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

Contact Information:

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Electromechanical Automation Division
5500 Business Park Drive
Rohnert Park, CA 94928
phone: 800.358.9068 / 707.584.7558
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email: emn_support@parker.com

EtherCAT®

ENGINEERING YOUR SUCCESS.

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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 Segment LED, 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	100 ohm, 50W	40 ohm, 100W	12.6 ohm, 150W
	External Regeneration	50 ohm, 140W	30 ohm, 300W	30 ohm, 600W
Environmental				
	Temperature	0 - 50 °C (32 - 122 °F)		
	Humidity	0 - 90% non-condensing		
	Shock / Vibration	15g, 11msec half sign / 10-2,000Hz @ 2g		

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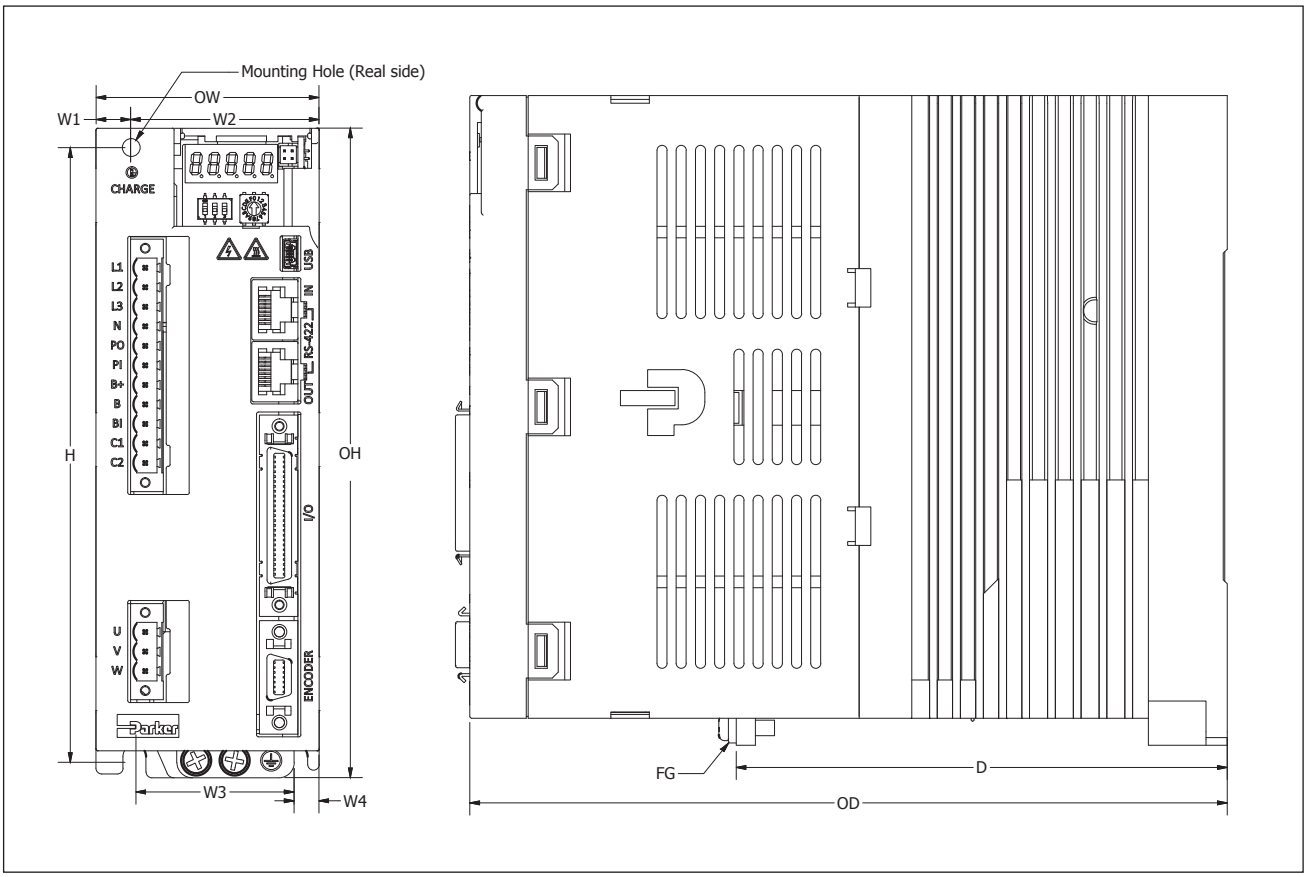
Pulse Drive Dimensions



(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 parkermotion.com/pseries

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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 Segment LED, 5 digits for Status and Alarms		
	Dynamic Braking	Built-in, user selectable reaction		
	Internal Regeneration	100 ohm, 50W	40 ohm, 100W	12.6 ohm, 150W
	External Regeneration	50 ohm, 140W	30 ohm, 300W	30 ohm, 600W
Environmental				
	Temperature	0 - 50 °C (32 - 122 °F)		
	Humidity	0 - 90% non-condensing		
	Shock / Vibration	15g, 11msec half sign / 10-2,000Hz @ 2g		

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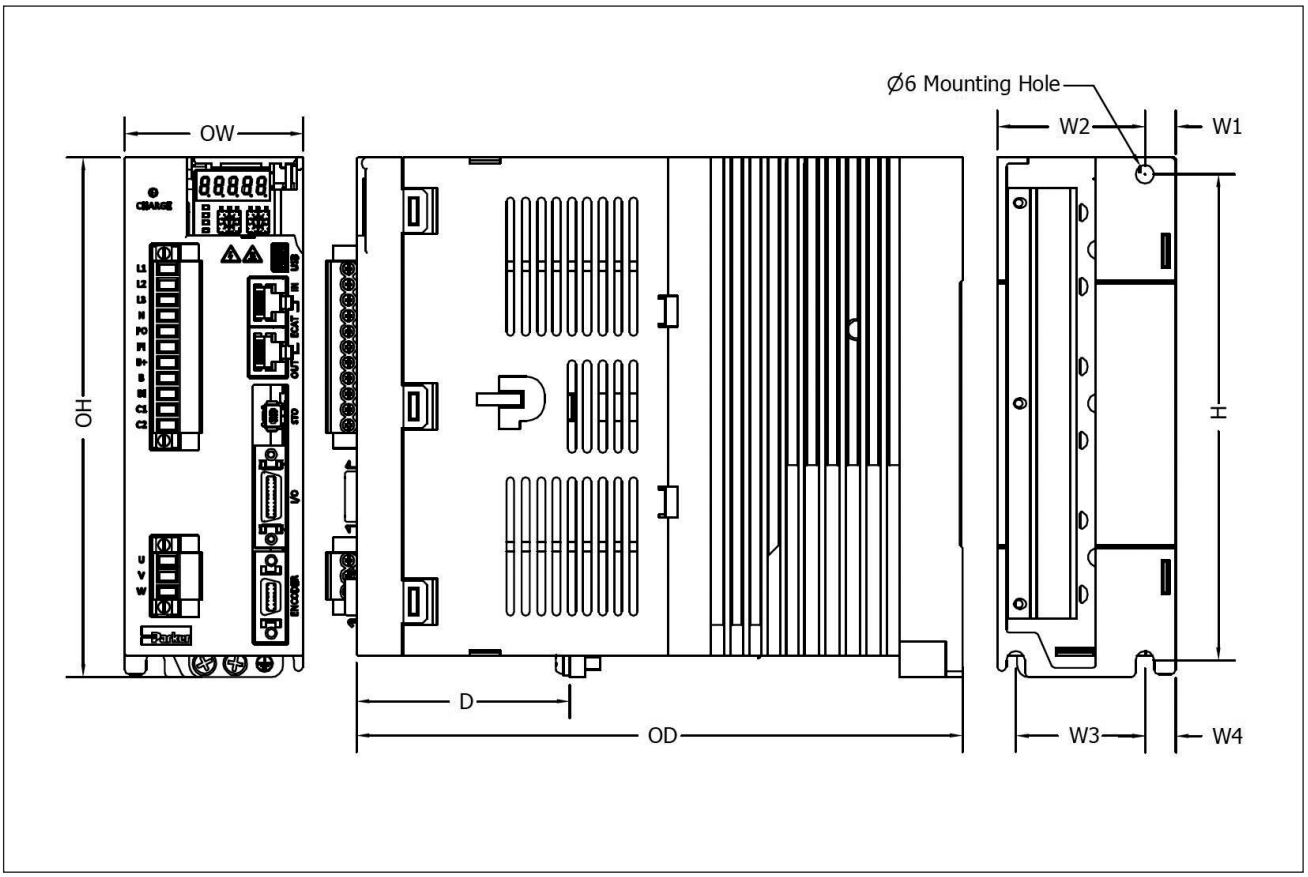
EtherCAT Drive Dimensions



(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 parkermotion.com/pseries

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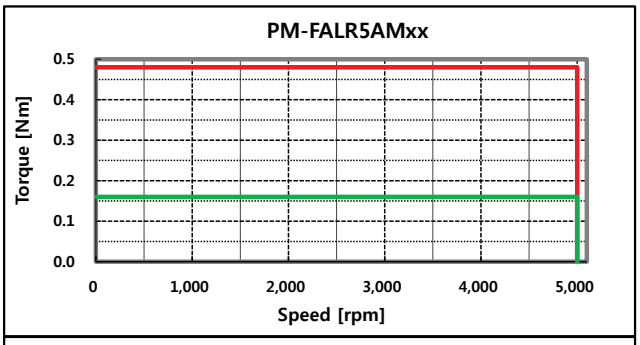
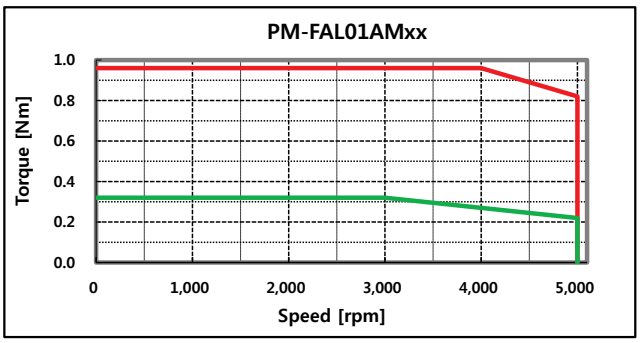
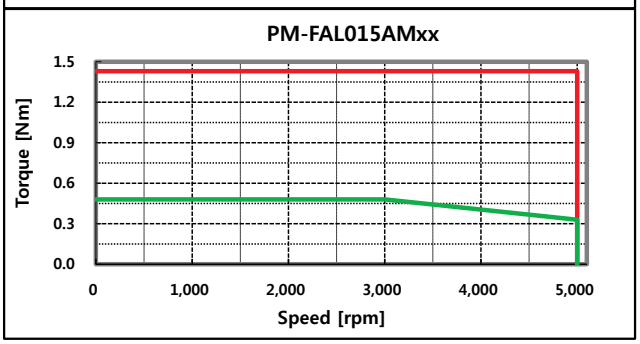
P Series Servo Motors

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-m² x 10-4	0.02	0.05	0.06
	in-lb-sec2 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
Protection		IP67 (body and connectors, not shaft)		
Standards		CE (EMC, LVD), UL (pending)		
Environmental				
	Temperature	0 - 40 °C		
	Humidity	20-80% non-condensing		
	Shock / Vibration	5G (49m/s²)		







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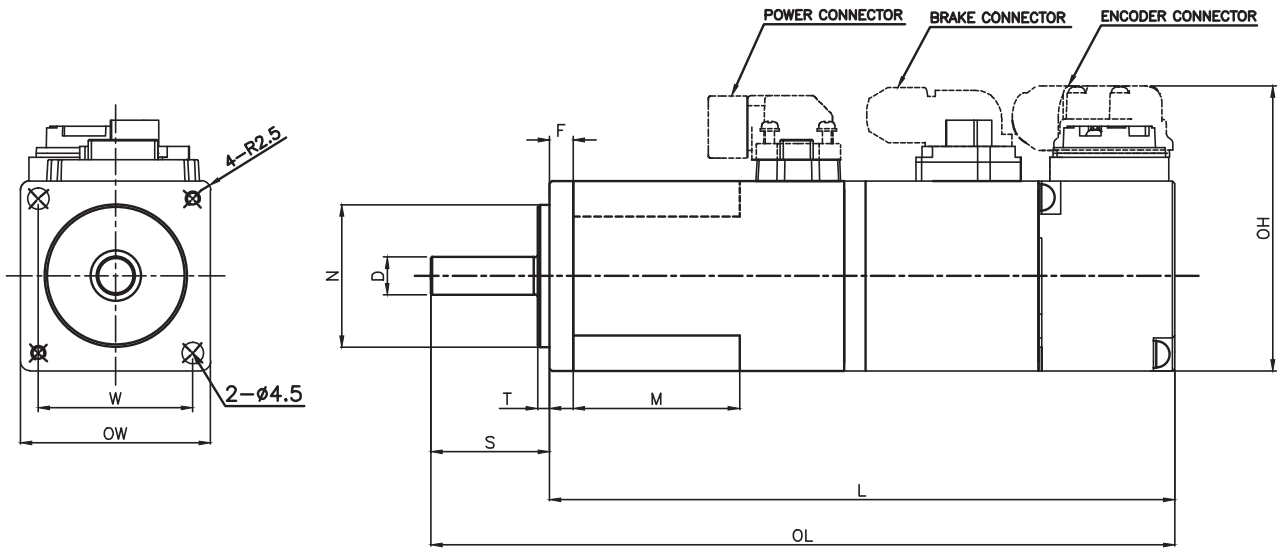
FAL Dimensions



(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

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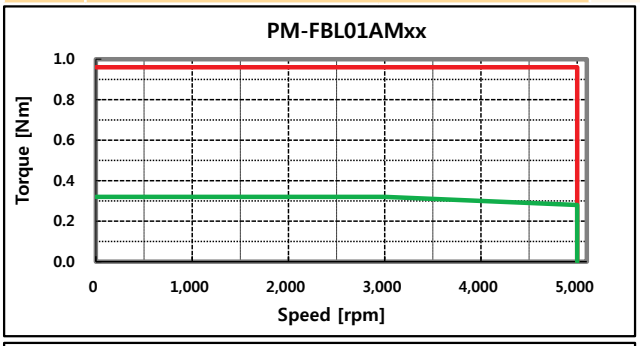
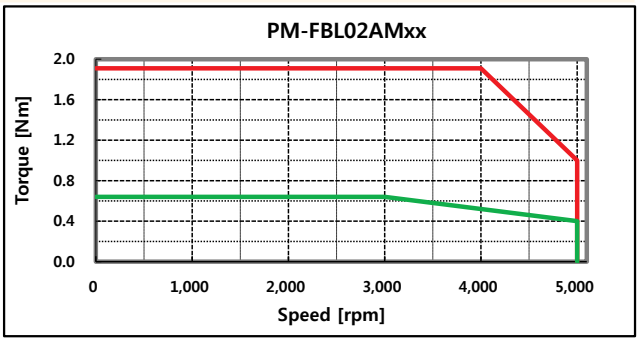
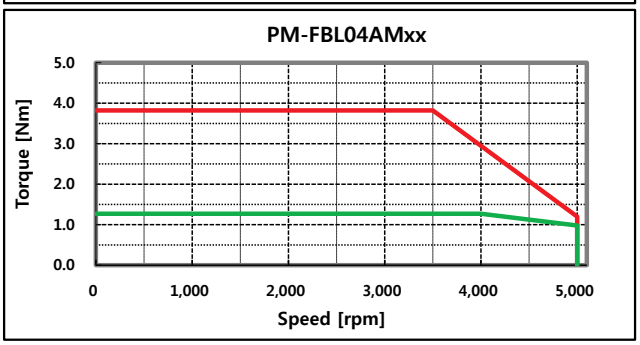
P Series Servo Motors

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-m² x 10-4	3.65	4.79	5.25
	in-lb-sec2 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/s²)		







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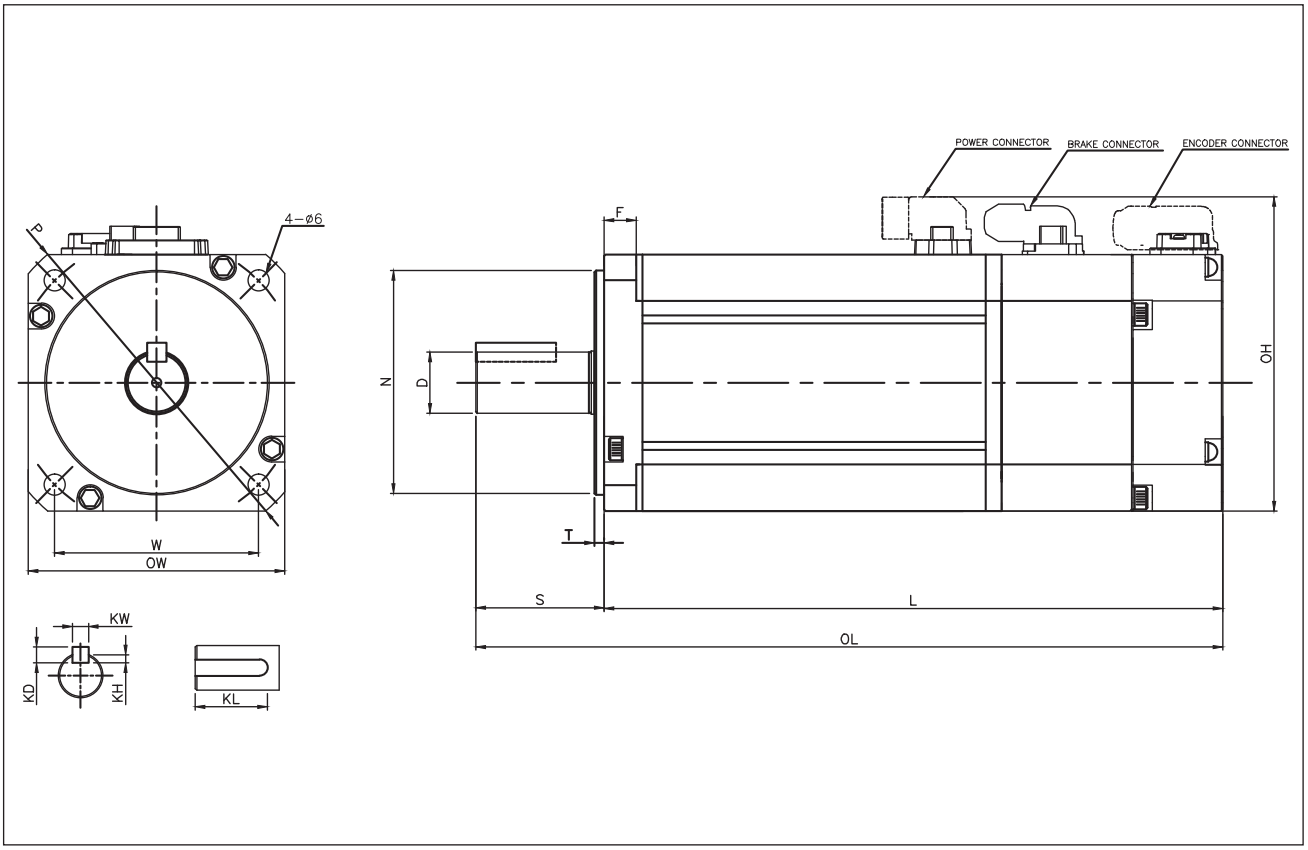
FBL Dimensions



(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											

Notes
* Includes Static Brake
**Bolt Circle Diameter =70mm

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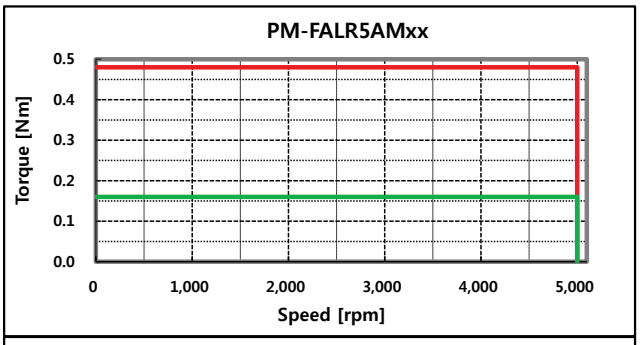
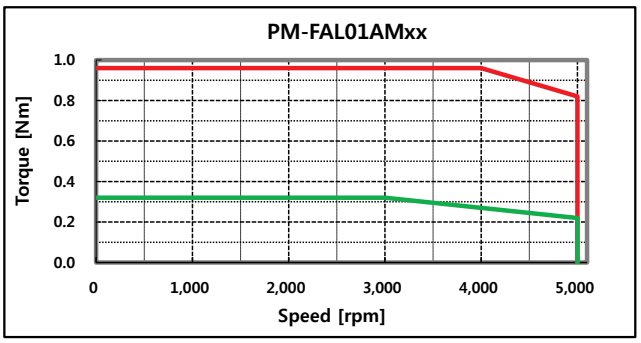
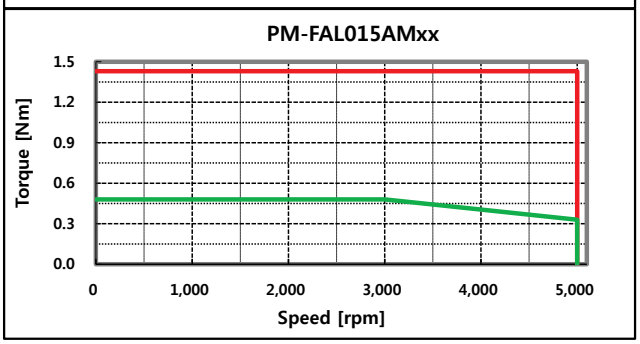
P Series Servo Motors

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-m² x 10-4	0.02	0.05	0.06
	in-lb-sec2 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
Protection		IP67 (body and connectors, not shaft)		
Standards		CE (EMC, LVD), UL (pending)		
Environmental				
	Temperature	0 - 40 °C		
	Humidity	20-80% non-condensing		
	Shock / Vibration	5G (49m/s²)		







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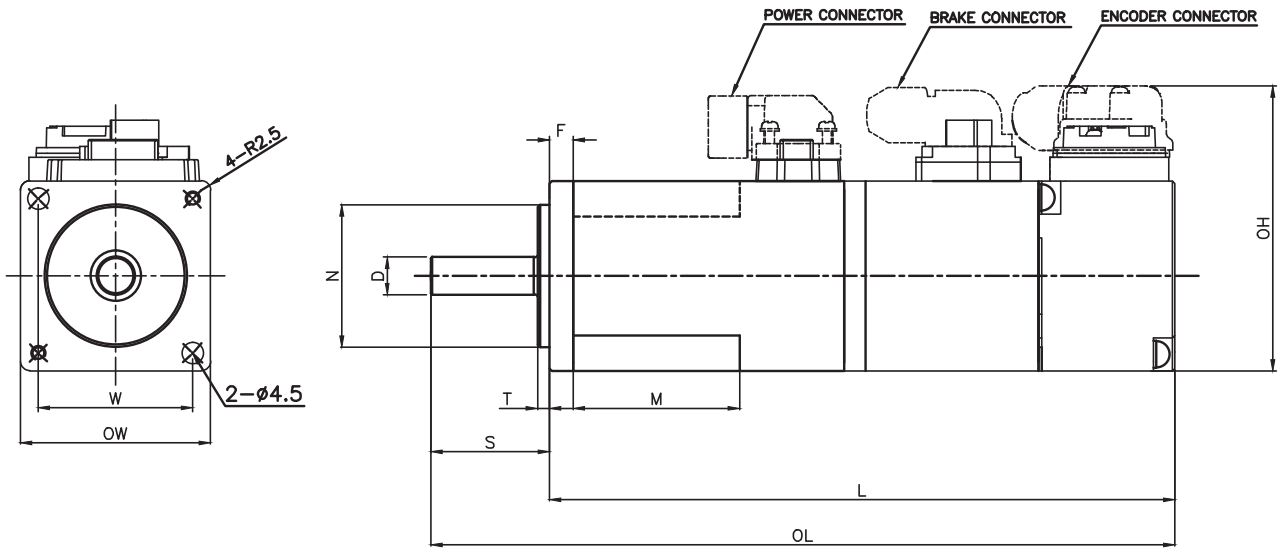
FAL Dimensions



(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

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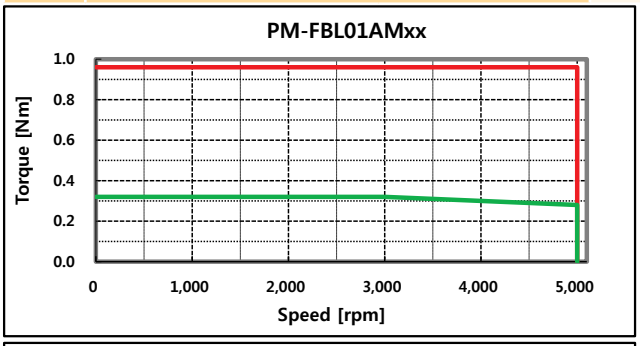
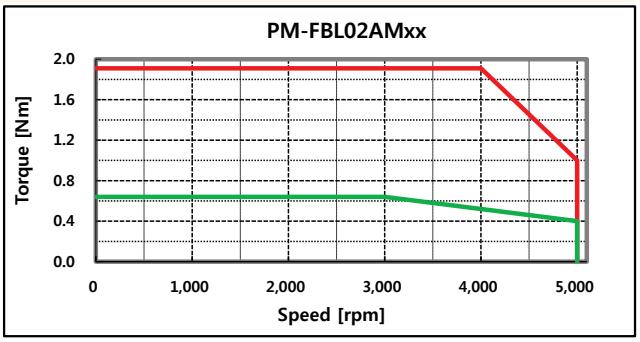
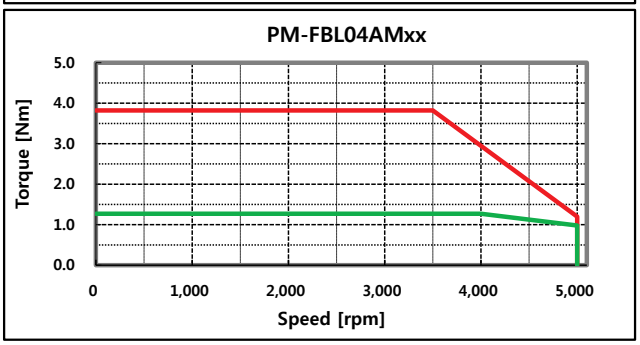
P Series Servo Motors

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-m² x 10-4	3.65	4.79	5.25
	in-lb-sec2 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/s²)		







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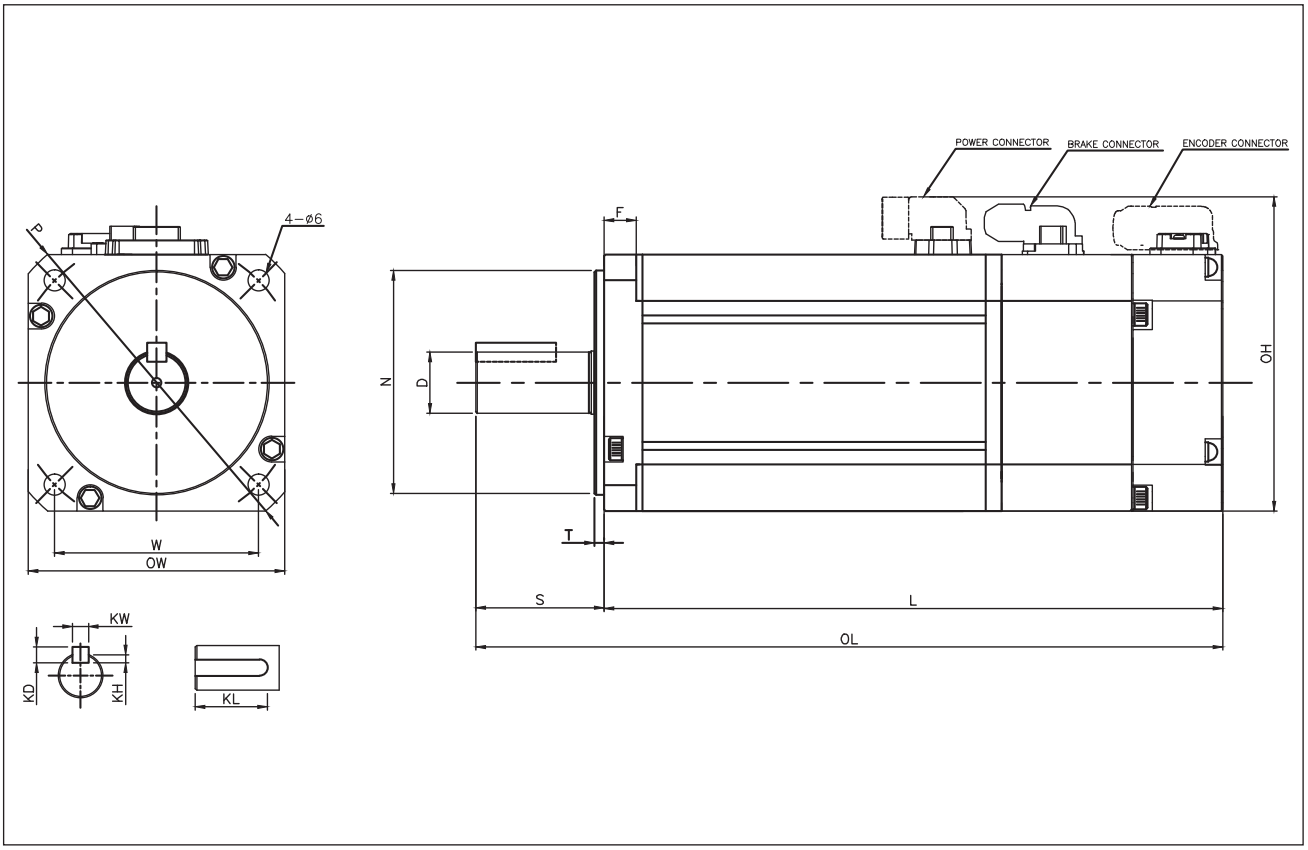
FBL Dimensions



(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											

Notes
* Includes Static Brake
**Bolt Circle Diameter =70mm

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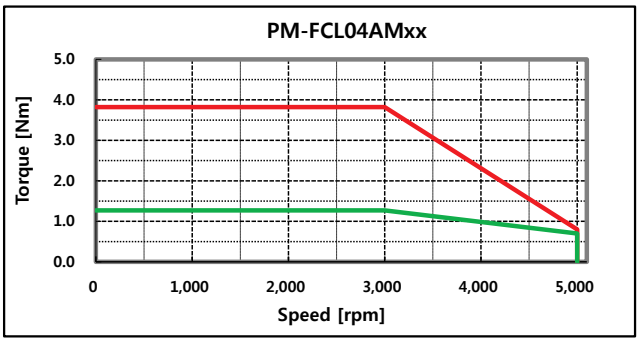
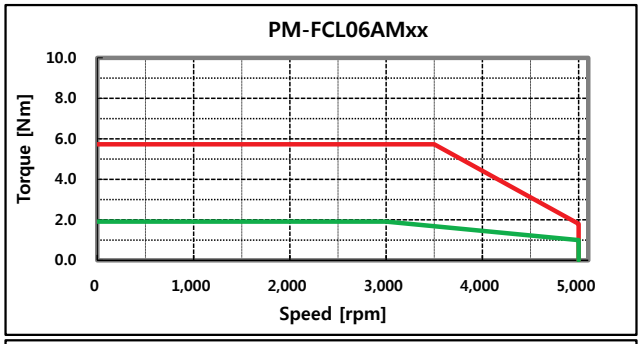
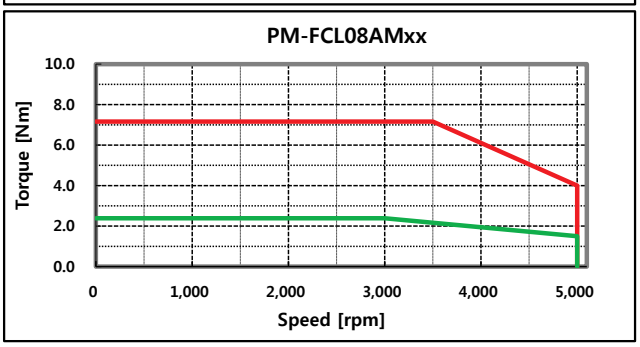
P Series Servo Motors

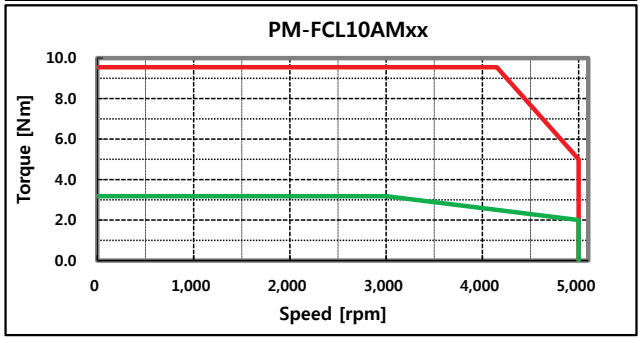
FCL Specifications

		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-m² x 10-4	0.5	0.88	1.25	1.62
	in-lb-sec2 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/s²)			









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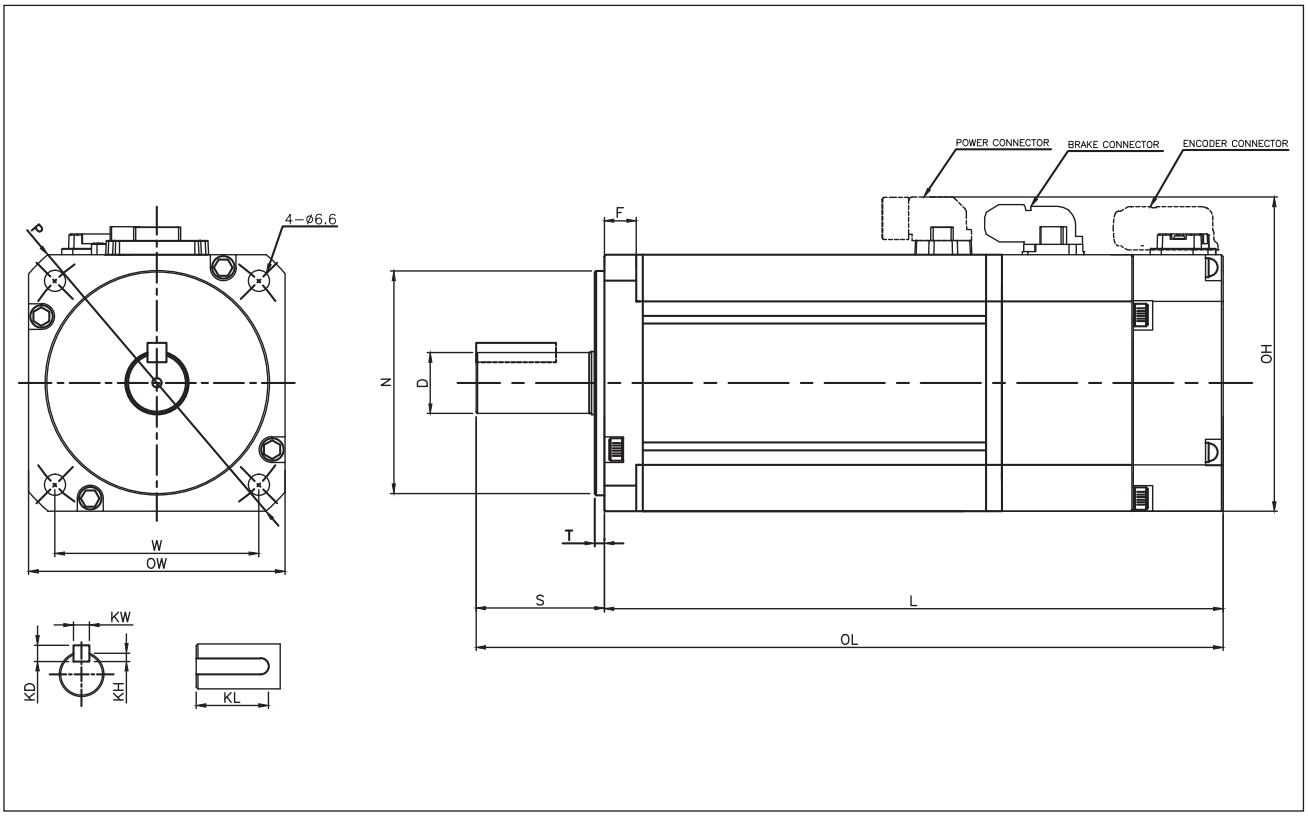
FCL Dimensions



(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											
PM-FCL10AMK			192.7	152.7											
PM-FCL04AMK2*			179	139			14				5	3	5		
PM-FCL06AMK2*			197	157			19				6	3.5	6		
PM-FCL08AMK2*			215	175											
PM-FCL10AMK2*			233	193											

Notes
* Includes Static Brake
**Bolt Circle Diameter =90mm

Solid Models Available for Download parkermotion.com/pseries

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P Series Ordering Information

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

Drive

	①		②	③
Order Example :	P D	-	04	C

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

Motor

	①		②	③	④	⑤	⑥	⑦
Order Example :	P M	-	FBL	04	A	M	K	2

① Series	② Frame Size	③ Rated Power	④ Winding	⑤ Feedback	⑥ Key	⑦ Options
PM	FAL - 40mm	R5 -50W	A - 3000rpm	M8 -18bit BiSS-C	N - none	[ ] - None
		01 -100W				[ ] - None 2 - Brake
		15 -150W				[ ] - None
	FBL - 62mm	01 -100W		M - 19bit BiSS-C	K - keyway	[ ] - None 2 - Brake
		02 -200W				
		04 -400W				
	FCL - 80mm	04 -400W				
		06 -600W				
		08 -800W				
		10 -1000W				

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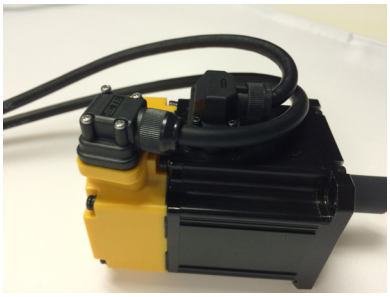
Accessories

	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 availabilty.

Cable Drawings Available for Download parkermotion.com/pseries



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Issue Date 8.6.2015

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