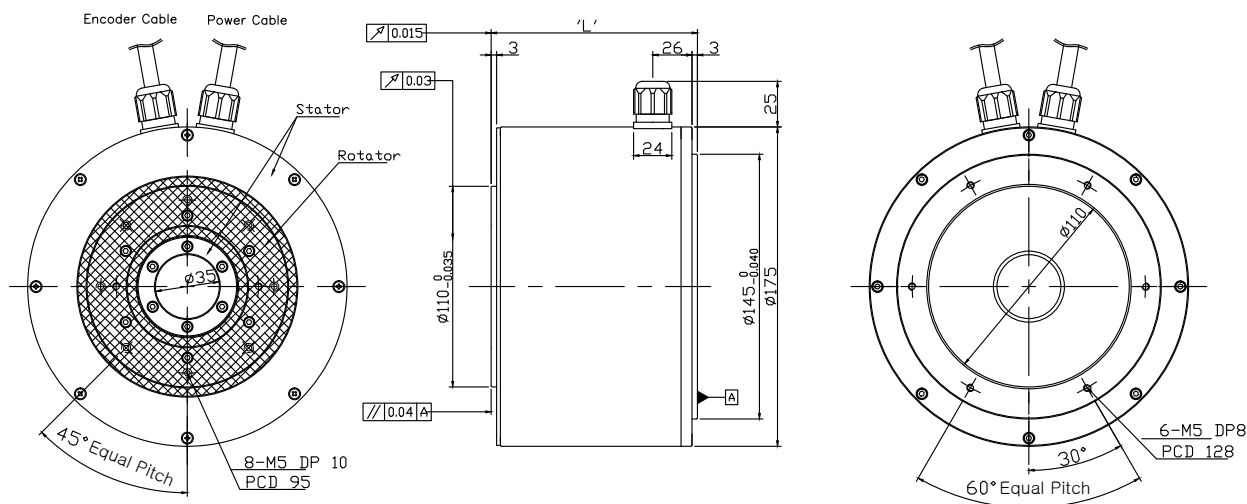
Basic specification

Motor		PM-DDB□□D□H			PM-DDC□□D□H			PM-DDD□□D□H			PM-DDE□□D□H		PM-DDF□□G□H	
		03	06	09	06	12	18	12	22	34	40	60	A1	A6
P series Drive		PD-04	PD-04	PD-04	PD-04	PD-04	PD-04	PD-04	PD-10	PD-10	PD-10	PD-35	PD-35	PD-35
Diameter	mm	ø135			ø175			ø230			ø290		ø360	
Rated Power	W	63	126	188	126	251	377	251	461	712	838	1,257	1,728	2,513
Rated Torque	N-m	3	6	9	6	12	18	12	22	34	40	60	110	160
Peak Torque	N-m	9	18	27	18	36	54	36	66	102	120	180	330	480
Rated Current	Arms	1.12	1.46	2.63	1.48	2.41	3	2.58	3.33	5.72	5.3	8.33	9.48	14.6
Peak Current	Arms	3.36	4.38	7.89	4.44	7.23	9	7.74	9.99	17.16	15.9	24.99	28.44	43.8
Rated Velocity	rpm	200			200			200			200		150	
Max. Velocity	rpm	500	500	500	500	500	400	500	400	400	300	300	250	250
Torque Constant	N-m/Arms	2.76	4.25	3.57	4.18	5.13	6.12	4.8	6.81	6.13	7.77	7.42	11.95	11.29
Moment of Inertia	kg-m ² ×10 ⁻⁴	5.74	8.67	11.5	27.32	38.9	50.48	54.14	68.15	82.16	311.55	371.71	1410.2	1763.4
Power Rate	kW/s	15.68	42.35	70.43	13.18	52.71	118.59	26.6	71.02	140.7	51.36	96.68	85.9	145.4
Angular Accel	rad/s ²	191.2	141.6	127.7	455.03	323.9	280.3	450.9	309.6	241.5	778.35	619.1	1281.13	1101.4
Accuracy for ABS Position	arc-sec	±30												
Accuracy for Repeatability	arc-sec	±1.3												
Axial run-out	mm	0.015												
Radial run-out	mm	0.03												
Allow. thrust load	N	1500			3300			4000			11000		15000	
Allow. moment load	N-m	40			70			93			250		350	
Encoder		20-bit single turn serial encoder (BiSS-C / Absolute)												
Weight(Approx.)	kg	6.3	7.2	9.2	8.7	10.6	12.6	17.3	19.6	21.9	28.2	35	54	70.3

Dimensions

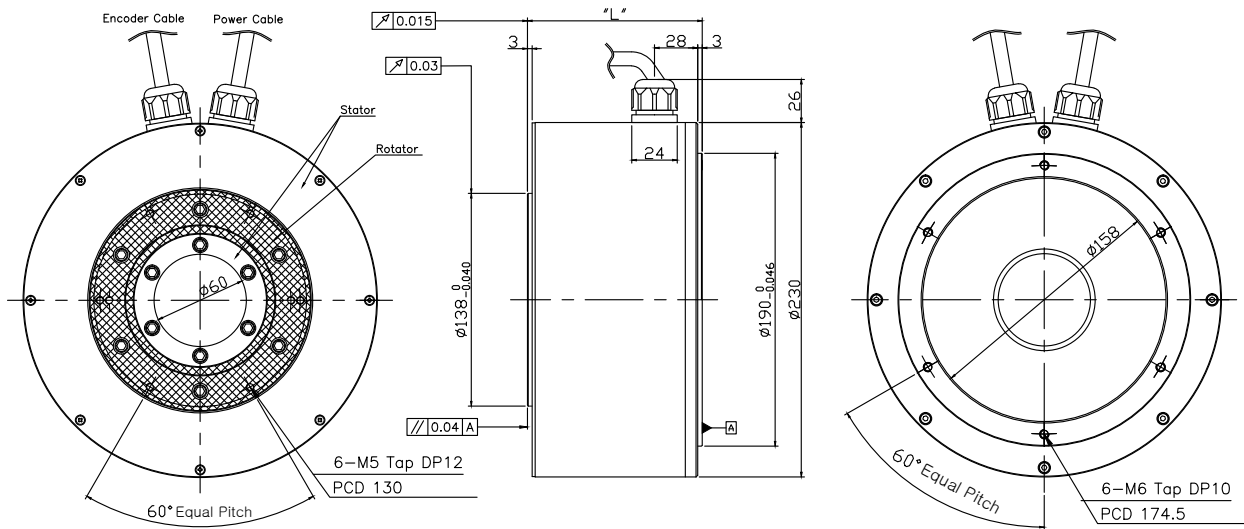


Size B		
Product	Length (mm) 'L'	Weight (Kg)
PM-DDB03D	78	6.3
PM-DDB06D	100	7.2
PM-DDB09D	124	9.2

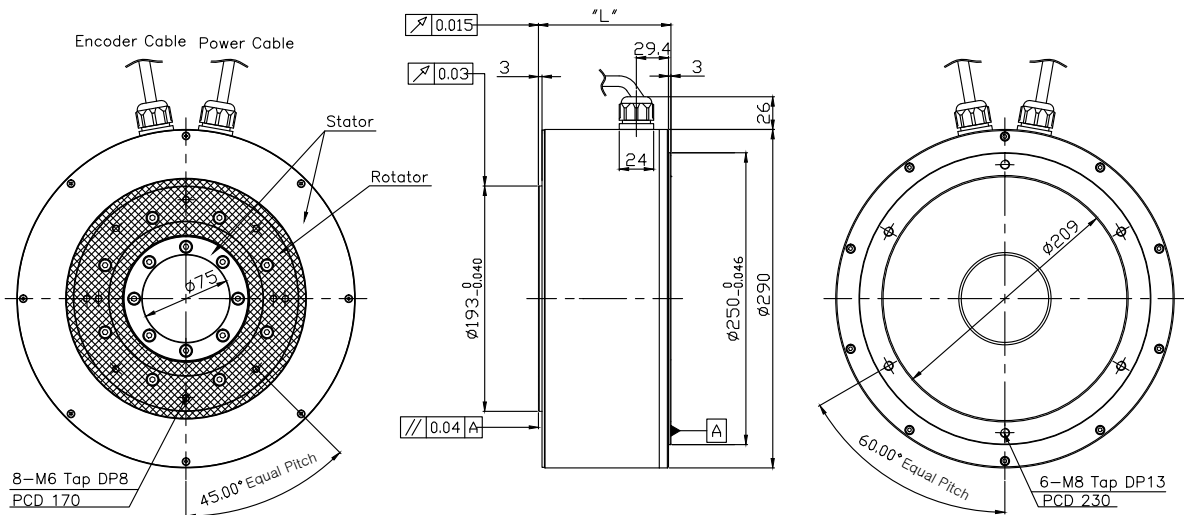


Size C		
Product	Length (mm) 'L'	Weight (Kg)
PM-DDC06D	77	8.7
PM-DDC12D	95	10.6
PM-DDC18D	113	12.6

Dimensions

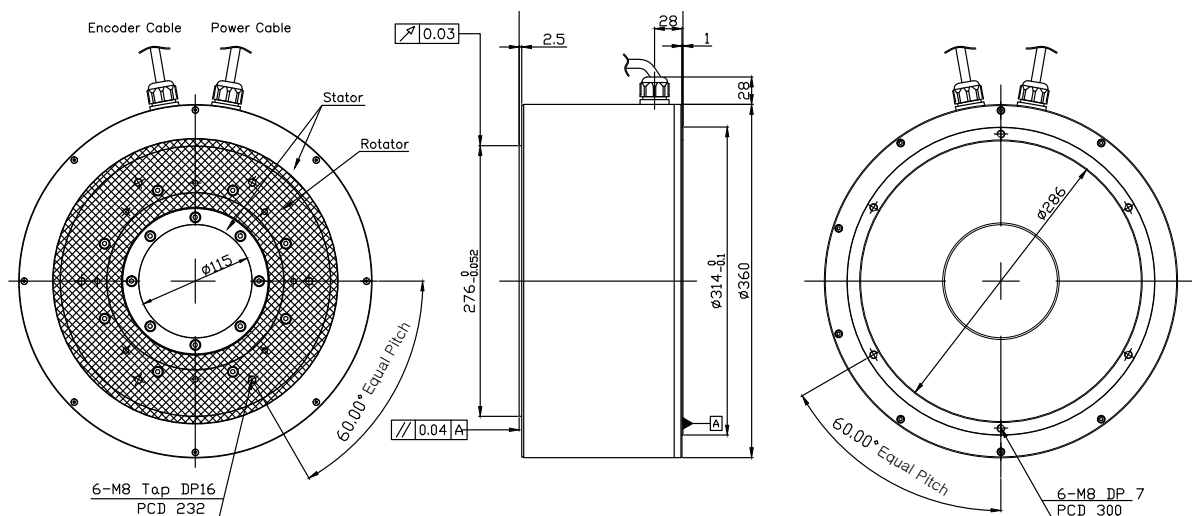


Size D		
Product	Length (mm) 'L'	Weight (Kg)
PM-DDD12D	82.5	17.3
PM-DDD22D	100.5	19.6
PM-DDD34D	118.5	21.9



Size E		
Product	Length (mm) 'L'	Weight (Kg)
PM-DDE40D	95.4	28.2
PM-DDE60D	113.4	35

Dimensions

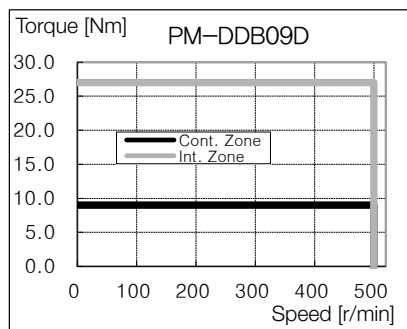
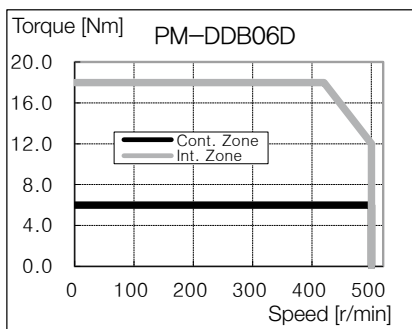
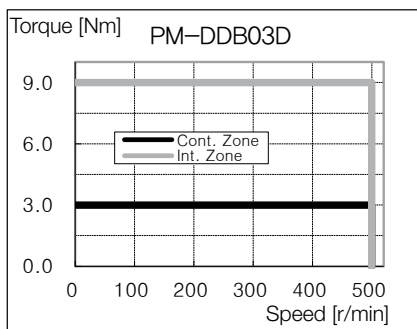


Size F

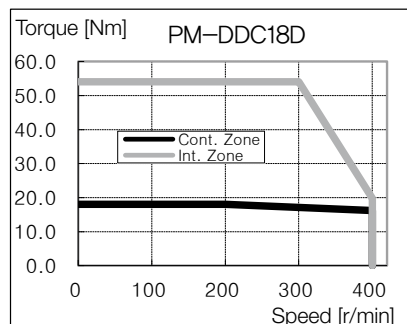
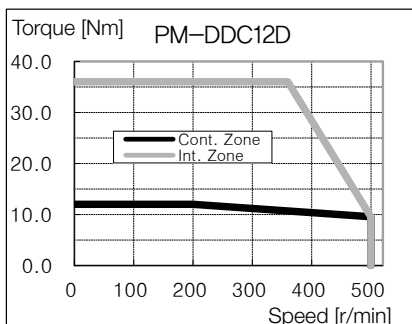
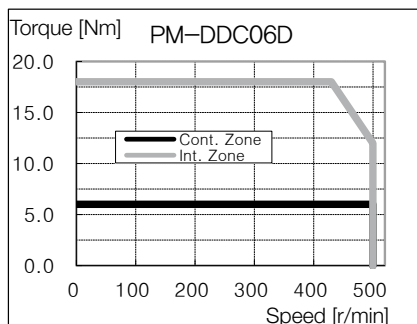
Product	Length (mm) 'L'	Weight (Kg)
PM-DDFA1G	131	54
PM-DDFA6G	167	70.3

N-T curve

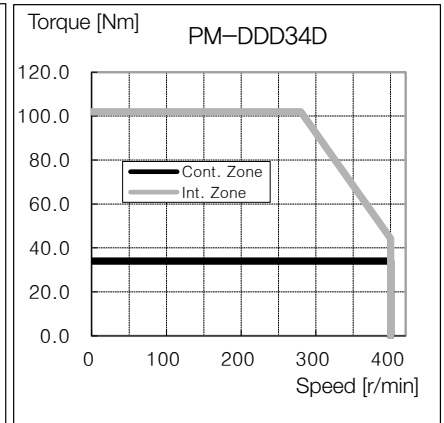
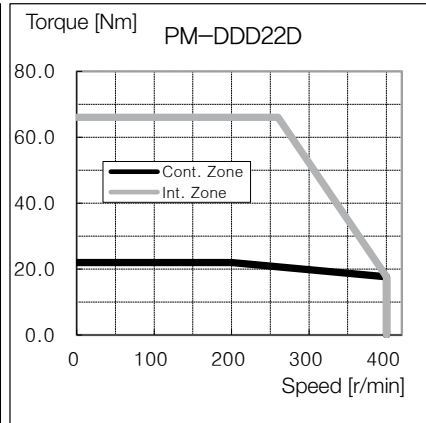
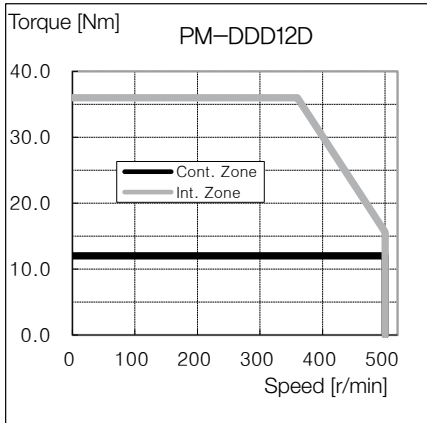
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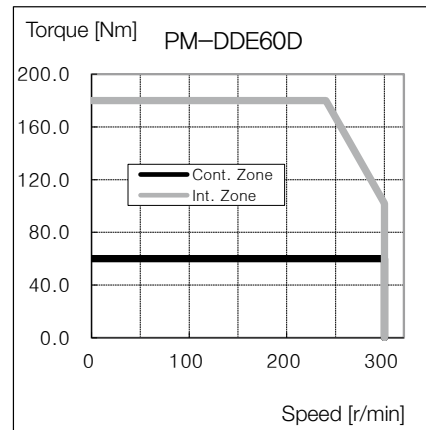
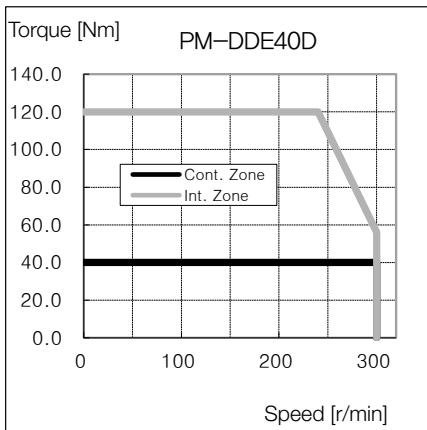
Size C



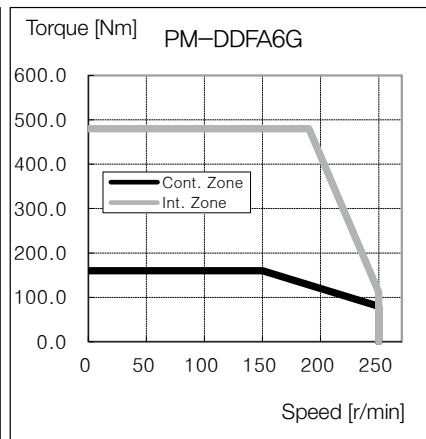
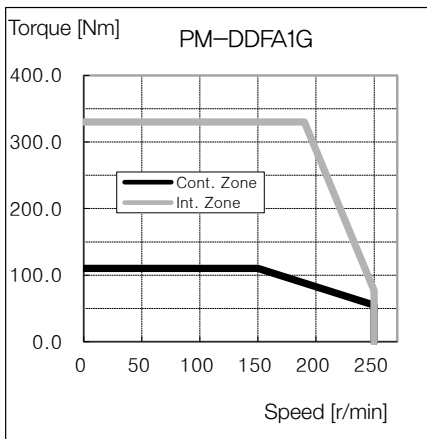
Size D



Size E



Size F



Ordering Code

Motor

P M-DD B 60 A NO H

Code	Type
DD	DD Motor

Code	Diameter size
B	External Diameter 135mm
C	External Diameter 175mm
D	External Diameter 230mm
E	External Diameter 290mm
F	External Diameter 360mm

Code	Torque
03	3Nm
06	6Nm
09	9Nm
---	---
60	60Nm
---	---
A6	160Nm

Code	Encoder					Note
	135	175	230	290	360	
NO	20Bit		20Bit	20Bit		Single turn ABS, Biss-C Communication

Code	Rated Speed	Note
A	300rpm	
D	200rpm	Standard, ϕ 135- ϕ 290 : 200rpm
G	150rpm	Standard, ϕ 360 : 150rpm
M	100rpm	

Code	Shaft Type	Code	Voltage
H	Standard Hollow shaft	None	200V DD Motor

Cable

APCS - EN 03 ZS

Code
APCS

Code	Cable
EN	Encode Feedback
PN	Motor Power

Code	Length
03	3m
05	5m
10	10m
20	20m

Code	Option
ZS	Standard Feedback Cable Standard Power Cable(PM-DDF series)
YS	Standard Power Cable(PM-DDB~E series)



Motion & Control Technologies...

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further information call:

1 800 C-Parker
(1 800 272 7537)



Aerospace

Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

OFFER OF SALE

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- 4. Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
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- 6. LIMITATION OF LIABILITY.** UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.
- 7. User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.
- 8. Loss to Buyer's Property.** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, will be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.
- 9. Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.
- 10. Buyer's Obligation;** Rights of Seller. To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.
- 11. Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.
- 12. Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.
- 13. Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.
- 14. Force Majeure.** Seller does not assume the risk and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.
- 15. Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.
- 16. Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) dissolves or liquidates all or a majority of its assets.
- 17. Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.
- 18. Indemnity for Infringement of Intellectual Property Rights.** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.
- 19. Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.
- 20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act.** Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

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