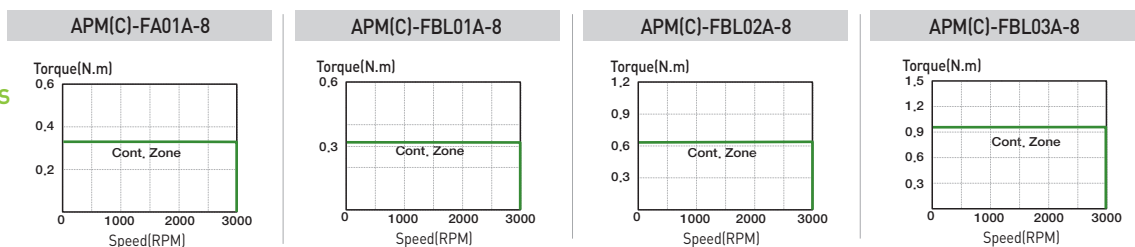


PHOX DC Drive Motor Specification

Servo Motor (APM(C)-□□□□□-8)		FAL01A-8	FBL01A-8	FBL02A-8	FBL03A-8
Applicable Drive		PHOX-03		PHOX-06	
Flange Size(□)		□40	□60	□60	□60
Rated Output	[kW]	0.1	0.1	0.2	0.3
	[N · m]	0.32	0.32	0.64	0.95
Rated Torque	[kgf · cm]	3.25	3.25	6.49	9.74
	[A]	2.71	2.5	5.54	6.79
Rated Current	[A]	2.71	2.5	5.54	6.79
Rated Speed	[r/min]	3000			
Inertia	[kg · m ² X10 ⁻⁴]	0.42	0.091	0.147	0.248
	[gf · cm · s ²]	0.43	0.093	0.15	0.2353
Allowable Load Inertia Ratio		30 times of motor inertia		20 times of motor inertia	
Rated Power Rate	[kW/s]	24.24	11.13	27.57	36.81
Speed/Position Detector	Standard	Serial Multi-Turn Built-In Type(18bit)			
	Option	X			
Specifications & Features	Structure	Fully closed · Self cooling IP67 ^{Note1)}			
	Rated Time	Continuous			
	Ambient Temp	Operating : 0 ~ 40[°C] Storage : -10 ~ 60[°C]			
	Ambient Humidity	Operating : Below80[%]RH / Storage : Below 90[%]RH(avoid dew-condensation)			
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.			
	E/V	Elevation/vibration 49[m/s ²][5G]			

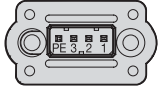
Note1) Except for axis penetration, when you attach reducer to the motor, we don't guarantee IP for reducer. If you bend over specification designated in cable standard, it is difficult to guarantee IP marked. It can be satisfied protection grade when you use private cable only.

Speed-Torque Characteristics



FAL Series

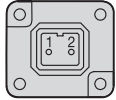
Plug Specifications



Power

Pin No.	Signal
1	U
2	V
3	W
4	Ground

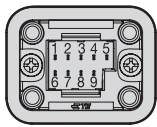
(Power Connector Pin Table)



Brake

Pin No.	Signal
1	BK+
2	BK-

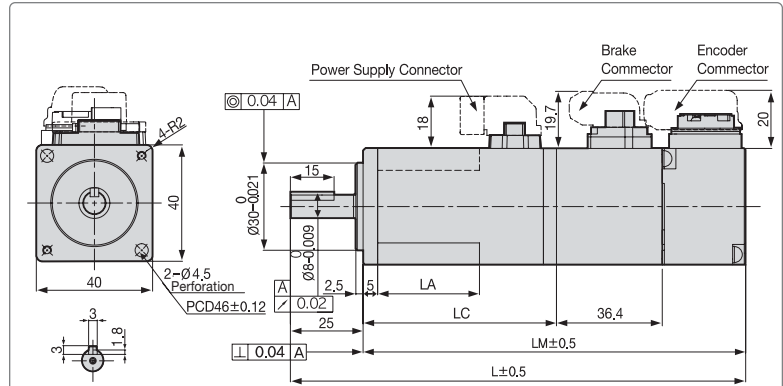
(Brake Connector Pin Table)



Encoder

Multi Turn (M)	
Pin No.	Signal
1	MA
2	SLO
3	-
4	OV
5	SHIELD
6	MA
7	SLO
8	-
9	+5V

(Encoder Connector Pin Table)



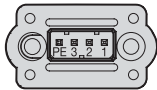
(Cross section of shaft key)

Model	External Dimensions(mm)				Weight(kg)
	L	LM	LC	LA	
FALR5A	103.2(139.6)	78.2(114.6)	49.5	23	0.31(0.66)
FAL01A	120.2(156.6)	95.2(131.6)	66.5	35	0.45(0.80)
FAL015A	140.2	115.2	86.5	35	0.61

Note1) Use DC[24V] for brake input power supply. **Note2)** The () is for brake-attached type. **Note3)** For external dimensions for oil-sealed type. Please kindly contact us separately.

FBL Series

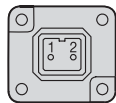
Plug Specifications



Power

Pin No.	Signal
1	U
2	V
3	W
4	Ground

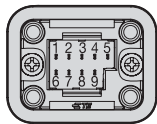
(Power Connector Pin Table)



Brake

Pin No.	Signal
1	BK+
2	BK-

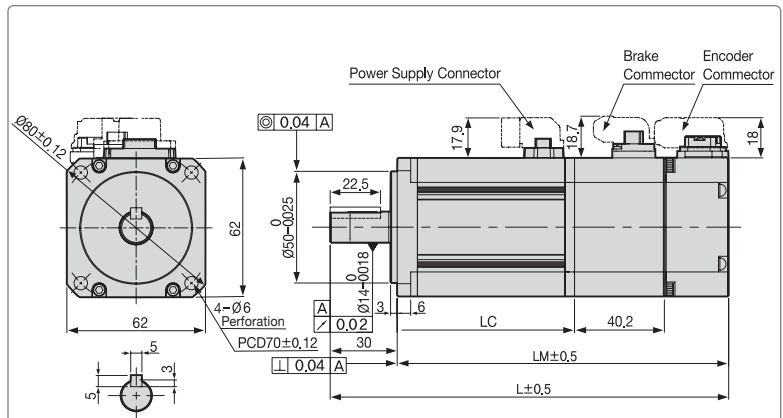
(Brake Connector Pin Table)



Encoder

Multi Turn (M)	
Pin No.	Signal
1	MA
2	SLO
3	GND_B
4	OV
5	SHIELD
6	MA
7	SLO
8	VDD_B
9	+5V

(Encoder Connector Pin Table)



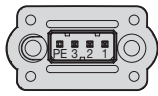
(Cross section of shaft key)

Model	External Dimensions(mm)						Key			Weight (kg)
	L	LM	LC	S	H	T	W	U		
FBL01A	107.2(147.2)	77.2(117.2)	48.5(48.3)	14	-0.018	5	5	3	0.56(1.3)	
FBL02A	118.2(158.2)	88.2(128.2)	59.5(59.3)	14	-0.018	5	5	3	0.74(1.48)	
FBL04A	138.2(178.2)	108.2(148.2)	79.5(79.3)	14	-0.018	5	5	3	1.06(1.8)	

Note1) Use DC[24V] for brake input power supply. **Note2)** The () is for brake-attached type. **Note3)** For external dimensions for oil-sealed type. Please kindly contact us separately.

FCL Series

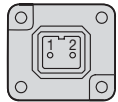
Plug Specifications



Power

Pin No.	Signal
1	U
2	V
3	W
PE	Ground

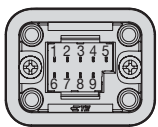
[Power Connector Pin Table]



Brake

Pin No.	Signal
1	BK+
2	BK-

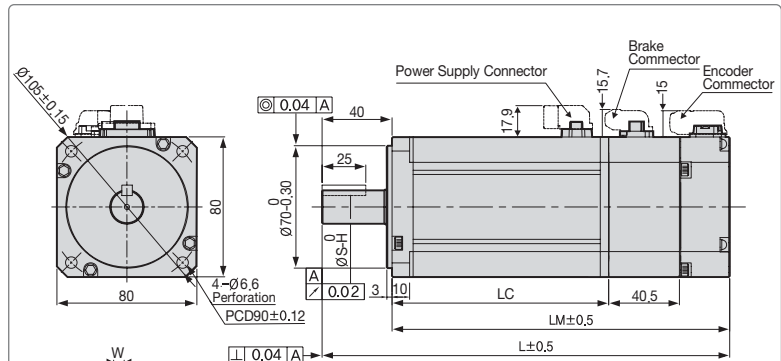
[Brake Connector Pin Table]



Encoder

Multi Turn (M)	
Pin No.	Signal
1	MA
2	SLO
3	GND_B
4	OV
5	SHIELD
6	MA
7	SLO
8	VDD_B
9	+5V

[Encoder Connector Pin Table]



(Cross section of shaft key)

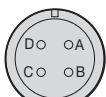
Model	External Dimensions(mm)							Weight(kg)	
	L	LM	LC	S	H	T	W		U
FCL04A, FCL03D	138.7(179.5)	98.7(139.5)	70(69.8)	14	-0.018	5	5	3	1.52(2.32)/1.26(2.06)
FCL06A, FCL05D	156.7(197.5)	116.7(157.5)	88(87.8)	19	-0.021	6	6	3.5	2.14(2.94)/2.12(2.92)
FCL08A, FCL06D	174.7(215.5)	134.7(175.5)	106(105.8)	19	-0.021	6	6	3.5	2.68(3.48)/2.66(3.46)
FCL10A, FCL07D	192.7(233.5)	152.7(193.5)	124(123.8)	19	-0.021	6	6	3.5	3.30(4.10)/2.78(3.58)

Note1) Use DC[24V] for brake input power supply. Note2) The [] is for brake-attached type. Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

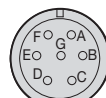
FE, FEP Series

Plug Specifications

[Power]



Spec.: MS3102A20-4P
(Standard)



Spec.: MS3102A20-15P
(Brake-attached type)

Power

Pin No.	Signal
A	U
B	V
C	W
D	Ground

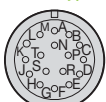
Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BKPin

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	-	H	+5V
F	-	G	0V
K	-	J	SHIELD
L	-	-	-

[Single Turn Encoder Connector Pin Table]

[Encoder]

Serial type

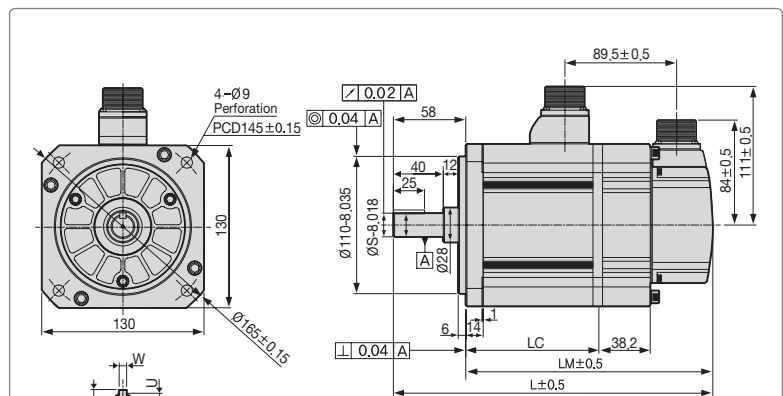


Spec.: MS3102A20-29P

Encoder

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	VOD_B	H	+5V
F	GND_B	G	0V
K	-	J	SHIELD
L	-	-	-

[Multi Turn Encoder Connector Pin Table]



(Cross section of shaft key)

Model	External Dimensions(mm)							Key	Weight(kg)
	L	LM	LC	S	T	W	U		
FE09A, FE06D, FE05G, FE03M, FEP09A, FEP06D, FEP05G, FEP03M	197.3(235.3)	139.3(177.3)	89.8(89.6)	19	5	5	3	5.04(6.58)	
FE15A, FE11D, FE09G, FE06M, FEP15A, FEP11D, FEP09G, FEP06M	217.3(255.3)	159.3(197.3)	109.8(109.6)	19	5	5	3	6.74(8.28)	
FE22A, FE16D, FE13G, FE09M, FEP22A, FEP16D, FEP13G, FEP09M	237.3(275.3)	179.3(217.3)	129.8(129.6)	22	6	6	3.5	8.48(10.02)	
FE30A, FE22D, FE17G, FE12M, FEP30A, FEP22D, FEP17G, FEP12M	255.3(293.3)	197.3(235.3)	147.8(147.6)	24	7	8	4	10.05(11.59)	

Note1) Use DC[24V] for brake input power supply. Note2) The [] is for brake-attached type.