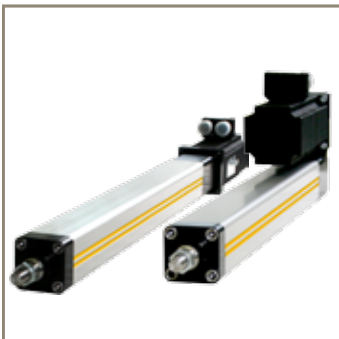
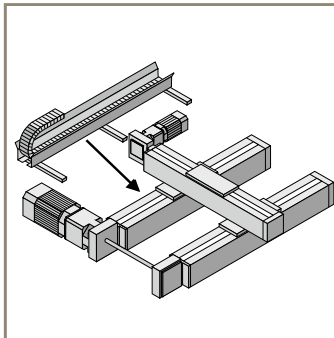




aerospace  
climate control  
**electromechanical**  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



# Parker Economic Servo Package P series



ENGINEERING YOUR SUCCESS.



**WARNING – USER RESPONSIBILITY**

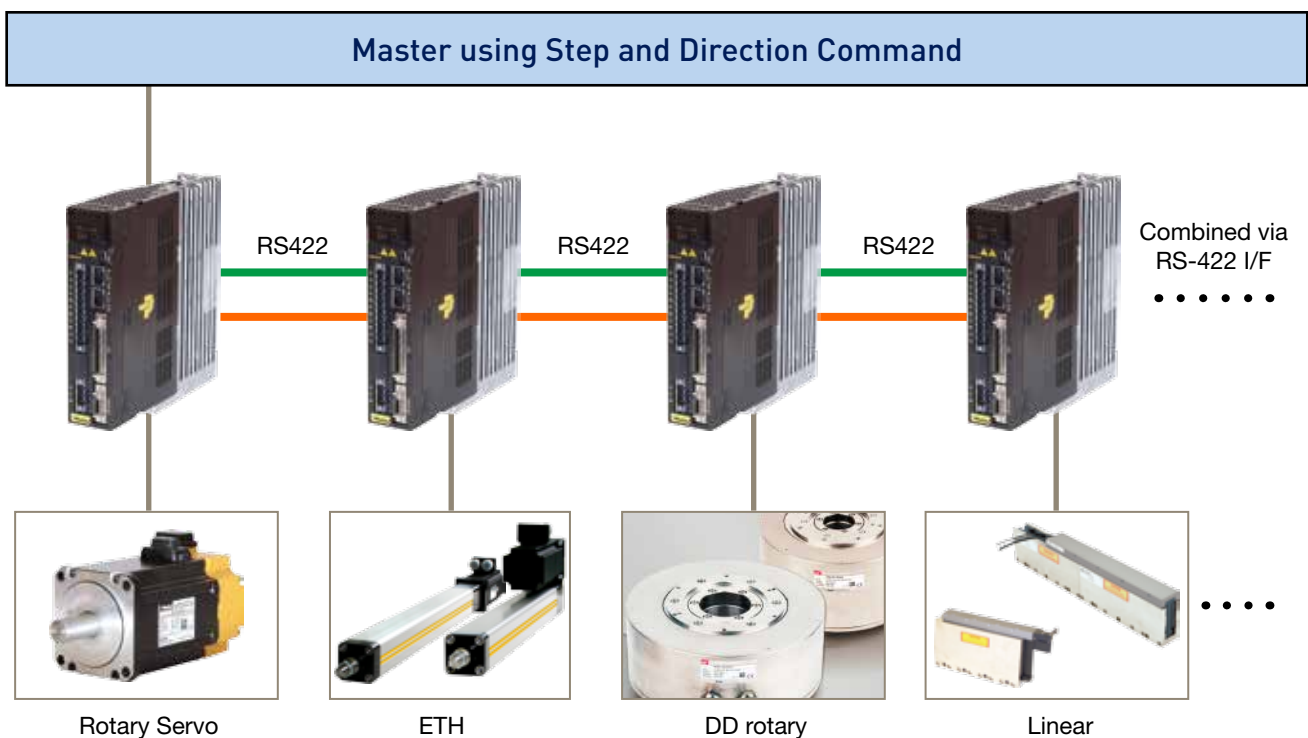
**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components 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, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

# Powerful servo solution

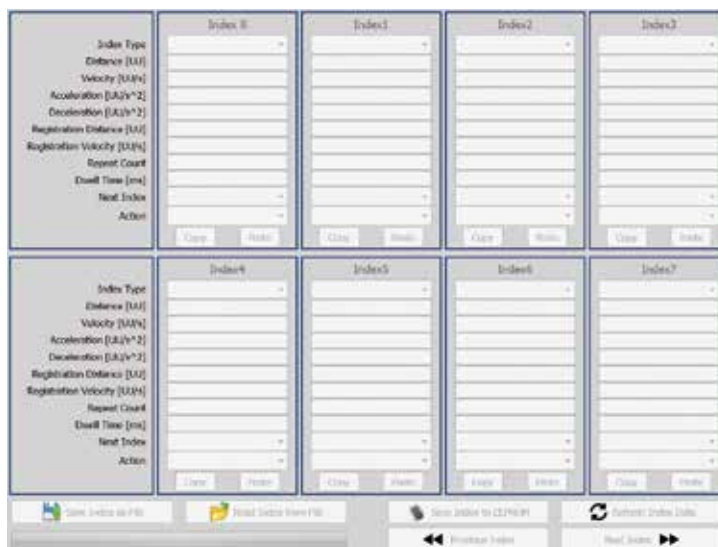
## Main features

- 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



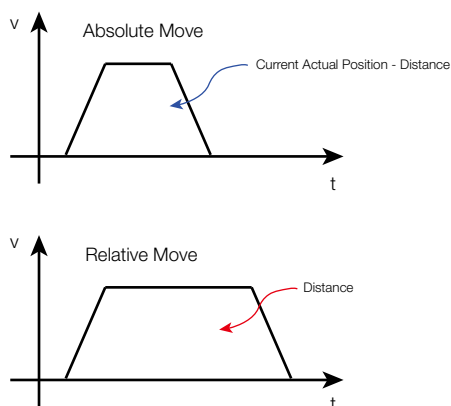
# Pre-defined profile function

- Available 64 profiles

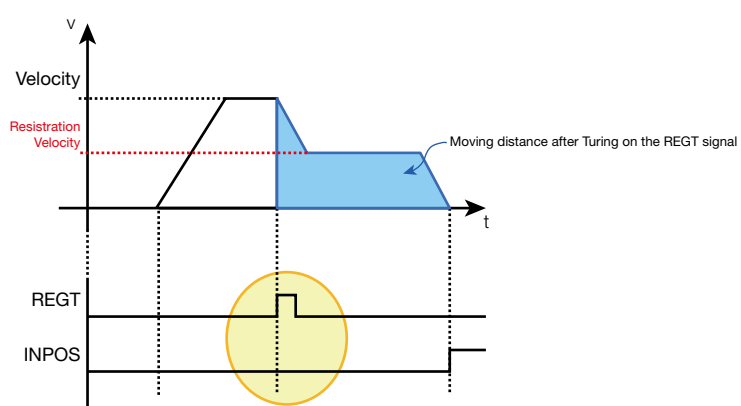


- Variable profile mode

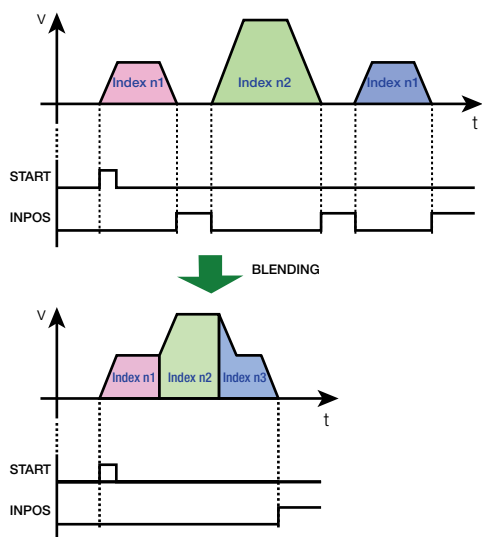
## - Absolute/Relative move



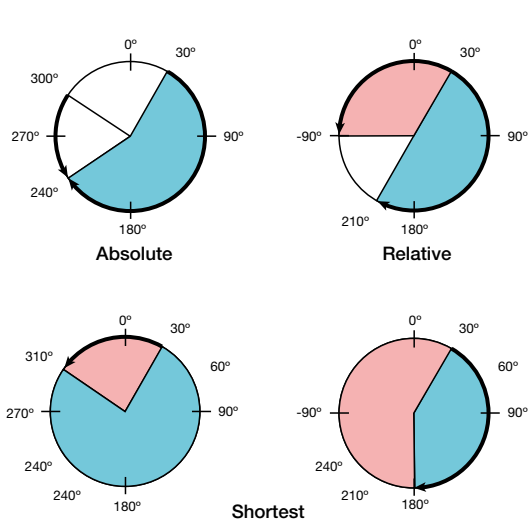
## - Registration Absolute/Relative move



## - Blending Absolute/Relative move

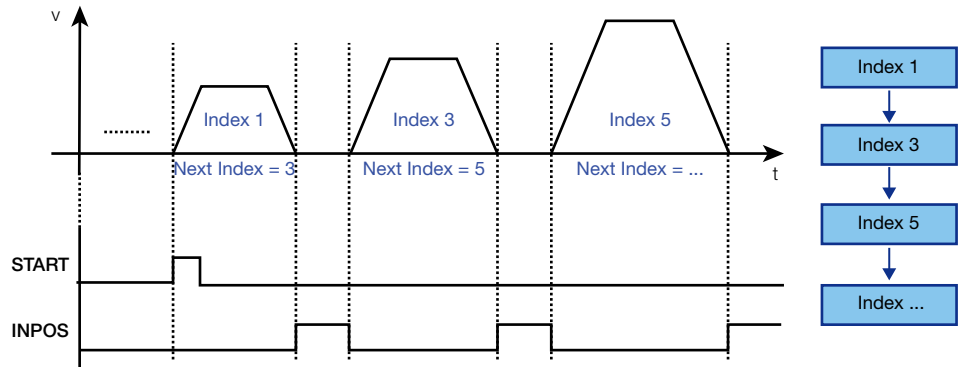


## - Rotary Absolute/Relative/Shortest move



### • Loop method

- Go to Next Index
- Wait for Start
- Stop

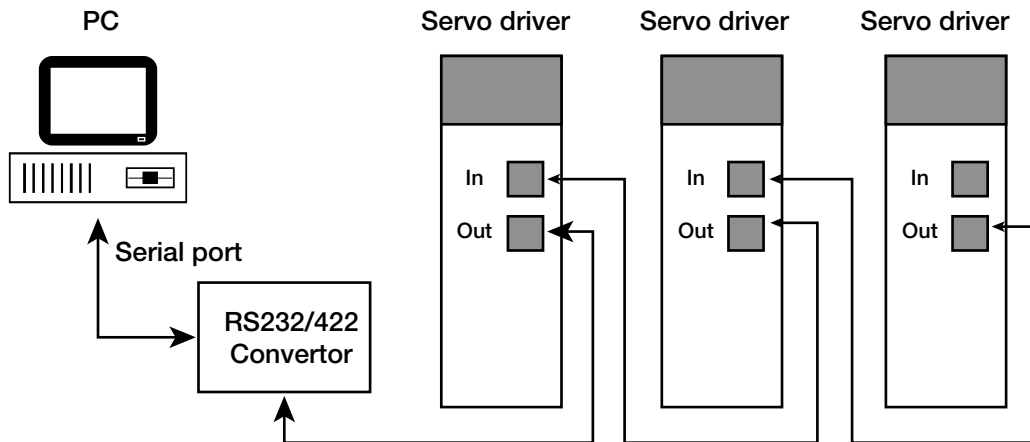


### • I/O control

- 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

# Servo Drive

## Technical Data

Motor Output Power	PD-01	PD-02	PD-04	PD-08
Shaft Power @ Continuous Current	100 Watts	200 Watts	400 Watts	800 Watts
Shaft Power @ Peak Current	300 Watts	600 Watts	1,200 Watts	2,400 Watts
Drive Output Power				
Continuous Current (RMS)	1.4 Amps	1.7 Amps	3.0 Amps	5.2 Amps
Peak Current (RMS)	4.2 Amps	5.1 Amps	9.0 Amps	15.6 Amps
Bus Voltage	340VDC			
Drive Input Voltage	230 VAC, 3Ø, 50/60Hz			
Drive Control Voltage	230 VAC, 1Ø, 50/60Hz			

Motor Output Power	PD-10	PD-20	PD-35	
Shaft Power @ Continuous Current	1,000 Watts	2,000 Watts	3,500 Watts	
Shaft Power @ Peak Current	3,000 Watts	6,000 Watts	10,500 Watts	
Drive Output Power				
Continuous Current (RMS)	6.75 Amps	13.5 Amps	16.7 Amps	
Peak Current (RMS)	20.25 Amps	40.5 Amps	50.1 Amps	
Bus Voltage	340Vdc			
Drive Input Voltage	230 VAC, 3Ø, 50/60Hz			
Drive Control Voltage	230 VAC, 1Ø, 50/60Hz			

Performance				
Servo update	62.5µ seconds			
Accuracy	± 1 encoder count ; encoder dependent			
Communication	Sinusoidal			

Input				
Command	Step and direction, CW and CCW (Position control)			
Enable / Reset	12-24VDC			
Encoder	Quadrature Incremental encoder, BiSS-C (absolute) encoder, EnDAT 2.2, SinCos			

Output				
Fault	24VDC, 120mA			
Brake	Solid state, normally open, 1Amp @ 24VDC max			
Encoder Out	RS-422 compatible differential driver			

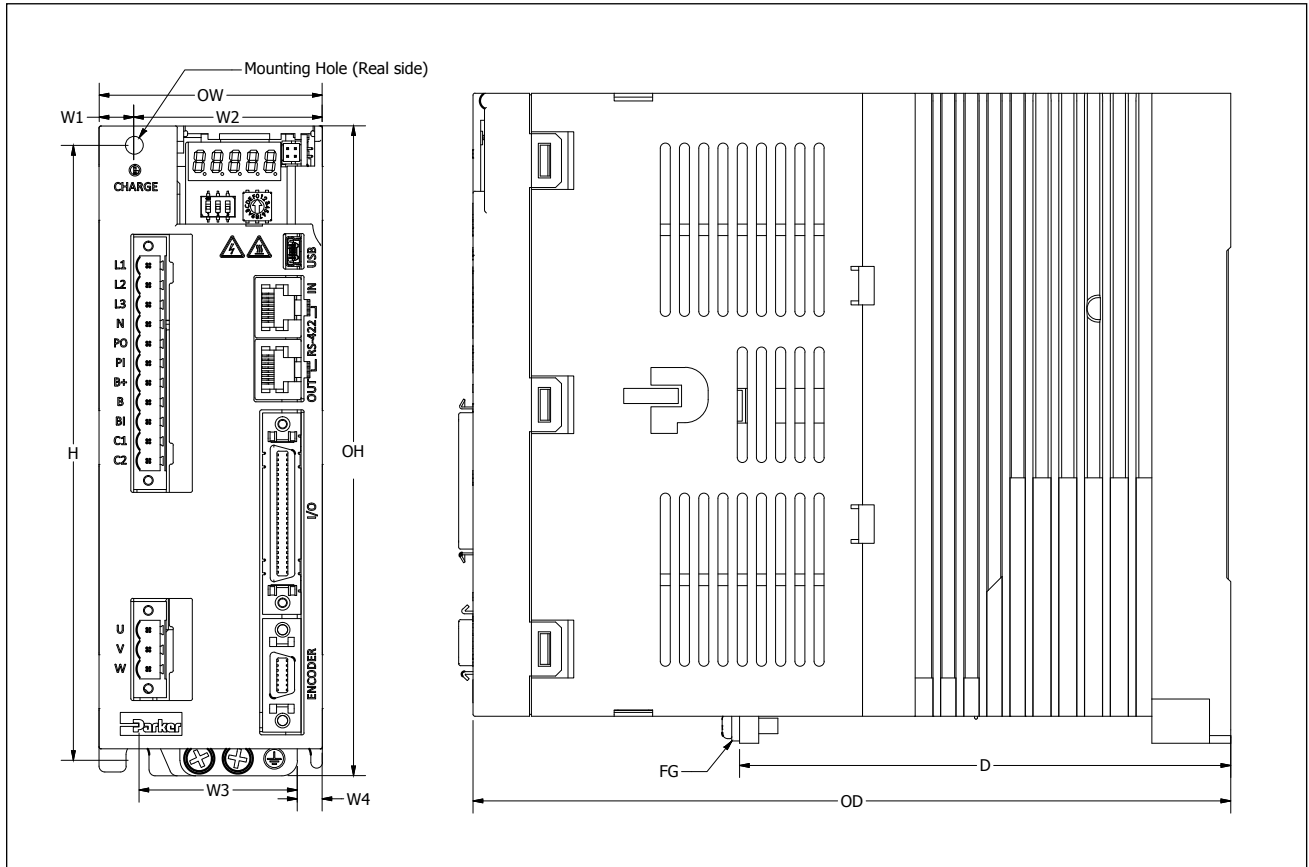
I/O				
Digital input	16-channel, +24V common, selectable			
Digital output	8-channel, Differential (Isolated), selectable			
Analog input	2-channel, ±10V (max.), 12bits			
Analog output	2-channel, ±10V (max.), selectable, 12bits			

Communications				
Type	USB 2.0 for firmware upload and drive configuration RS422 for operation interface			
Standard	ANSI/ TIA/ EIA-422 standard			
Baud Rate	9,600/ 19,200/ 38,400/ 57,600/ 115,200 bps			

Standards				
	CE, RoHS			

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-01 ~ 04	PD-08 / 10	PD-20 / 35
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

**Note)**

- This is for your reference only. For exact dimension, please refer to the drawing file available from [http://solutions.parker.com/AUG\\_EM](http://solutions.parker.com/AUG_EM).
- Specification subject to change without notice.



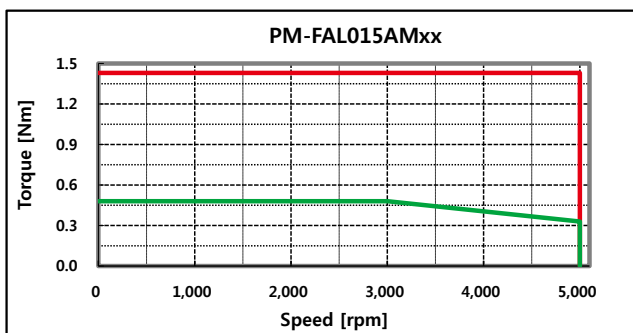
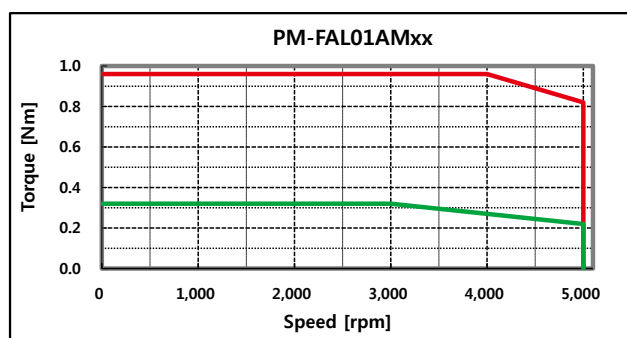
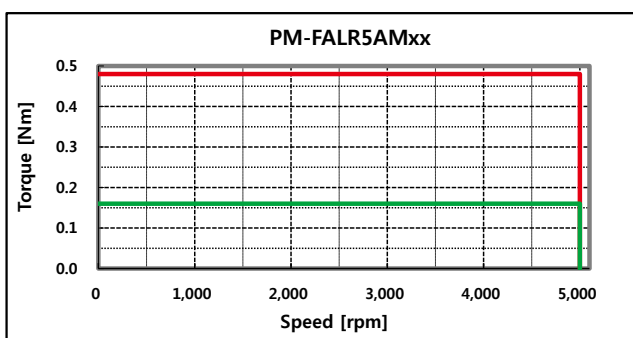
# Servo Motor (FAL Series Motor)

## Technical Data

Motor Output Power		PM-FALR5AMxx	PM-FAL01AMxx	PM-FAL015AMxx
Rated Output Power		50 Watts	100 Watts	150 Watts
Motor Output Torque				
Rated Torque	N-m	0.16	0.32	0.48
	kgf-cm	1.62	3.25	4.87
Instantaneous Peak Torque	N-m	0.48	0.96	1.43
	kgf-cm	4.87	9.74	14.62
Motor Speed				
Rated Speed		3000 rpm		
Peak Speed		5000 rpm		
Moment of Inertia	kg-m <sup>2</sup> x 10 <sup>-4</sup>	0.02	0.05	0.06
	gf-cm-s <sup>2</sup>	0.02	0.05	0.07
Available Moment of Load Inertia		Motor Inertia x 30		x 20
Position Feedback		BiSS-C Interface – 18bit		
Weight		0.4kg	0.5kg	0.7kg

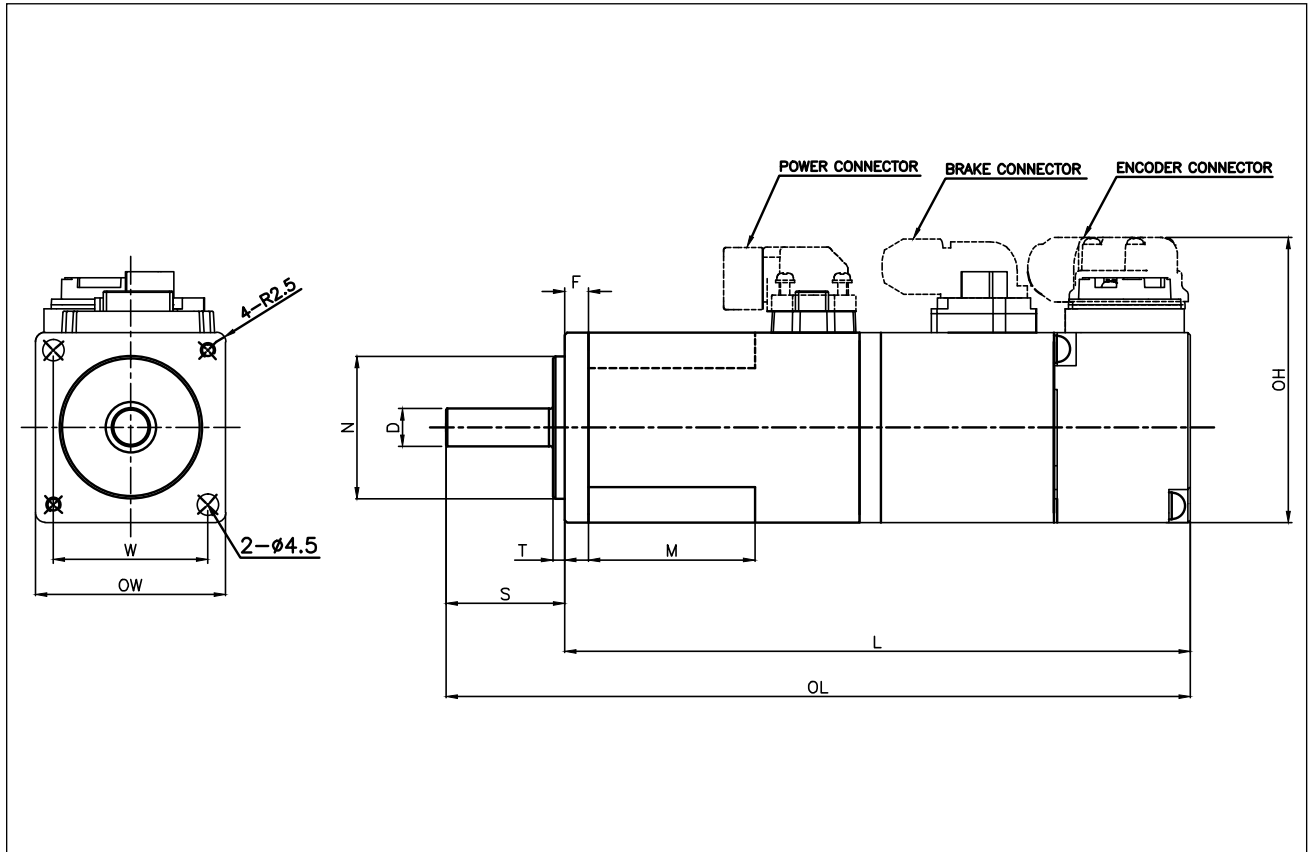
Standards	CE
-----------	----

Environmental				
Temperature		0 - 40 °C		
Humidity		20-80% non-condensing		
Shock / Vibration		5G (49m/s <sup>2</sup> )		





## Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	M	S	T
PM-FALR5AMN	40	60	103.2	78.2	30	32.5	8	5	23	25	2.5
PM-FAL01AMN			120.2	95.2					35		
PM-FAL015AMN			140.2	115.2					35		
PM-FALR5AM2			139.6	114.6					23		
PM-FAL01AM2			156.6	131.6					35		
PM-FAL015AM2			176.6	151.6					35		

Note)

- FAL series are no-key type, Detail drawings and N-T curves are available at [http://solutions.parker.com/AUG\\_EM](http://solutions.parker.com/AUG_EM)
- Specification subject to change without notice.

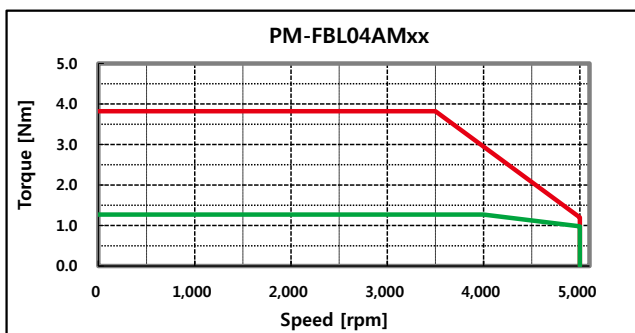
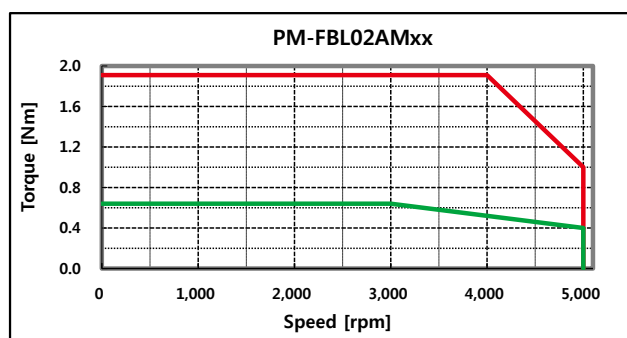
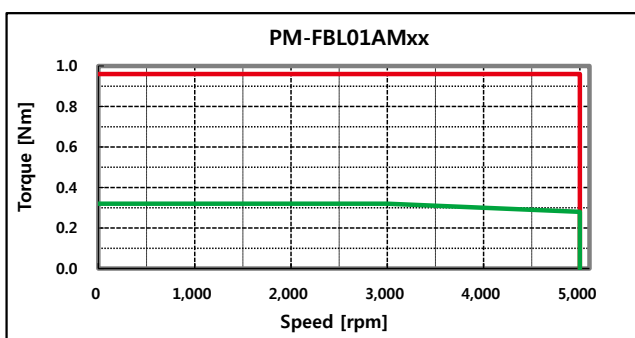
# Servo Motor (FBL Series Motor)

## Technical Data

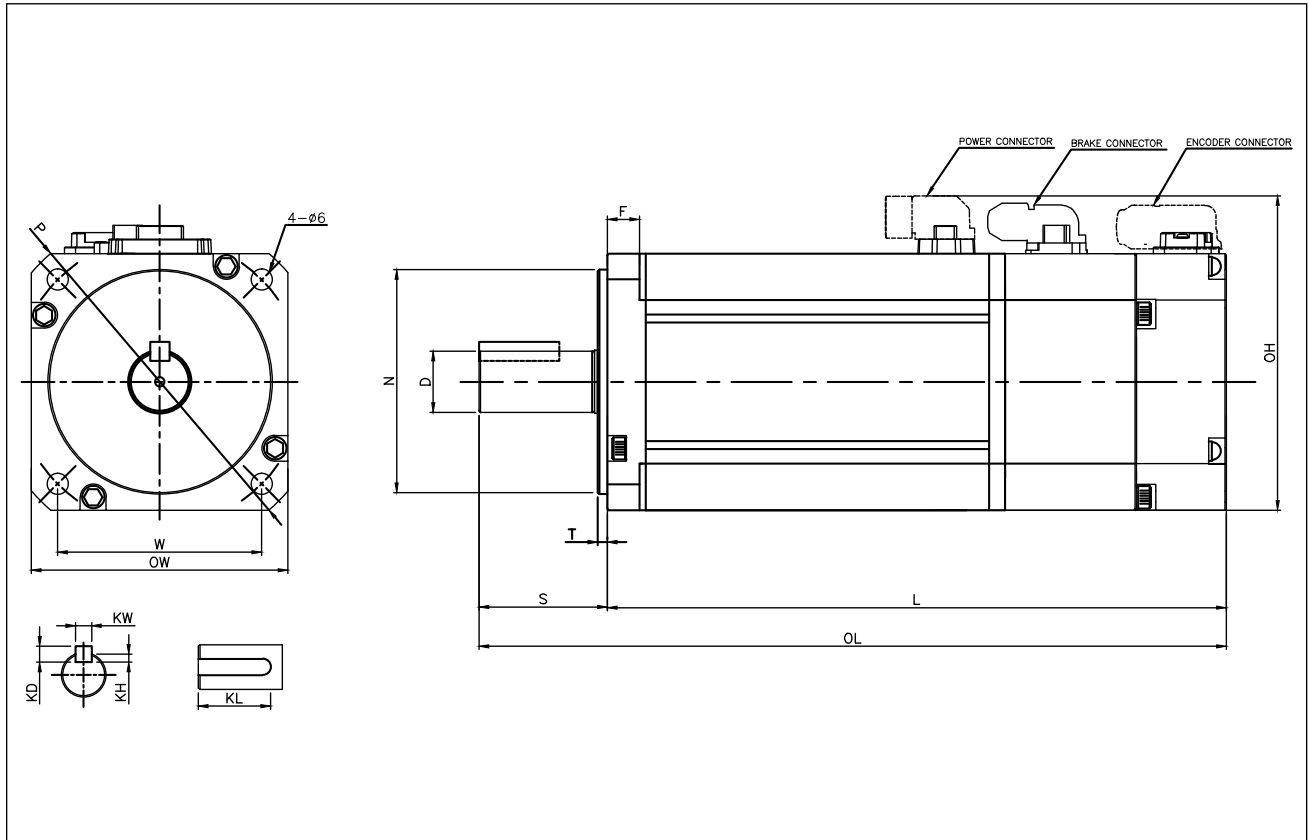
Motor Output Power		PM-FBL01AMxx	PM-FBL02AMxx	PM-FBL04AMxx
Rated Output Power		100 Watts	200 Watts	400 Watts
Motor Output Torque				
Rated Torque	N-m	0.32	0.64	1.27
	kgf-cm	3.25	6.50	12.99
Instantaneous Peak Torque	N-m	0.96	1.91	3.82
	kgf-cm	9.74	19.49	38.98
Motor Speed				
Rated Speed		3000 rpm		
Peak Speed		5000 rpm		
Moment of Inertia	kg-m <sup>2</sup> x 10 <sup>-4</sup>	0.09	0.15	0.25
	gf-cm-s <sup>2</sup>	0.09	0.15	0.25
Available Moment of Load Inertia		Motor Inertia x 20		
Position Feedback		BiSS-C Interface – 19bit		
Weight		0.7kg	0.9kg	1.3kg

Standards	CE
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Environmental				
Temperature		0 - 40 °C		
Humidity		20-80% non-condensing		
Shock / Vibration		5G (49m/s <sup>2</sup> )		



## Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	S	T	KW	KH	KD	KL	P
PM-FBL01AMN	62	80	107.2	77.2	50	49.5	14	6	30	3	5	3	5	22.5	80
PM-FBL02AMN			118.2	88.2											
PM-FBL04AMN			138.2	108.2											
PM-FBL01AMK2			147.2	117.2											
PM-FBL02AMK2			158.2	128.2											
PM-FBL04AMK			178.2	148.2											

Note)

- Detail drawings and N-T curves are available at [http://solutions.parker.com/AUG\\_EM](http://solutions.parker.com/AUG_EM)
- Specification subject to change without notice.

# Servo Motor (FCL Series Motor)

## Technical Data

Motor Output Power		PM-FCL04AMxx	PM-FCL06AMxx	PM-FCL08AMxx	PM-FCL10AMxx
Rated Output Power		400 Watts	600 Watts	750 Watts	1000 Watts
Motor Output Torque					
Rated Torque	N-m	1.27	1.91	2.39	3.18
	kgf-cm	13	19.5	24.36	32.5
Instantaneous Peak Torque	N-m	3.82	5.73	7.16	9.55
	kgf-cm	38.98	58.47	73.08	97.44
Motor Speed					
Rated Speed		3000 rpm			
Peak Speed		5000 rpm			
Moment of Inertia	kg-m <sup>2</sup> x 10 <sup>-4</sup>	0.5	0.88	1.25	1.62
	gf-cm-s <sup>2</sup>	0.51	0.89	1.27	1.65
Available Moment of Load Inertia		Motor Inertia x 15			
Position Feedback		BiSS-C Interface – 19bit			
Weight		1.6kg	2.2kg	2.7kg	3.8kg

### Standards

CE

### Environmental

Temperature

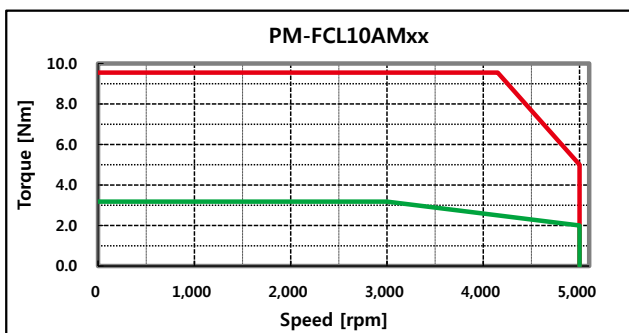
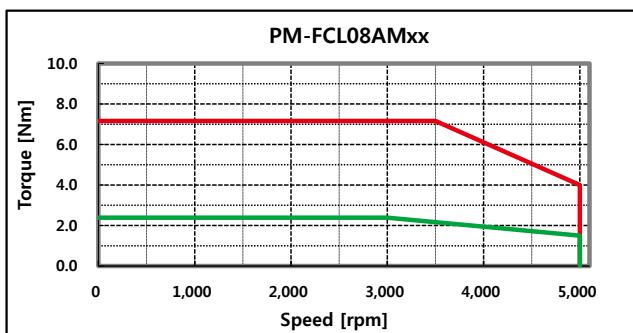
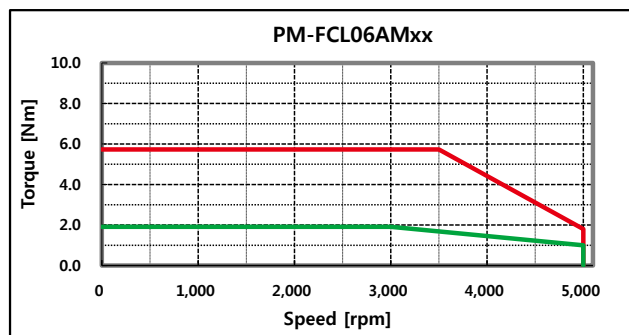
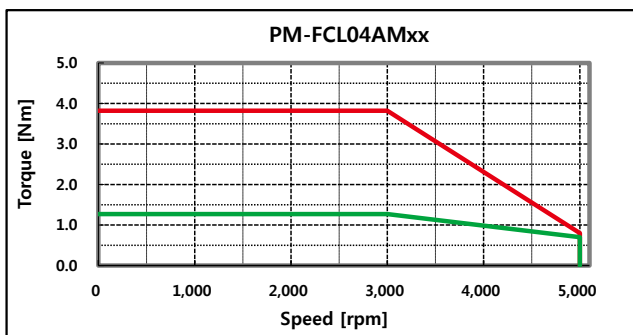
0 - 40 °C

Humidity

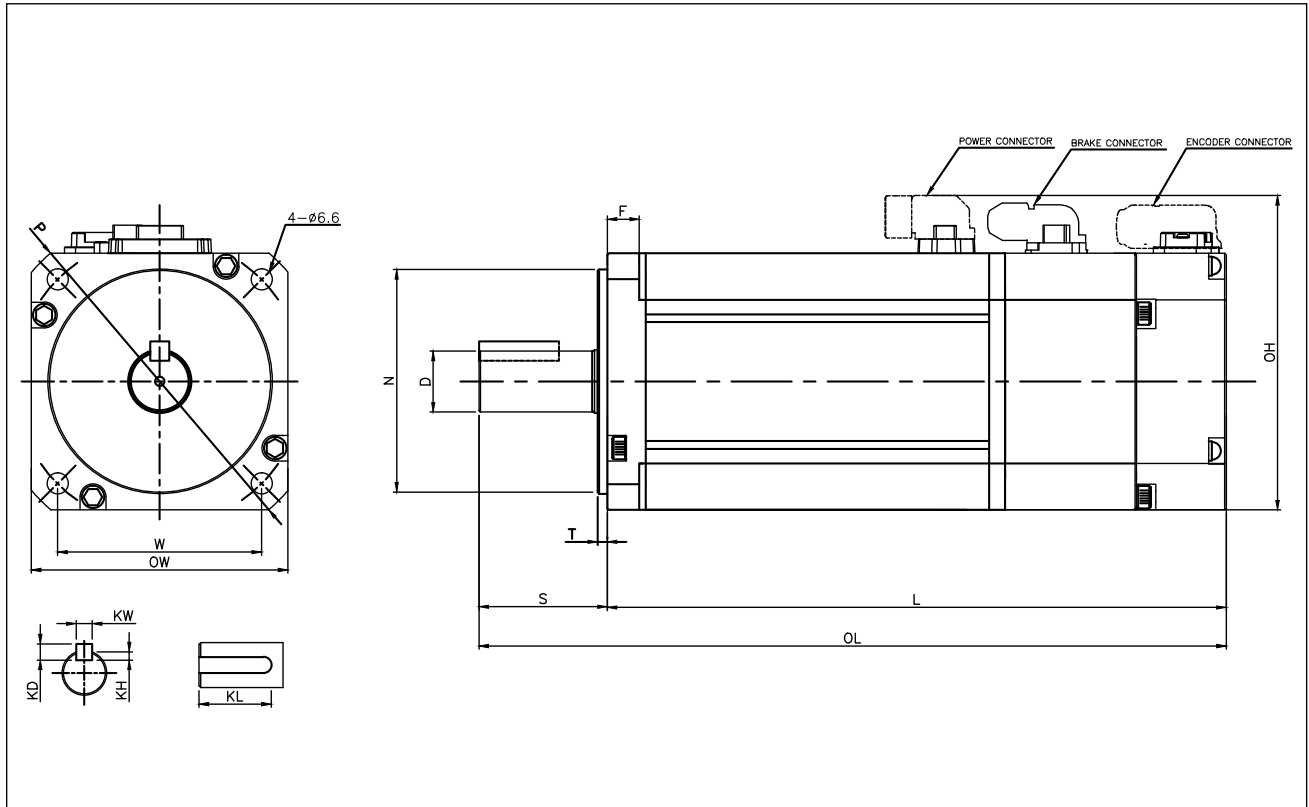
20-80% non-condensing

Shock / Vibration

5G (49m/s<sup>2</sup>)



## Dimensions



(Unit: mm)

	OW	OH	OL	L	N	W	D	F	S	T	KW	KH	KD	KL	P
PM-FCL03DMK PM-FCL04AMK	80	98	138.7	98.7	70	63.6	14	10	40	3	5	3	5	25	105
PM-FCL05DMK PM-FCL06AMK			156.7	116.7			19				6	3.5	6		
PM-FCL06DMK PM-FCL08AMK			174.7	134.7			14				5	3	5		
PM-FCL07DMK PM-FCL10AMK			192.7	152.7			19				6	3.5	6		
PM-FCL03AMK2 PM-FCL04AMK2			179	139			14				5	3	5		
PM-FCL05DMK2 PM-FCL06AMK2			197	157			19				6	3.5	6		
PM-FCL06DMK2 PM-FCL08AMK2			215	175			19				6	3.5	6		
PM-FCL07DMK2 PM-FCL10AMK2			233	193			19				6	3.5	6		

Note)

- Detail drawings and N-T curves are available at [http://solutions.parker.com/AUG\\_EM](http://solutions.parker.com/AUG_EM)
- Specification subject to change without notice.

# Servo Motor (FE Series Motor)

## Technical Data

Motor Output Power		PM-FE09AMxx	PM-FE15AMxx	PM-FE22AMxx	PM-FE30AMxx
Rated Output Power		900 Watts	1500 Watts	2200 Watts	3000 Watts
Motor Output Torque					
Rated Torque	N-m	2.86	4.77	7	9.55
	kgf-cm	29.2	48.7	71.4	97.4
Instantaneous Peak Torque	N-m	8.59	14.32	21.01	28.65
	kgf-cm	87.7	146.1	214.3	292.2
Motor Speed					
Rated Speed		3000 rpm			
Peak Speed		5000 rpm			
Moment of Inertia	kg-m <sup>2</sup> x 10 <sup>-4</sup>	5.66	10.18	14.62	19.04
	gf-cm-s <sup>2</sup>	5.77	10.39	14.92	19.43
Available Moment of Load Inertia		Motor Inertia x 10			
Position Feedback		BiSS-C Interface – 19bit			
Weight		5.0kg	6.7kg	8.5kg	10.1kg

Standards

CE

Environmental

Temperature

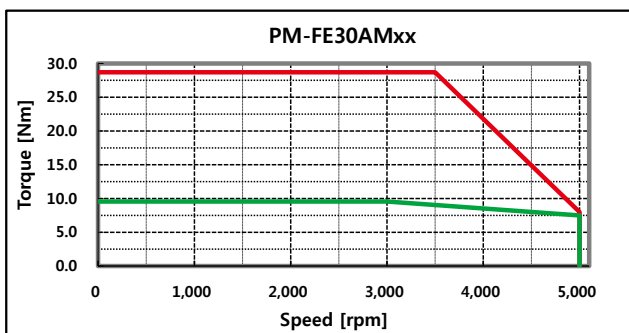
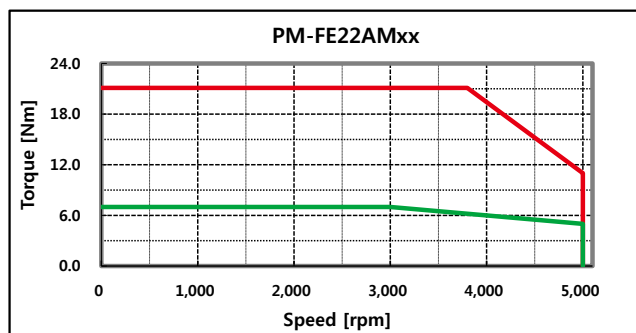
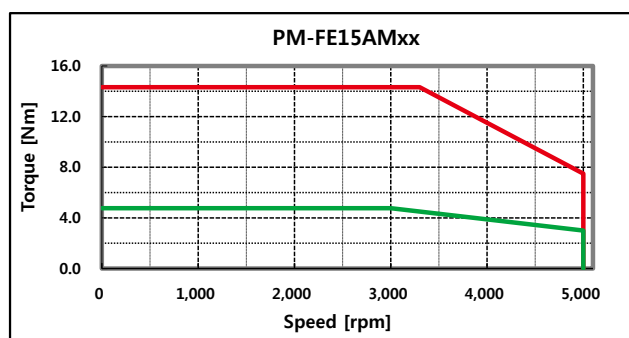
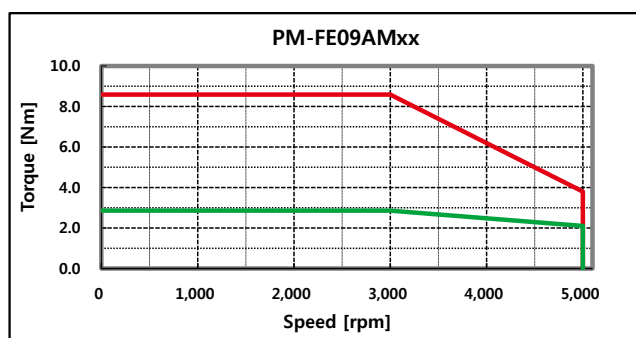
0 - 40 °C

Humidity

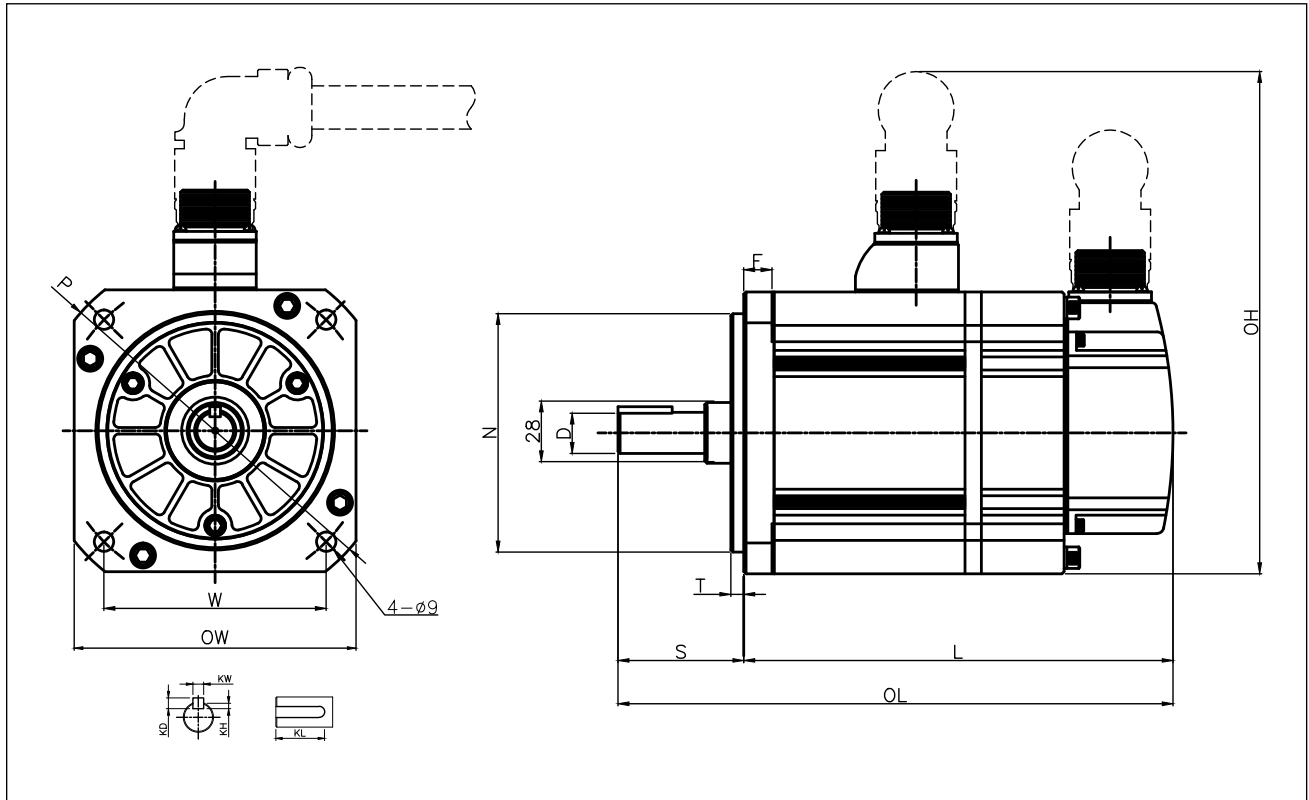
20-80% non-condensing

Shock / Vibration

5G (49m/s<sup>2</sup>)



## 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							6	3.5	6			
PM-FE09MMK PM-FE13GMK PM-FE16DMK PM-FE22AMK			237.3	179.3							22	4	7			
PM-FE12MMK PM-FE17GMK PM-FE22DMK PM-FE30AMK			255.3	197.3							24	8	7			
PM-FE03MMK2 PM-FE05GMK2 PM-FE06DMK2 PM-FE09AMK2			235.3	177.3							19	5	3			5
PM-FE06MMK2 PM-FE09GMK2 PM-FE11DMK2 PM-FE15AMK2			255.3	197.3							22	6	3.5			6
PM-FE09MMK2 PM-FE13GMK2 PM-FE16DMK2 PM-FE22AMK2			275.3	217.3							24	8	4			7
PM-FE12MMK2 PM-FE17GMK2 PM-FE22DMK2 PM-FE30AMK2			293.3	235.3							24	8	4			7

Note)

- Detail drawings and N-T curves are available at [http://solutions.parker.com/AUG\\_EM](http://solutions.parker.com/AUG_EM)
- Specification subject to change without notice.



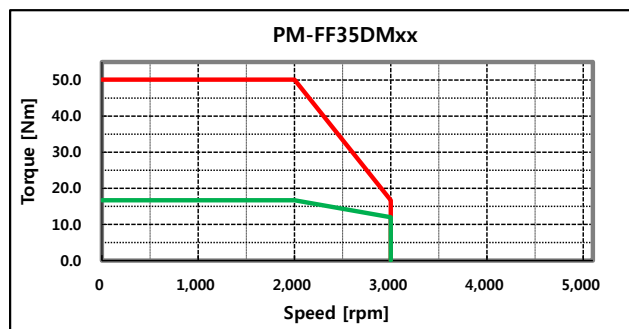
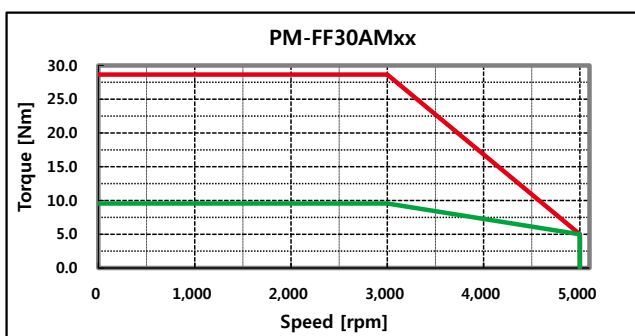
# Servo Motor (FF Series Motor)

## Technical Data

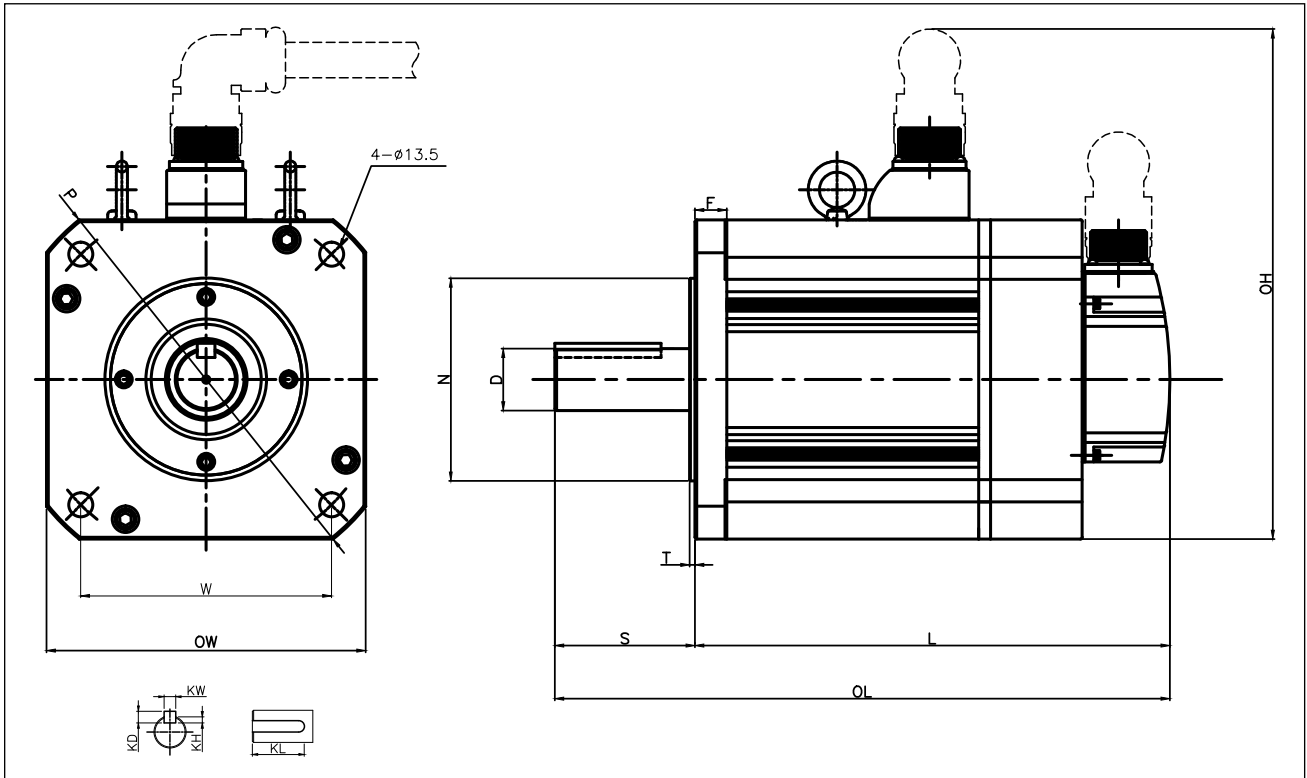
Motor Output Power			PM-FF30AMxx	PM-FF35DMxx
	Rated Output Power		3000 Watts	3500 Watts
Motor Output Torque				
	Rated Torque	N-m	9.55	16.70
		kgf-cm	97.4	170.4
	Instantaneous Peak Torque	N-m	28.65	50.10
		kgf-cm	292.3	511.40
Motor Speed				
	Rated Speed		3000 rpm	2000 rpm
	Peak Speed		5000 rpm	3000 rpm
Moment of Inertia		kg-m <sup>2</sup> x 10 <sup>-4</sup>	27.96	46.56
		gf-cm-s <sup>2</sup>	28.53	47.51
Available Moment of Load Inertia			Motor Inertia x 5	
Position Feedback			BiSS-C Interface – 19bit	
Weight			12.5kg	17.4kg

Standards	CE
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Environmental		
	Temperature	0 - 40 °C
	Humidity	20-80% non-condensing
	Shock / Vibration	5G (49m/s <sup>2</sup> )



## 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](http://solutions.parker.com/AUG_EM)
- Specification subject to change without notice.

# Ordering Code

## Motor

<b>P M-F</b>	<b>BL</b>	<b>04</b>	<b>A</b>	<b>M</b>	<b>K</b>	<b>2</b>
	↓	↓	↓	↓	↓	↓
	<b>Flange size</b>	<b>Shaft Power</b>	<b>Rated Speed (RPM)</b>	<b>Encoder</b>	<b>Shaft Key</b>	<b>Oil seal, Brake</b>
	AL 40mm	R5 50W	A* 3,000rpm	M BiSS-C Multi Turn	N No key	Omit No oil
	BL 62mm	01 100W	D 2,000rpm		K Shaft key	Seal and Brake
	CL 80mm	02 200W	G 1,500rpm			1 Oil seal
	E 130mm	... ..	M 1,000rpm			2 Brake
	F 180mm	35 3,500W				3 Both

\* : Standard

## Drive

<b>P D</b>	-	<b>04</b>	<b>P</b>
		↓	↓
		<b>Power</b>	<b>Control Interface</b>
		04 400W	P Pulse type
		10 1,000W	
		35 3,500W	

## Cable

<b>APCS</b>	-	<b>P</b>	<b>N</b>	<b>03</b>	<b>LS</b>
		↓	↓	↓	↓
		<b>Cable</b>	<b>Cable type</b>	<b>Cable length</b>	<b>Option code</b>
		P Power Cable	N Standard (Normal Application)	03 3m	BxxxQS FxL Series Brake Cable
		E Encoder Cable	F High Flex (Robot Application)	05 5m	PxxxLS FxL Series Power Cable
		B Brake Cable		10 10m	PxxxHS FE Series Power Cable
				20 20m	PxxNB FE Series Brake Type Power Cable
					PxxIS FF Series(up to 3.5kW) Power Cable
					PxxPB FF Series(up to 3.5kW) Brake Type Power Cable
					PxxJS FF Series(up to 5.0kW) Power Cable
					PxxLB FF Series(up to 5.0kW) Brake Type Power Cable
					ExxES FxL Series Single-turn Encoder Cable
					ExxES1 FxL Series Multi-turn Encoder Cable
					ExxDS FE/FF Series Single-turn Encoder Cable
					ExxDS1 FE/FF Series Multi-turn Encoder Cable

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