

Small brushless DC motors

● Principles of operation

The differences between a DC motor having a mechanical commutation system and a BLDC motor are mainly found in:

- the product concept
- the commutation of phase currents.

From the user's point of view, brushless DC motors follow the same equations as those with brushes: torque is proportional to current, speed depends on the voltage and the load torque.

● The commutation of brushless motors

In the conventional DC motor commutation takes place mechanically through the commutator-and-brush system. In a BLDC motor, commutation is done by electronic means. In that case the instantaneous rotor position must be known in order to determine the phases to be energized.

The angular rotor position can be known by:

- using a position sensor (Hall sensor, optical encoder, resolver)
- electronically analyzing the back-EMF of a non-energized winding. This is called sensorless commutation.

● Use of Hall sensors

In general, BLDC motor have three phase windings. The easiest way is to power two of them at a time, using Hall sensors to know the rotor position. A simple logic allows for optimal energizing of the phases as a function of rotor position, just like the commutator and brushes are doing in the conventional DC motor.

● Use of an encoder or resolver

The rotor position may also be known by use of an encoder or resolver. Commutation may be done very simply, similar to the procedure with Hall sensors, or it may be more complex by modulating sinusoidal currents in the three phases. This is called vector control, and its advantage is to provide a torque ripple of theoretically zero, as well as a high resolution for precise positioning.

● Use of Back-EMF analysis

A third option requiring no position sensor is the use of a particular electronic circuit. The motor has only three hook-up wires, the three phase windings are connected in either triangle or star. In the latter case, resistors must be used to generate a zero reference voltage. With this solution the motor includes no sensors or electronic components and it is therefore highly insensitive to hostile environments. For applications such as hand-held tools, where the cable is constantly moved, the fact of just three wires is another advantage.

The functioning of a sensorless motor is easy to understand. In all motors, the relation of back-EMF and torque versus rotor position is the same. Zero crossing of the voltage induced in the non-energized winding corresponds to the position of maximum torque generated by the two energized phases. This point of zero crossing therefore allows to determine the moment when the following commutation should take place depending on motor speed. This time interval is in fact equivalent to the time the motor takes to move from the position of the preceding commutation to the back-EMF zero crossing position. Electronic circuits designed for this commutation function allow for easy operation of sensorless motors.

As the back-EMF information is necessary to know the rotor position, sensorless commutation doesn't work with the motor at stall. The only way of starting is to pilot it at low speed like a stepper in open loop.

● Remember:

- for commutation, position sensors are necessary when operating in incremental mode
- sensorless commutation is recommended only for applications running at constant speed and load.

● Operating principle of BLDC motors:

It follows the same equations as the DC motor using mechanical commutation except that parameters like iron losses and losses in the drive circuit are no longer negligible in applications where efficiency is of prime importance.

● Iron losses

They depend on speed and, in the torque formula, may be introduced as viscous friction. The equation for useful motor torque becomes:

$$M_m = k \cdot I_m - k_v \cdot \omega - M_f$$

With M_m = motor useful torque
 k = torque constant
 I_m = motor current
 k_v = viscous coefficient for iron losses
 ω = angular velocity
 M_f = bearing friction

● Losses in the electronics

The current and voltage required by the motor and the drive circuit to be operated at the desired speed and torque depend also on the drive circuit.

As an example, a driver bridge in bipolar technique will reduce the voltage available at the motor terminals by about 1.7V, and the total current must include the consumption of the circuitry.

Brushless DC Motor

FL22RBL SERIES

● INDICATIONS OF THE MODELS

FL 22 RBL 45 – 24V – 46 04 A

Single shaft (B:double shaft)
Output power : 04W
Rated speed/100 :4600rpm
Rated voltage :24VDC
Body length:45mm
Round Brushless motor
Motor frame size: Metric (mm) 22mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	10N @ 10mm from the flange
Max. axial force	2N
Insulation class	Class B
Dielectric strength	360VAC @ 1 S
Insulation resistance	100MΩ Min, 500VDC

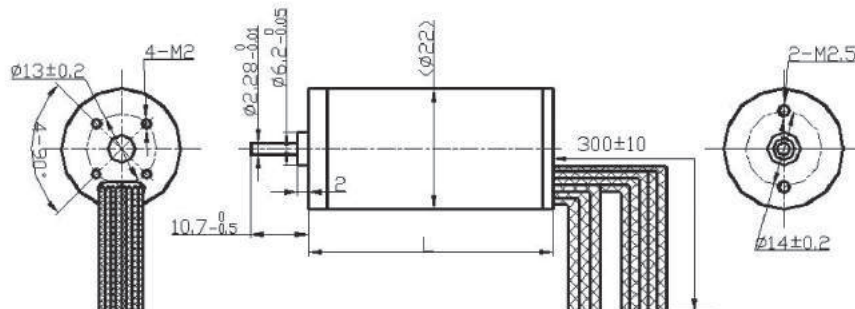
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Blue	UL1007 28AWG	Vcc	Power supply positive of Hall:+5VDC—+24VDC
2	Red		Hall A	
3	Yellow		Hall B	
4	Brown		Hall C	
5	Green	UL1007 26AWG	GND	Power supply negative of Hall
6	Red		Phase U	
7	Brown		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model		FL22RBL45–24V–4604A	FL22RBL70–24V–3515A
Number of poles		8	8
Number of phase		3	3
Rated voltage	VDC	24	24
Rated speed	RPM	4600	3800
Continuous stall torque	mN.m	9.6	24
Rated torque	mN.m	8.0	20
Rated power	W	3.8	8
Peak torque	mN.m	24	60
Peak current	A	1.1	2
Resistance	ohms	23	11.6
Inductance	mH	6.2	4.3
Torque constant	mNm/A	29.7	35.8
Back EMF	Vrms/Krpm	2.2	2.65
Rotor inertia	g.cm ²	0.66	1.32
Body length	mm	45	68
Mass	Kg	0.07	0.12

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

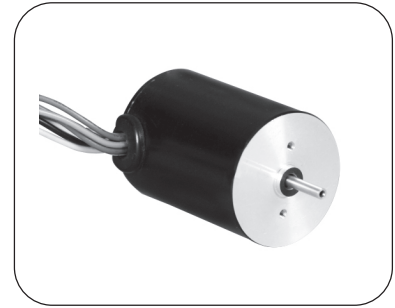
Brushless DC Motor

FL28BL SERIES

● INDICATIONS OF THE MODELS

FL 28 BL 38 – 24V – 3007 A

Single shaft (B:double shaft)
Output power : 07 W
Rated speed/100:3000rpm
Rated voltage:24VDC
Body length 38mm
Brushless motor
Motor frame size: Metric (mm) 28mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	10N @ 10mm from the flange
Max. axial force	2N
Insulation class	Class B
Dielectric strength	360VAC @ 1S
Insulation resistance	100MΩ Min, 500VDC

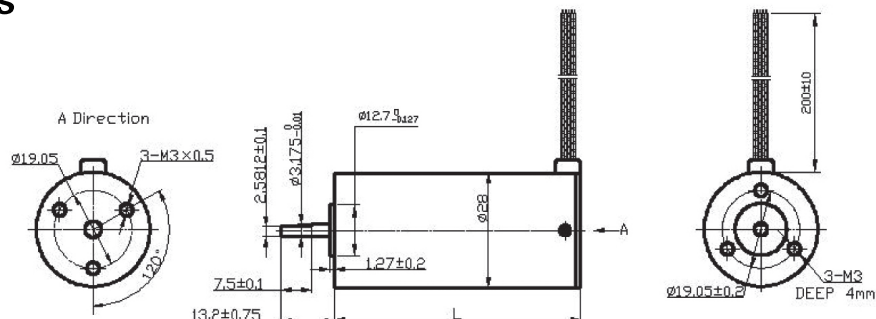
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Yellow	UL1007 26AWG	Vcc	Power supply positive of Hall: +5VDC → +24VDC
2	Blue		Hall A	
3	Orange		Hall B	
4	Brown		Hall C	
5	White		GND	Power supply negative of Hall
6	Green		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model	FL28BL26-15V-8006AF	FL28BL38	FL28BL77-24V-3116AF
Number of poles	4	4	4
Number of phase	3	3	3
Rated voltage	VDC	15	24
Rated speed	RPM	8000	10000
Continuous stall torque	mN.m	6	17
Rated torque	mN.m	5	14
Rated power	W	4	14.78
Peak torque	mN.m	15	42
Peak current	A	1.3	2.7
Resistance	ohms	8.2	4.2
Inductance	mH	2.3	1.69
Torque constant	mNm/A	14.3	16.9
Back EMF	Vrms/Krpm	1.06	1.25
Rotor inertia	g.cm ²	2.35	3.69
Body length	mm	26	38
Mass	Kg	0.060	0.082

● DIMENSIONS



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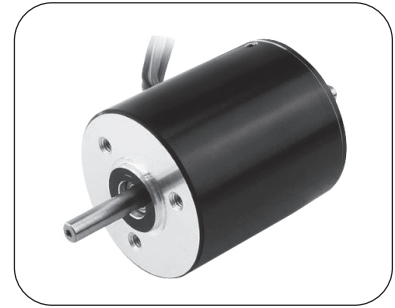
Brushless DC Motor

FL33BL SERIES

● INDICATIONS OF THE MODELS

FL 33 BL 38 — 24V — 30 07 A

Fulling
Motor frame size: Metric (mm) 33mm
Brushless motor
Body length 38mm
Rated voltage: 24VDC
Rated speed/100: 3000rpm
Output power: 07W
Single shaft (B: double shaft)



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	10N @ 10mm from the flange
Max. axial force	2N
Insulation class	Class B
Dielectric strength	500VAC @ 1min.
Insulation resistance	100MΩ Min., 500VDC

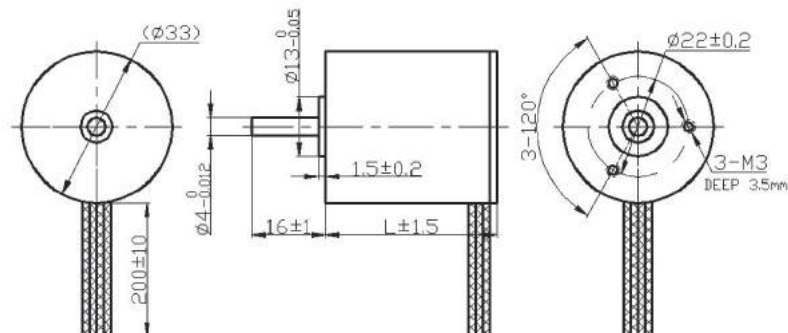
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Yellow	UL1007 26AWG	Vcc	Power supply positive of Hall: +5VDC → +24VDC
2	Blue		Hall A	
3	Orange		Hall B	
4	Brown		Hall C	
5	White		GND	Power supply negative of Hall
6	Green		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model		FL33BL38-24V-3007A	FL33BL80-xxV-xxxxA	
Number of poles		4	4	
Number of phase		3	3	
Rated voltage	VDC	24	48	24
Rated speed	RPM	3000	10000	7800
Continuous stall torque	mN.m	26	48	60
Rated torque	mN.m	22	40	50
Rated power	W	7	40	40
Peak torque	mN.m	66	120	120
Peak current	A	1.7	3.2	4.8
Resistance	Ohms	14.2	2.3	0.86
Inductance	mH	7	1.45	0.55
Torque constant	mNm/A	46.3	41.8	27
Rotor inertia	g.cm ²	7.95	23.55	23.55
Back EMF	Vrms/Krpm	3.43	3.1	2.0
Body length	mm	38	80	80
Mass	Kg	0.085	0.2	0.2

● DIMENSIONS



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Brushless DC Motor

FL36CBL SERIES

● INDICATIONS OF THE MODELS

FL 36 CBL 57— 24V—45 33 A

Single output shaft (A)
Double output shaft (B)
Rated power: 33W
Rated speed 1%: 4500rpm
Rated voltage: 24V
Body length: 57mm
Round Brushless motor, low cost
Motor frame size: 36mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B/F
Dielectric strength	500VAC, 1min.
Insulation resistance	100MΩ, 500VDC

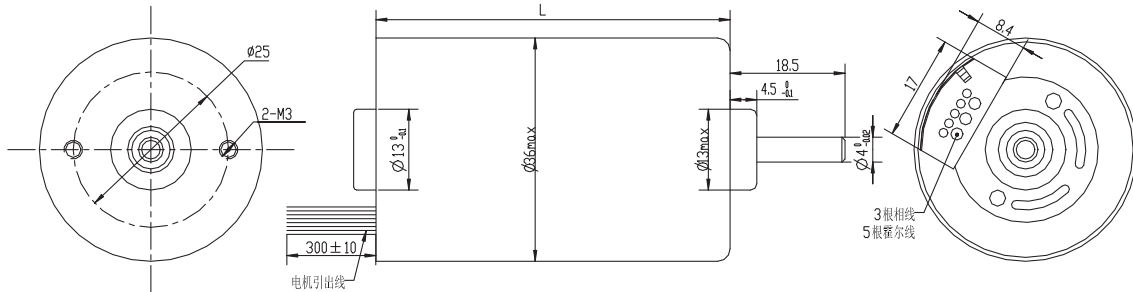
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Vcc	HALL positive:+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG20-24	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL36CBL60-24V -4840A	FL36CBL57-24V -4533A	FL36CBL40-24V -4818A	FL36CBL30-24V- 488A
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	4800	4500	4800	4800
Continuous running torque	mN.m	96	84	42	18
Rated torque	mN.m	80	70	35	15
Rated power	W	40	33	18	8
Peak torque	mN.m	240	210	105	45
Peak current	A	6.5	5.3	3.0	1.5
Line to line resistance	ohms@20℃	0.93	1.3	2.7	7.8
Line to line inductance	mH	1.3	1.6	2.6	5.5
Torque constant	mNm/A	38.5	41.2	37.1	34.1
Back E.M.F	Vrms/KRPM	2.85	3.05	2.75	2.53
Rotor inertia	g.cm ²	30	27	12	6
Body length(L)	mm	60	57	40	30
Weight	Kg	0.28	0.25	0.16	0.12

● DIMENSIONS



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Brushless DC Motor

FL36RBL SERIES

● INDICATIONS OF THE MODELS

FL 36 RBL 40 — 24V — 48 18 A

Single shaft (A)
Double shaft (B)
Rated power: 18W
Rated speed 1%: 4800rpm
Rated voltage: 24V
Body length: 40mm
Round Brushless motor
Motor frame size: 36mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B/F
Dielectric strength	500VAC ,1 min.
Insulation resistance	100MΩ , 500VDC

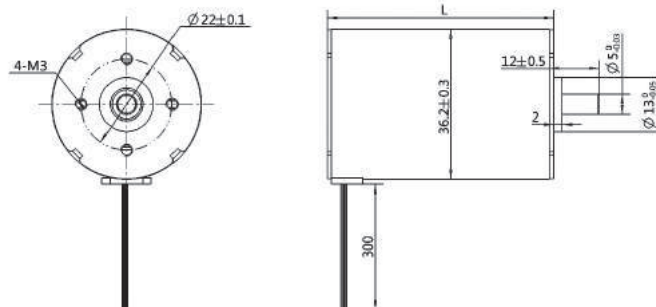
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Positive of Hall	+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG20-24	Negative of Hall	
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL36RBL40-24V-4818A	FL36RBL57-24V-4524A
Number of poles		8	
Number of phase		3	
Rated voltage	VDC	24	
Rated speed	RPM	4800	4500
Continuous running torque	mN.m	43	60
Rated torque	mN.m	36	50
Rated power	W	18	24
Peak torque	mN.m	108	150
Peak current	A	3.7	4.1
Line to line resistance	ohms@20℃	2.4	2.0
Line to line inductance	mH	2.1	2.0
Torque constant	mNm/A	32	39
Back E.M.F	Vrms/KRPM	2.40	2.95
Rotor inertia	g.cm ²	14	24
Body length(L)	mm	40	55
Weight	Kg	0.16	0.25

● DIMENSIONS



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Brushless DC Motor

FL39RBL SERIES

● INDICATIONS OF THE MODELS

FL 39 RBL 48 - 24V - 32 40 A
 Fulling
 Motor frame size: 39mm
 Round Brushless motor
 Body length: 48mm
 Rated voltage: 24V
 Rated speed 1%: 3200rpm
 Rated power: 40W
 Single shaft (A)
 Double shaft (B)



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B/F
Dielectric strength	500VAC, 1 min.
Insulation resistance	100MΩ, 500VDC

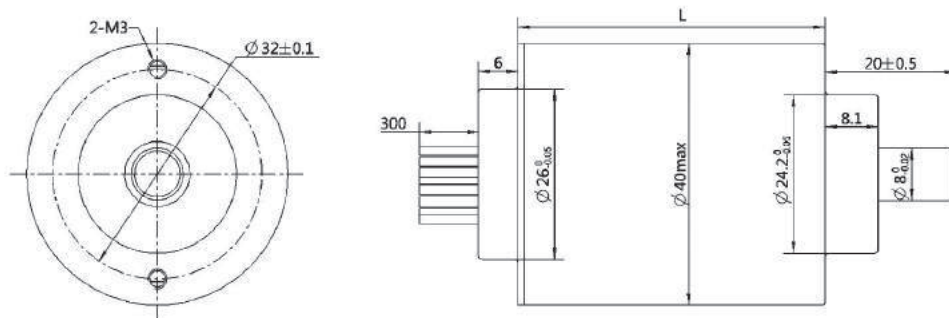
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1430 AWG26	Vcc	HALL positive: +5 → +24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	UL1430 AWG18/20/ 22	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

	Unit	FL39RBL48-24V-3240A
Number of poles		6
Number of phase		3
Rated voltage	VDC	24
Rated speed	RPM	3200
Continuous running torque	mN.m	132
Rated torque	mN.m	110
Rated power	W	40
Peak torque	mN.m	330
Peak current	A	6
Line to line resistance	ohms @ 20°C	1.3
Line to line inductance	mH	0.8
Torque constant	mNm/A	58.7
Back E.M.F	Vrms/KRPM	4.35
Rotor inertia	g.cm ²	40
Body length(L)	mm	48
Weight	Kg	0.35

● DIMENSIONS



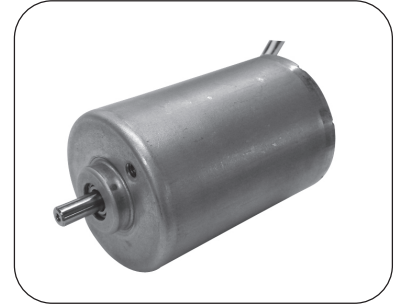
*Product developing, only available for samples.

Brushless DC Motor

FL42CBL SERIES

● Indications of The Models

FL 42 CBL 60 – 24V – 59 43
 Fulling
 Motor frame size: 42mm
 Round Brushless motor: low cost BLDC
 Body length: 60mm
 Rated voltage: 24V
 Rated speed 1%
 Rated power: 43W



● General Specifications

Winding type	star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm @ 450g
End play	0.08mm @ 450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min, 500VDC

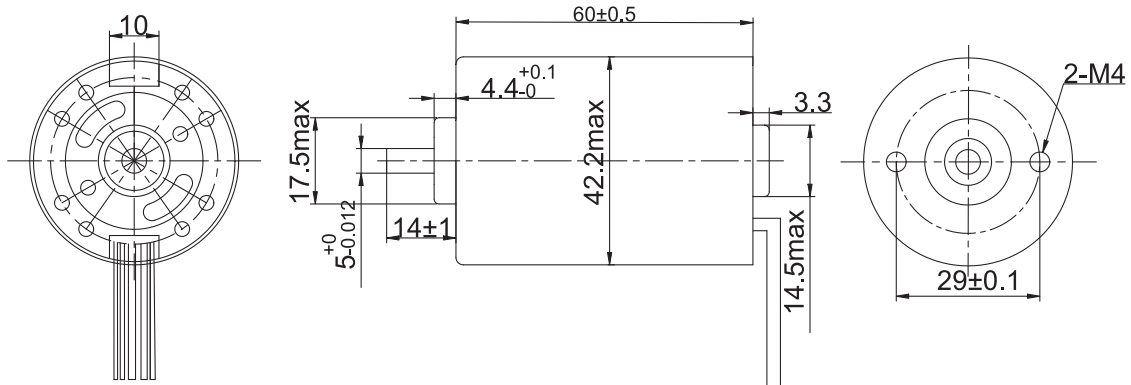
● Electric Connection

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1430 AWG26	Vcc	Power supply positive of Hall +5VDC—+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL1332 AWG22	GND	Power supply negative of Hall
6	Yellow		U	
7	Red		V	
8	Black		W	

● Electrical Specifications

Model	Unit	FL42CBL60–24V–5943	FL42CBL60–15V–4540
Number of poles		4	8
Number of phase		3	
Rated voltage	VDC	24	15
Rated speed	RPM	5900	4450
Rated torque	mN.m	68	87.5
Rated power	W	43	40.8
Peak torque	mN.m	204	262
Peak current	A	6.6	11
Line to line resistance	ohms	0.82	0.32
Line to line inductance	mH	1	0.3
Torque constant	mNm/A	32.4	24.3
Back EMF	Vrms/Krpm	2.4	1.8
Rotor inertia	g.cm ²	44	44
Body length(L)	mm	60	60
Weight	Kg	0.35	0.35

● Dimensions



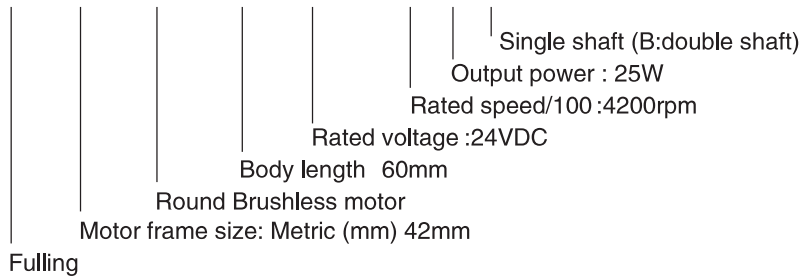
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Brushless DC Motor

FL42RBL SERIES

● INDICATIONS OF THE MODELS

FL 42 RBL 60 – 24V – 42 25 A



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC @ 1min.
Insulation resistance	100MΩ Min, 500VDC

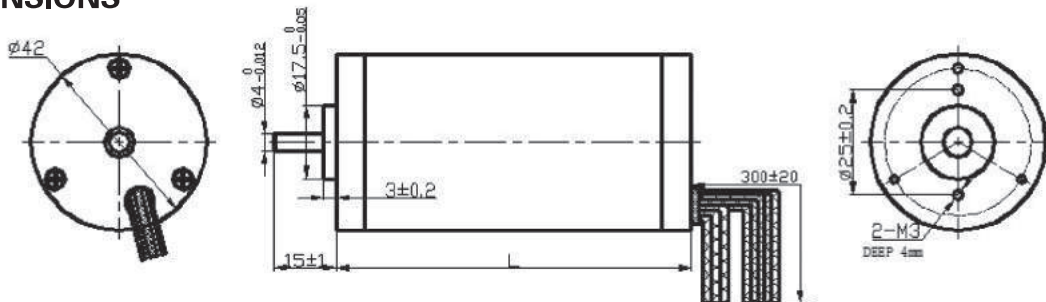
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Blue	UL1007 26AWG	Vcc	Power supply positive of Hall:+5VDC—+24VDC
2	Yellow		Hall A	
3	Brown		Hall B	
4	Red		Hall C	
5	Green	UL1007 22AWG	GND	Power supply negative of Hall
6	Red		Phase U	
7	Brown		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model		FL42RBL30–24V –4009A–P	FL42RBL60–24V –4030A–P	FL42RBL85–24V –4060A–P	FL42RBL93–24V –6375A–P
Number of poles		8			
Number of phase		3			
Rated voltage VDC		24			
Rated speed	RPM	4000	4200	4000	6300
Continuous stall torque	mN.m	24	68	180	138
Rated torque	mN.m	20	56	150	115
Rated power	W	8.4	25	62	76
Peak torque	mN.m	60	170	450	350
Peak current	A	1.7	4.4	11.4	11.8
Resistance	Ohms	5.9	1.6	0.71	0.325
Inductance	mH	5.1	1.94	0.86	0.36
Torque constant	mNm/A	39.4	40.6	40.1	30.3
Back EMF	Vrms/Krpm	2.95	3.04	3.0	2.27
Rotor inertia	g.cm ²	15.6	33	84	94
Body length	mm	30	60	85	93
Mass	Kg	0.25	0.4	0.7	0.8

● DIMENSIONS



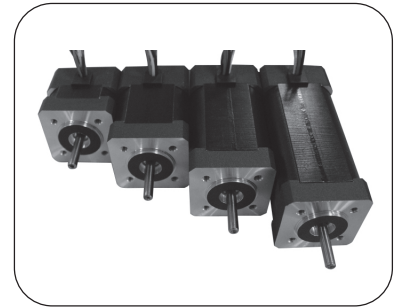
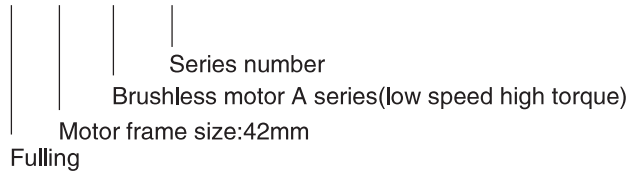
*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL42BLA SERIES

● INDICATIONS OF THE MODELS

FL 42 BLA 01



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N @ 20mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

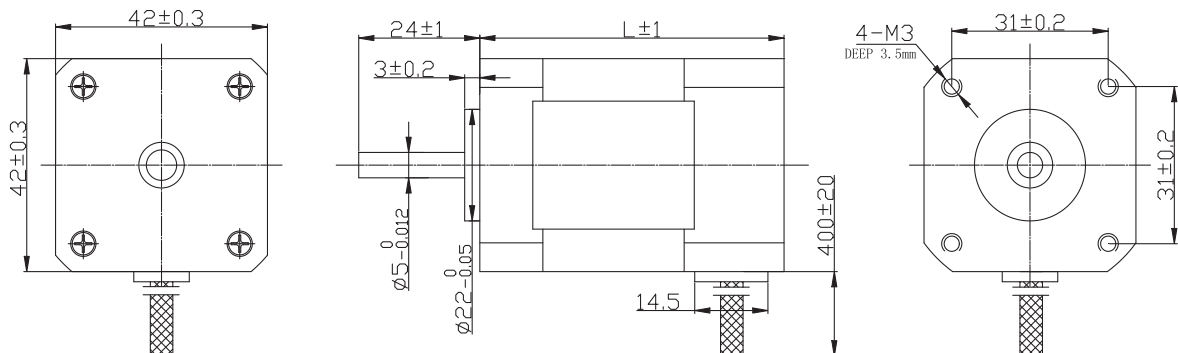
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1430 26AWG	Vcc	Power supply positive of Hall:+5VDC--+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL1430 20AWG	GND	Power supply negative of Hall
6	Yellow		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model		FL42BLA01	FL42BLA02	FL42BLA03	FL42BLA04
Number of poles		10			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	3000			
Continuous stall torque	N.m	0.081	0.19	0.30	0.41
Rated torque	N.m	0.07	0.16	0.26	0.36
Rated power	W	22	50	81	113
Peak torque	N.m	0.21	0.48	0.78	1.08
Peak current	A	4	8.3	13.5	19
Line to line resistance	ohms	2.6	1.1	0.7	0.48
Line to line inductance	mH	1.83	0.96	0.58	0.44
Torque constant	N.m/A	0.055	0.059	0.058	0.057
Back E.M.F	Vrms/Krpm	4.06	4.35	4.25	4.2
Rotor inertia	g.cm ²	60	80	100	120
Body length (L)	mm	40.3	60.3	80.3	100.3
Mass	Kg	0.26	0.46	0.65	0.85

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

FL42BLB SERIES

● INDICATIONS OF THE MODELS

FL 42 BLB 01

1

1

1

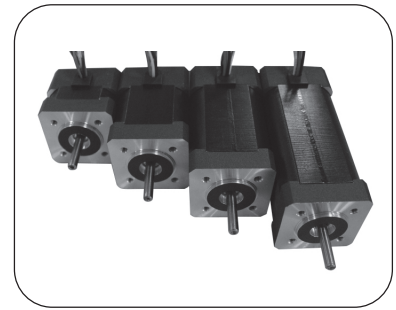
1

Series number

Brushless motor B series(sintered magnet)

Motor frame size: Metric (mm)

Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N @ 20mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

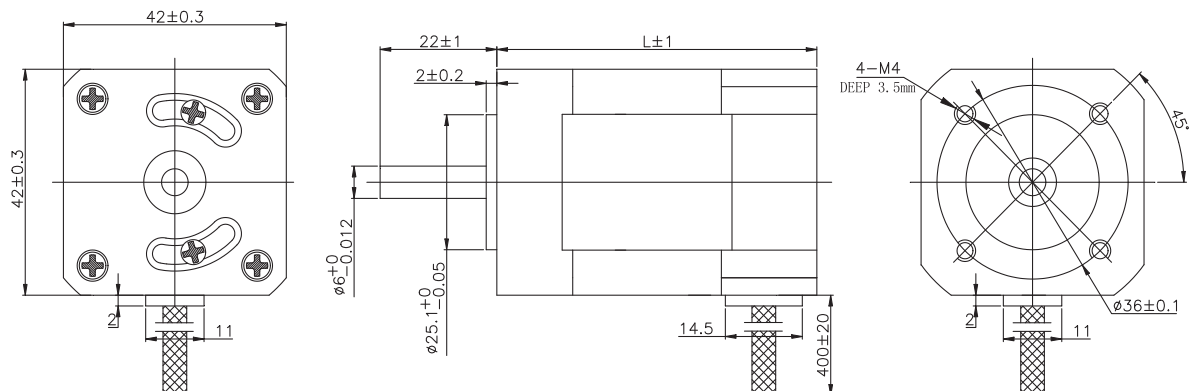
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1430 26AWG	Vcc	Power supply positive of Hall:+5VDC---→+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black		GND	Power supply negative of Hall
6	Yellow	UL1430 20AWG	Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model		FL42BLB01	FL42BLB02	FL42BLB03	FL42BLB04
Number of poles		6			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	3000			
Continuous stall torque	N.m	0.074	0.20	0.35	0.49
Rated torque	N.m	0.064	0.17	0.3	0.43
Rated power	W	20	53.5	94	135
Peak torque	N.m	0.19	0.51	0.9	1.29
Peak current	A	3.5	9	14.5	20.8
Line to line resistance	ohms	3.6	1.05	0.54	0.4
Line to line inductance	mH	1.8	0.75	0.45	0.3
Torque constant	N.m/A	0.057	0.058	0.062	0.0624
Back E.M.F	Vrms/Krpm	4.2	4.3	4.57	4.6
Rotor inertia	g.cm ²	80	100	120	140
Body length	mm	40.3	60.3	80.3	100.3
Mass	Kg	0.4	0.6	0.8	1.0

● DIMENSIONS

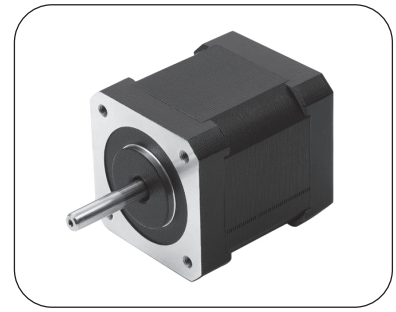
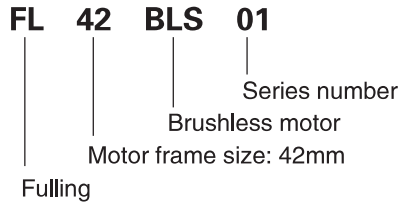


*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL42BLS SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N @ 20mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

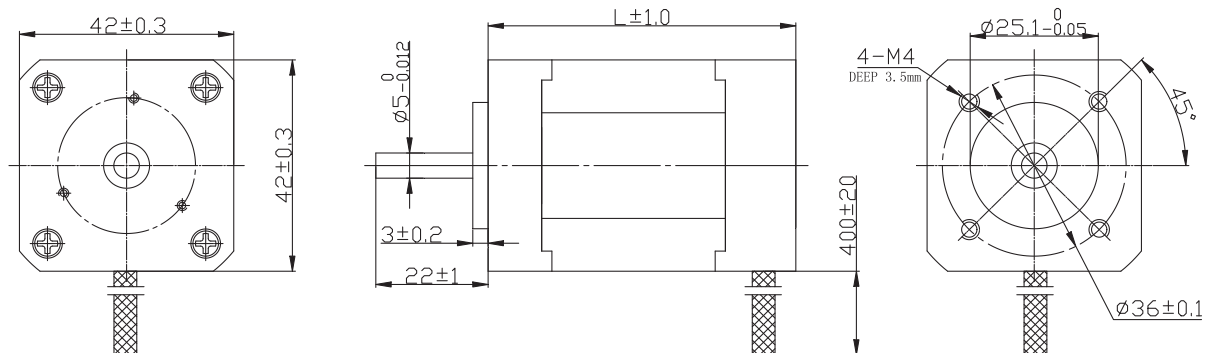
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1430 26AWG	Vcc	Power supply positive of Hall:+5VDC—+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL1430 20AWG	GND	Power supply negative of Hall
6	Yellow		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model		FL42BLS01	FL42BLS02	FL42BLS03	FL42BLS04
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	4000			
Continuous stall torque	N.m	0.075	0.15	0.22	0.3
Rated torque	N.m	0.0625	0.125	0.185	0.25
Rated power	W	26	52.5	77.5	105
Peak torque	N.m	0.19	0.38	0.56	0.75
Peak current	A	6	10.8	15.5	21.7
Line to line resistance	ohms	1.5	0.8	0.43	0.3
Line to line inductance	mH	2.1	1.2	0.71	0.5
Torque constant	N.m/A	0.033	0.036	0.037	0.035
Back E.M.F	Vrms/Krpm	2.45	2.71	2.74	2.62
Rotor inertia	g.cm ²	24	48	72	96
Body length	mm	40.3	60.3	80.3	100.3
Mass	Kg	0.3	0.45	0.65	0.8

● DIMENSIONS

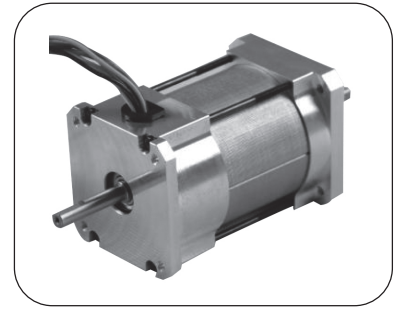
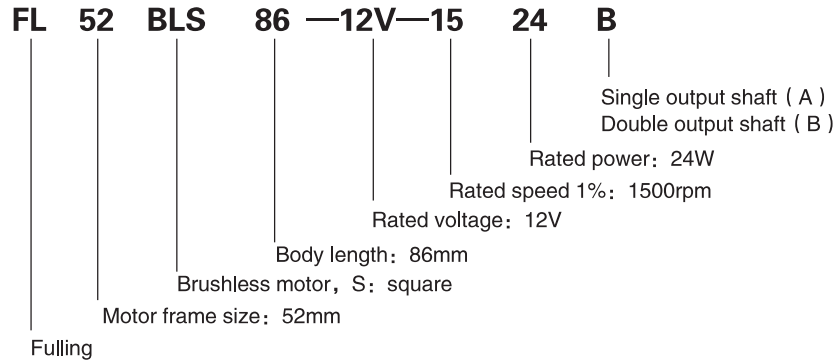


*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL52BLS SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	115N @ 10mm from the flange
Max. axial force	45N
Insulation class	Class B/F
Dielectric strength	500VAC 1 min
Insulation resistance	100MΩ , 500VDC

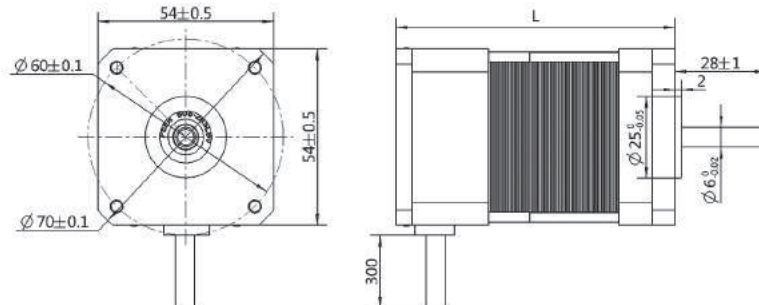
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1430 AWG26	Vcc	HALL positive: +5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	UL1430 AWG18/20 /22	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

	Unit	FL52BLS86- 12V-1524B	FL52BLS86- 24V-40100A
Number of poles			4
Number of phase			3
Rated voltage	VDC	12	24
Rated speed	RPM	1500	4000
Continuous running torque	mN.m	192	288
Rated torque	mN.m	160	240
Rated power	W	24	100
Peak torque	mN.m	480	720
Peak current	A	8.5	15.5
Line to line resistance	ohms@20℃	0.40	0.35
Line to line inductance	mH	1.6	1.2
Torque constant	mNm/A	58	47
Back E.M.F	Vrms/KRPM	4.3	3.5
Rotor inertia	g.cm ²	180	180
Body length(L)	mm	86	86
Weight	Kg	1	1

● DIMENSIONS



*Product developing, only available for samples.

Brushless DC Motor

FL57BLA SERIES

● INDICATIONS OF THE MODELS

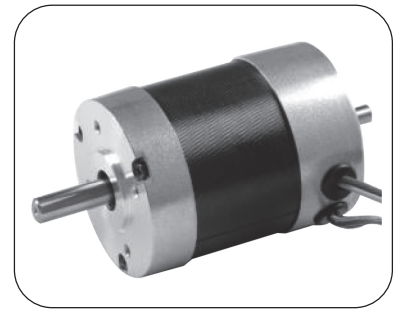
FL 57 BLA 01

Series number of stator stack

Brushless motor A series(sintered magnet)

Frame: 57mm

Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.025mm@460g
End play	0.025mm@4000g
Max. radial force	115N@20mm from the flange
Max. axial force	45N
Insulation class	Class F
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ, 500VDC

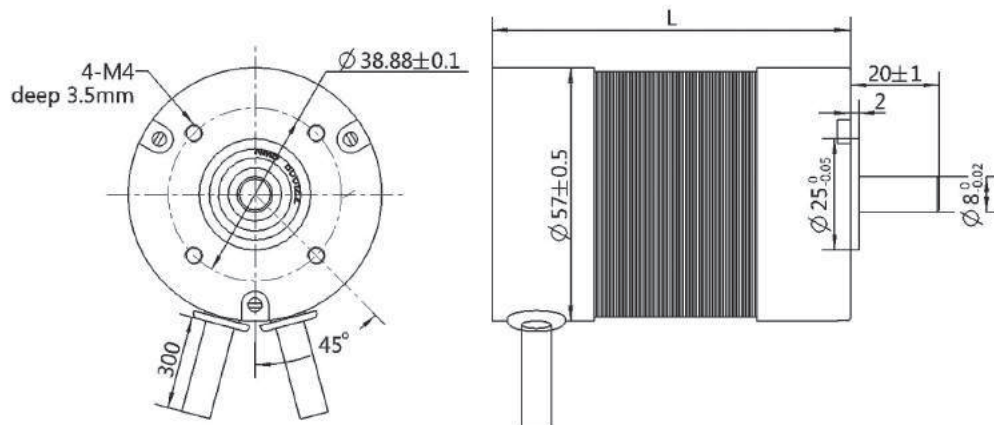
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	Red	UL1430 AWG26	Vcc	HALL positive:+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	UL 1430 AWG16/ 18/ 20/22	GND	HALL negative
6	Yellow		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL57BLA01	FL57BLA02	FL57BLA03	FL57BLA04
Number of poles		6			
Number of phase		3			
Rated voltage	VDC	36			
Rated speed	RPM	4000			
Continuous running torque	mN.m	240	480	720	960
Rated torque	mN.m	200	400	600	800
Rated power	W	83	167	251	335
Peak torque	N.m	0.6	1.2	1.8	2.4
Peak current	A	8.6	16	29	35
Line to line resistance	ohms@20℃	0.95	0.40	0.25	0.20
Line to line inductance	mH	1.20	0.55	0.40	0.25
Torque constant	mNm/A	74	77	63	70
Back E.M.F	Vrms/KRPM	5.5	5.7	4.7	5.2
Rotor inertia	g.cm ²	100	200	300	400
Body length(L)	mm	53.6	73.6	93.6	113.6

● DIMENSIONS

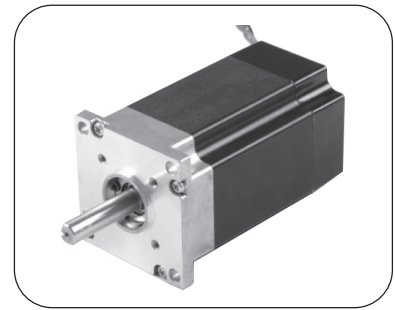
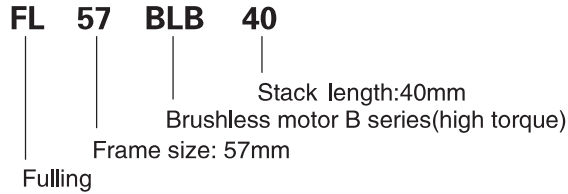


*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL57BLB SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.025mm@460g
End play	0.025mm@4000g
Max. radial force	115N@20mm from the flange
Max. axial force	45N
Insulation class	Class B
Dielectric strength	500VDC for one minute
Insulation resistance	100MΩ Min., 500VDC

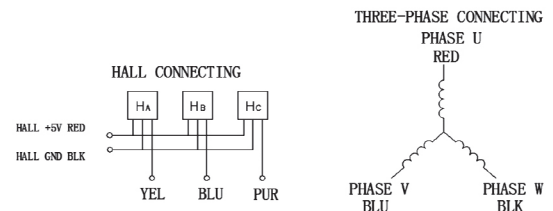
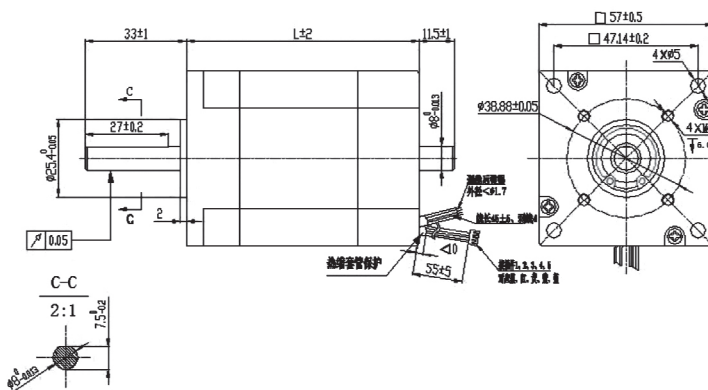
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	Red	UL3265 AWG28	Vcc	Power supply positive of hall +5VDC—+24VDC
2	Yellow		Hall A	
3	Blue		Hall B	
4	Purple		Hall C	
5	Black	UL1430 AWG18	GND	POWER SUPPLY NEGATIVE OF HALL
6	Red		Phase A	
7	Blue		Phase B	
8	Black		Phase C	

● ELECTRICAL SPECIFICATIONS

Model	Unit	Tolerance	FL57BLB40	FL57BLB60	FL57BLB80
Number of poles			8		
Number of phase			3		
Rated voltage	VDC		36		
Rated speed	RPM	± 10%	3000		
Rated torque	N.m		0.3	0.45	0.6
Rated power	W		94	141	188
Peak torque	N.m		0.9	1.35	1.8
Peak current	A		12.3	18.2	23.8
Line to line resistance	ohms @20℃	± 10%	1.2	0.8	0.5
Line to line inductance	mH	± 20%	1.2	0.8	0.6
Torque constant	Nm/A	± 10%	0.076	0.076	0.077
Back E.M.F	Vrms/KRPM	± 10%	5.6	5.6	5.7
Rotor inertia	g.cm ²		210	320	430
Body length(L)	mm		76	96	116
Weight	Kg		0.8	1.0	1.2

● DIMENSIONS



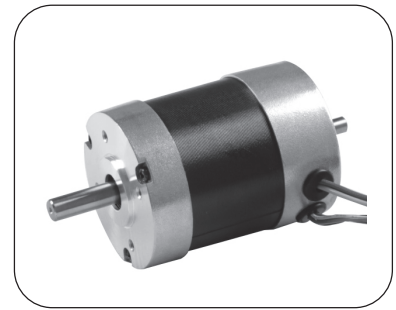
*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL57BL(S) SERIES

● INDICATIONS OF THE MODELS

FL 57 BL(S) 01
 Fulling Frame: 57mm Series number
 BL: Brushless motor with round front end bell
 BLS: Brushless motor with square front end bell



● GENERAL SPECIFICATIONS

Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.025mm@460g
End play	0.025mm@4000g
Max. radial force	75N @ 20mm from the flange
Max. axial force	15N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

● ELECTRIC CONNECTION

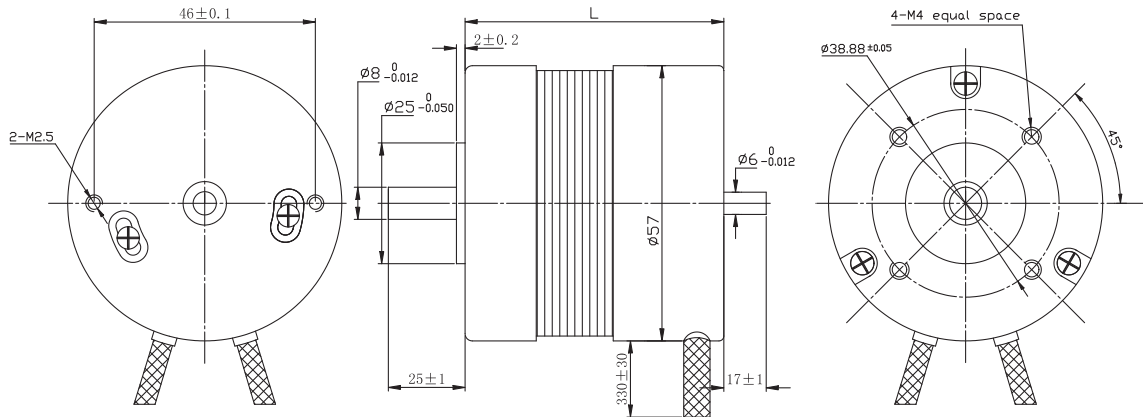
Lead No.	Lead Color	Lead Gauge	Function	Description
1	Red	UL1430 AWG26	Vcc	Power supply positive of hall +5VDC—+24VDC
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	UL1430 AWG20	GND	POWER SUPPLY NEGATIVE OF HALL
6	Yellow		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATION

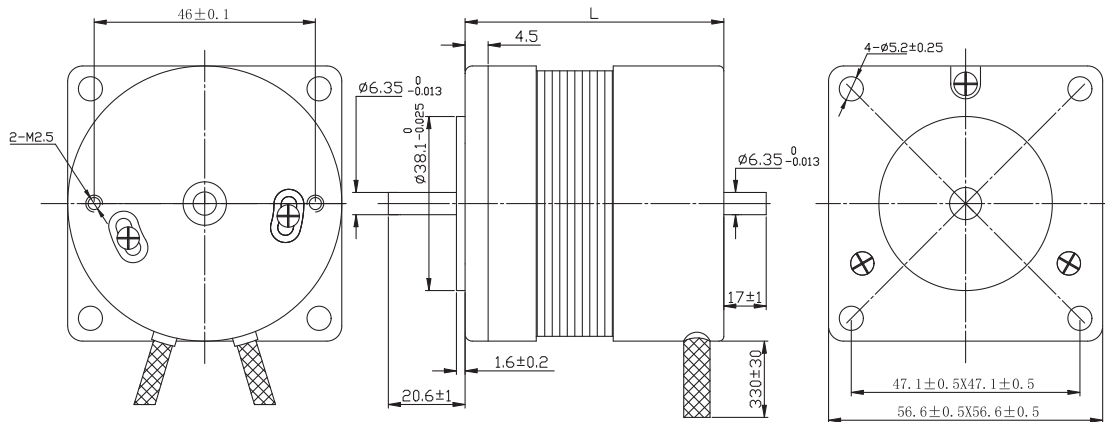
Model		FL57BL(S)005	FL57BL(S)01	FL57BL(S)02	FL57BL(S)03	FL57BL(S)04
Number of poles		4				
Number of phase		3				
Rated voltage	VDC	36				
Rated speed	RPM	4000				
Rated torque	N.m	0.055	0.11	0.22	0.33	0.44
Rated power	W	23	46	99	138	184
Peak torque	N.m	0.16	0.39	0.7	1	1.27
Peak current	A	3.5	6.8	12	16	21
Line to line resistance	ohms	4.3	1.63	0.64	0.45	0.33
Line to line inductance	mH	10	4.4	2.0	1.5	0.95
Torque constant	Nm/A	0.052	0.061	0.060	0.065	0.062
BackE.M.F	Vrms/KRPM	3.8	4.5	4.45	4.8	4.6
Rotor inertia	g.cm ²	30	75	119	173	230
Body length(L)	mm	43.6	53.6	73.6	93.6	113.6
Mass	Kg	0.33	0.44	0.72	0.95	1.2

● DIMENSIONS

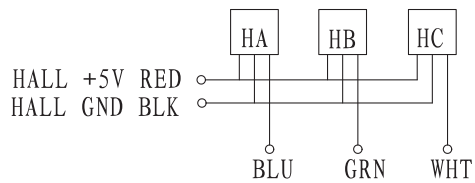
FL57BL



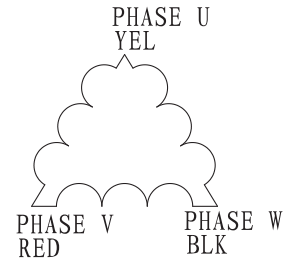
FL57BLS



HALL CONNECTING



THREE-PHASE CONNECTING

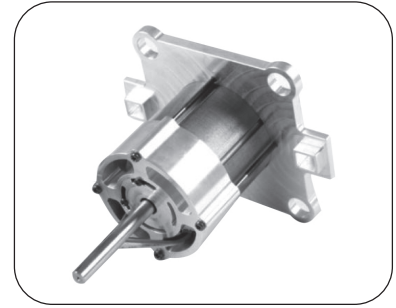
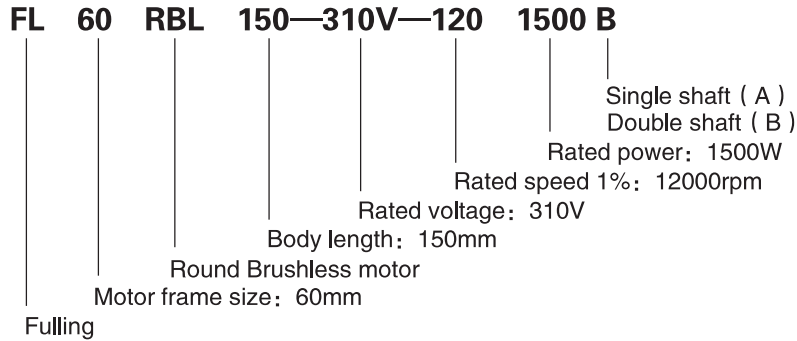


*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL60RBL SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120degree electrical angle
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	115N @ 10mm from the flange
Max. axial force	45N
Insulation class	Class B/F
Dielectric strength	2500VAC, 3 seconds , 5mA max.
Insulation resistance	100MΩ, 500VDC

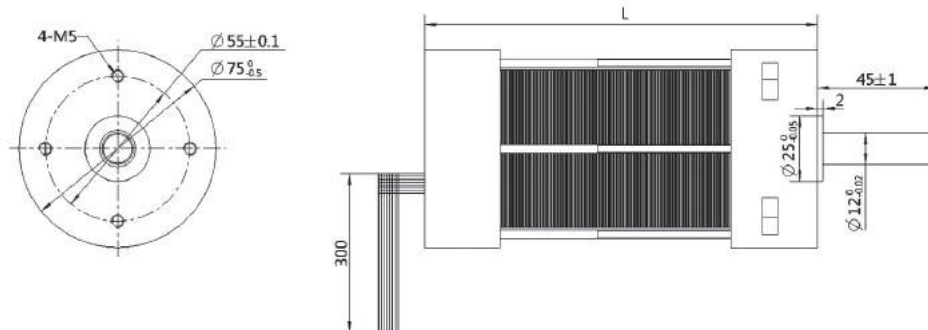
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Vcc	HALL positive:+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG 18-22	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

	Unit	FL60RBL150-310V -1201500B	FL60RBL95-150V -140750B	FL60RBL80-150V -30110B
Number of poles		4		
Number of phase		3		
Rated voltage	VDC	310	150	150
Rated speed	RPM	12000	14000	3000
Continuous running torque	N.m	1.44	0.60	0.42
Rated torque	N.m	1.20(S2)	0.50(S2)	0.35
Rated power	W	1500 (S2)	750 (S2)	110
Peak torque	N.m	3.6	1.5	1
Peak current	A	17.5	17	3
Line to line resistance	ohms@20℃	1.2	2	15.5
Line to line inductance	mH	10	16	55
Torque constant	mNm/A	219	95	405
Back E.M.F	Vrms/KRPM	16.2	7	30
Rotor inertia	g.cm ²	1000	500	320
Body length(L)	mm	150	95	80
Weight	Kg	2.5	1.5	1.2

● DIMENSIONS

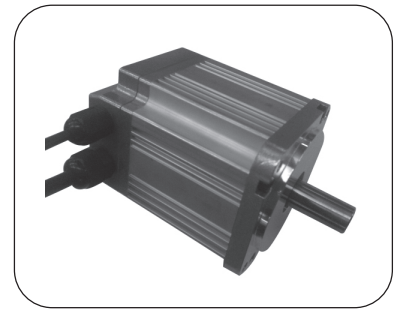
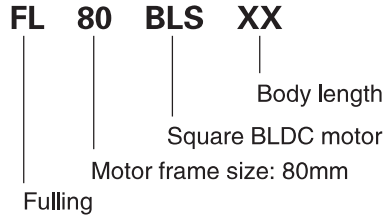


*Product developing, only available for samples.

Brushless DC Motor

FL80BLS SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	115N@20mm from the flange
Max. axial force	45N
Insulation class	Class F
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

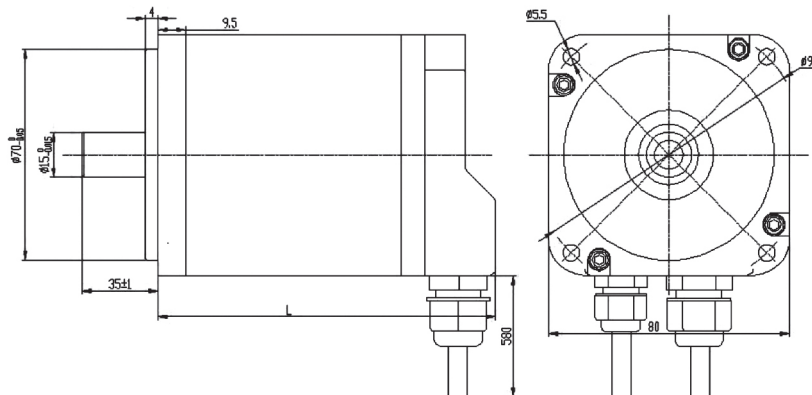
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	Red	UL1332 AWG22	Vcc	POWER SUPPLY POSITIVE OF HALL: +5VDC→+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL3135 AWG14	GND	POWER SUPPLY NEGATIVE OF HALL
6	Yellow		Phase A	
7	Red		Phase B	
8	Black		Phase C	

● ELECTRICAL SPECIFICATIONS

Model		FL80BLS84	FL80BLS105	FL80BLS120	FL80BLS140
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	48			
Rated speed	RPM	3000			
Rated torque	N.m	0.9	1.7	2.2	3
Rated power	W	280	530	700	950
Peak torque	N.m	2.5	5	6.5	8.5
Peak current	A	22	45	61	78
Resistance	ohms	0.25	0.10	0.07	0.057
Inductance	mH	1.3	0.6	0.4	0.3
Torque constant	Nm/A	0.118	0.113	0.109	0.111
Back E.M.F	Vrms/KRPM	8.7	8.4	8.1	8.2
Rotor inertia	g.cm ²	544	1020	1360	1900
Body length(L)	mm	84	105	120	140
Weight	Kg	1.6	2	2.5	2.9

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

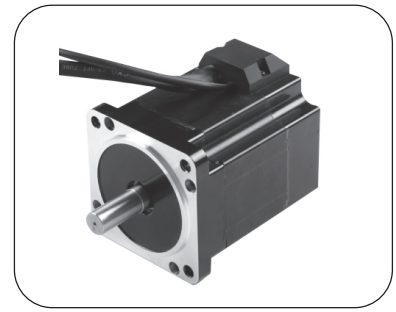
Brushless DC Motor

FL86BLC SERIES

● INDICATIONS OF THE MODELS

FL 86 BLC 64

Fulling
Frame: 86mm
BLC: Brushless motor C series
Body length 64mm



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@400g
Max. radial force	220N@20mm from the flange
Max. axial force	45N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ, 500VDC

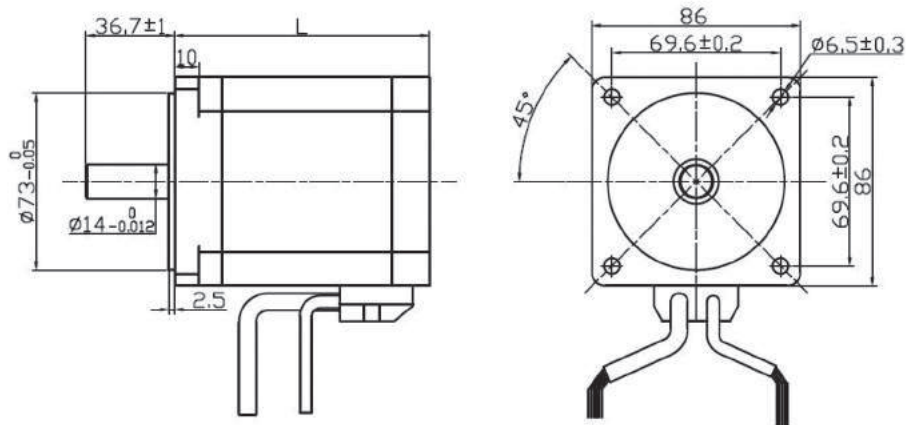
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1332 AWG26	Vcc	Power supply positive of Hall +5VDC—+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL1332 AWG14	GND	Power supply negative of Hall
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL86BLC64	FL86BLC77	FL86BLC105	FL86BLC125
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	48			
Rated speed	RPM	3000			
Rated torque	N.m	0.4	0.8	1.6	2.22
Rated power	W	130	250	500	700
Peak torque	N.m	1.2	2.4	4.8	6.66
Peak current	A	11	17.5	37	52
Line to line resistance	ohms@20℃	1	0.34	0.14	0.1
Line to line inductance	mH	1.4	0.6	0.36	0.24
Torque constant	Nm/A	0.122	0.149	0.135	0.131
Back E.M.F	Vrms/Krpm	9	11	10	9.7
Rotor inertia	g.cm ²	400	800	1600	2400
Body length(L)	mm	64	77	105	125
Weight	Kg	1.5	1.85	2.7	4

● DIMENSIONS

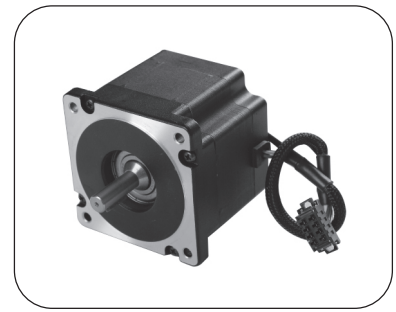
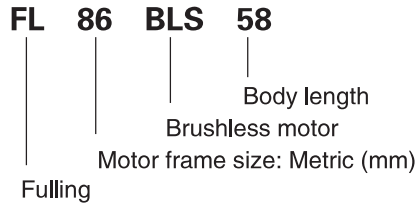


*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL86BLS SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	220N @ 20mm from the flange
Max. axial force	60N
Insulation class	Class F
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

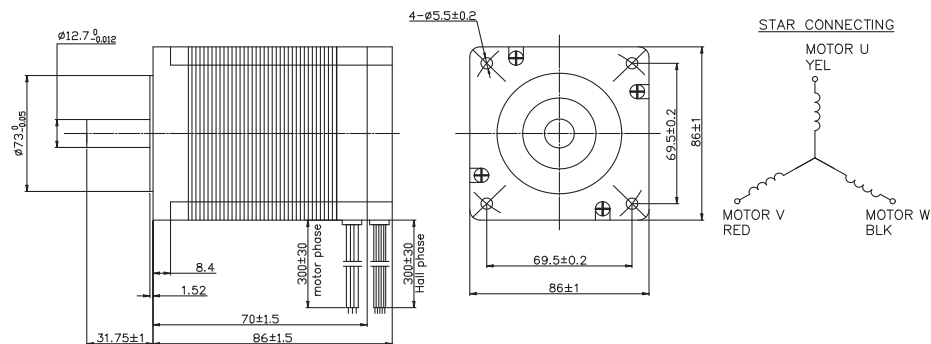
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1332 22#AWG	Vcc	Power supply of Hall positive :+5VDC—+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL1332 18#AWG	GND	Power supply of Hall negative
6	Yellow		Phase A	
7	Red		Phase B	
8	Black		Phase C	

● ELECTRICAL SPECIFICATIONS

Model		FL86BLS58	FL86BLS71	FL86BLS84	FL86BLS98	FL86BLS125
Number of poles		8				
Number of phase		3				
Rated voltage	VDC	48				
Rated speed	RPM	3000				
Rated torque	N.m	0.35	0.7	1.05	1.4	2.1
Rated power	W	110	220	330	440	660
Peak torque	N.m	1.05	2.1	3.15	4.2	6.3
Peak current	A	9.5	20	24	33	56
Line to line resistance	ohms	0.9	0.34	0.2	0.16	0.10
Line to line inductance	mH	2.6	1	0.66	0.5	0.31
Torque constant	Nm/A	0.116	0.124	0.127	0.127	0.128
Back E.M.F	Vrms/KRPM	8.6	9	9.4	9.4	9.5
Rotor inertia	g.cm ²	400	800	1200	1600	2400
Body length (L)	mm	56	70	84	96	123
Mass	Kg	1.6	2.12	2.64	3.15	4.2

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

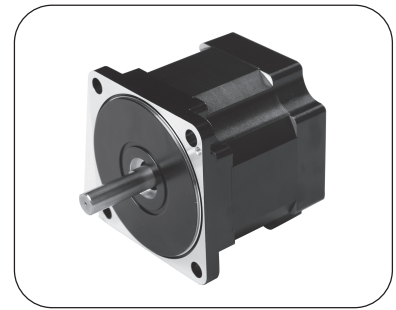
Brushless DC Motor

FL90BL80 SERIES

● INDICATIONS OF THE MODELS

FL 90 BL 80- 115VAC- 66 220 A

Single shaft(A)
(B:double shaft)
Rated power:220W
No load speed 1%
Rated voltage:115VAC
Body length:80mm
Brushless motor
The motor outer diameter: 90mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Electrical degree	120e
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	220N
Max. axial force	60N
Insulation class	Class B
Dielectric strength	1000VAC for one minute
Insulation resistance	100M Ω Min., 500VDC

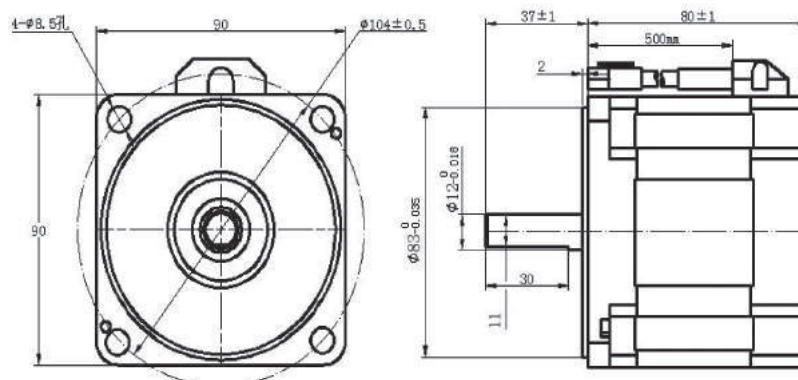
● ELECTRIC CONNECTION

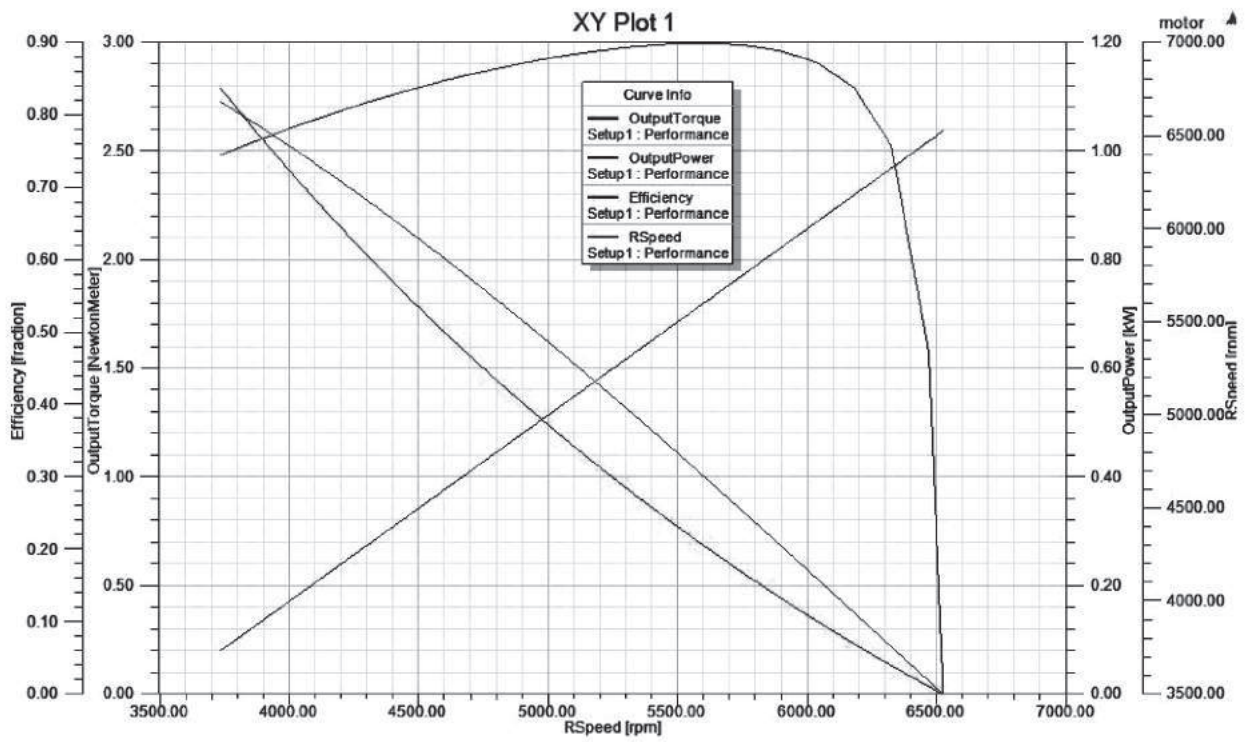
Lead No.	Lead Color	Lead Gauge	Function	Description
1	Yellow	18# cable	Motor U	
2	Red		Motor V	
3	Black		Motor W	
4	Black	22# cable	GND	Power supply of negative of Hall
5	Blue		HALLA	
6	Green		HALLB	
7	White		HALLC	
8	Red		Vcc	Power supply positive of Hall:+5VDC—+24VDC

● ELECTRICAL SPECIFICATIONS

Model	Unit	Tolerance	FL90BL80-115VAC-66220A
Number of poles			4
Number of phase			3
Rated voltage	VAC		115
Noload speed	RPM	$\pm 10\%$	6600
No load current	A	$<0.5A$	0.63
Rated speed	RPM	$\pm 10\%$	5300
Rated torque	N.m		0.4
Rated power	W		220
Peak torque	N.m		1.2
Peak current	Aac	$\pm 10\%$	8.5
Line to line resistance	ohms@25°C	$\pm 10\%$	1.8
Line to line inductance	mH	$\pm 20\%$	0.4
Torque constant	mNm/A	$\pm 10\%$	225
Back E.M.F constant	Vrms/KRPM	$\pm 10\%$	16.6
Rotor inertia	g.cm ²		285
Weight	g		2200

● DIMENSIONS



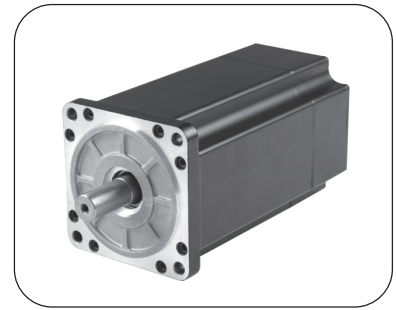
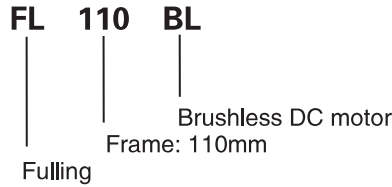


*This motor can be designed & manufactured with customized request.

Brushless DC Motor

FL110BL SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@400g
Max. radial force	220N@20mm from the flange
Max. axial force	60N
Insulation class	Class F
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ, 500VDC

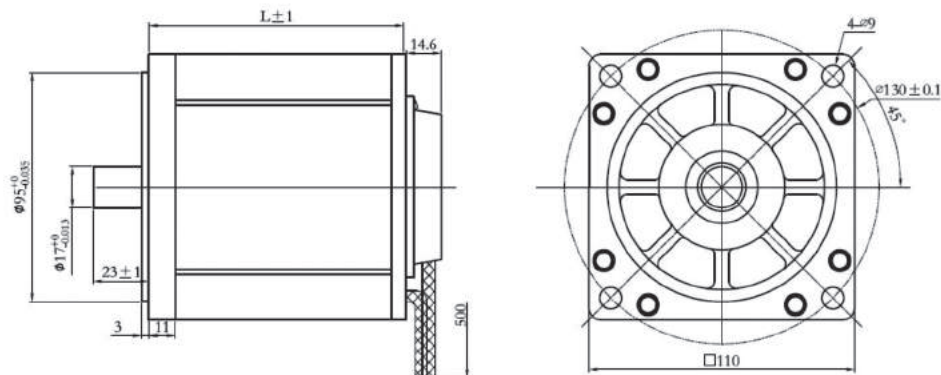
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1332 AWG26	Vcc	Power supply positive of Hall+5VDC--+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL1332 AWG14	GND	Power supply negative of Hall
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

	Unit	FL110BL51	FL110BL68
Number of poles		8	
Number of phase		3	
Rated voltage	VDC	60	
Rated speed	RPM	3000	
Rated torque	N.m	3	4.5
Rated power	W	942	1413
Peak torque	N.m	9	13.5
Peak current	A	68	110
Line to line resistance	ohms@20°C	0.069	0.046
Line to line inductance	mH	0.42	0.283
Torque constant	Nm/A	0.134	0.123
Back E.M.F	Vrms/Krpm	9.9	9.12
Rotor inertia	g.cm ²	4350	5800
Body length(L)	mm	102	119
Weight	Kg	4.65	6.5

● DIMENSIONS

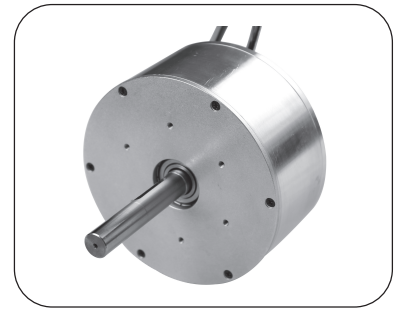
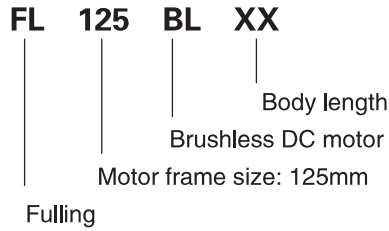


*Product developing, only available for samples.

Brushless DC Motor

FL125BL SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.025mm@460g
End play	0.08mm@4000g
Max. radial force	220N@20mm from the flange
Max. axial force	60N
Insulation class	Class/F
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

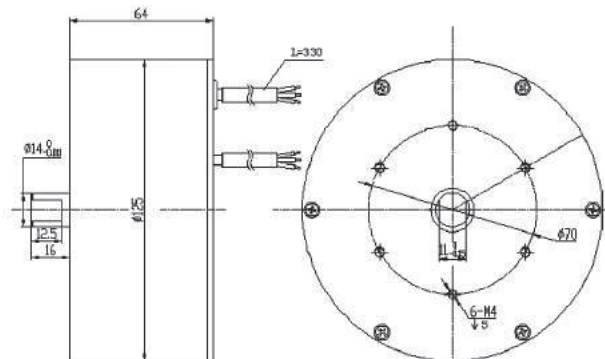
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	Red	UL1332 AWG22	Vcc	POWER SUPPLY POSITIVE OF HALL: +5VDC---+24VDC
2	Blue		Hall A	
3	Green		Hall B	
4	White		Hall C	
5	Black	UL3135 AWG14	GND	POWER SUPPLY NEGATIVE OF HALL
6	Yellow		Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model	FL125BL60	
Number of poles	24	
Number of phase	3	
Rated voltage	VDC	60
Rated speed	RPM	480
Rated torque	N.m	6.8
Rated power	W	340
Peak torque	N.m	40
Peak current	A	46
Resistance	ohms	0.77
Inductance	mH	2.64
Torque constant	Nm/A	0.88
Back E.M.F	Vrms/KRPM	65
Rotor inertia	g.cm ²	2100
Body length(L)	mm	64
Weight	Kg	2.9

● DIMENSIONS



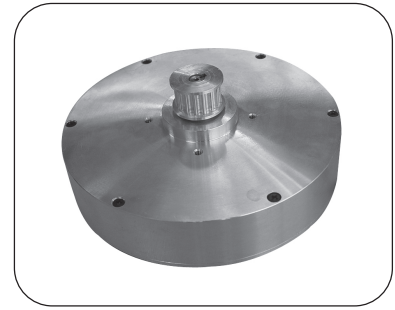
*Product developing, only available for samples.

Brushless DC Motor

FL150BL SERIES

● INDICATIONS OF THE MODELS

FL 150 BL 32 — 24V — 5 55 A
 Fulling | Motor frame size: Metric (mm) 150mm | Brushless motor | Body length:32mm | Rated voltage:24VDC | Rated speed/100 :500rpm | Output power : 55W | Single shaft (B:double shaft)



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	115N @ 10mm from the flange
Max. axial force	45N
Insulation class	CLASS B/F
Dielectric strength	500VAC@ 1Min
Insulation resistance	100MΩ , 500VDC

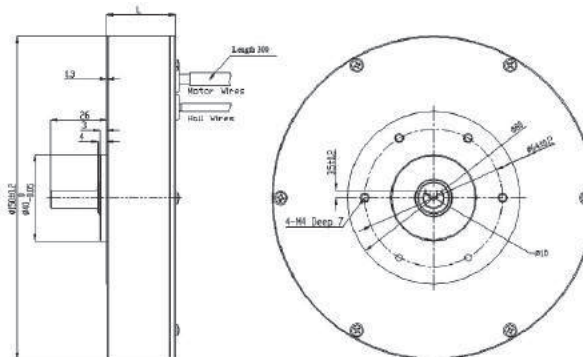
● ELECTRIC CONNECTION

No.	Lead color	Lead Gauge	Function	Description
1	Red	AWG26	Hall Vcc	+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black		Hall GND	0 V
6	Yellow	AWG16	Phase U	
7	Red		Phase V	
8	Black		Phase W	

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL150BL32—24V—555A	FL150BL36—24V—355A	FL150BL46—48V—4140A
Number of poles		28	28	28
Number of phase		3	3	3
Rated voltage	VDC	24	24	48
Rated speed	RPM	500	300	350
Continuous stall torque	N.m	1.2	1.96	4.32
Rated torque	N.m	1.0	1.80	3.60
Rated power	W	55	55	140
Peak torque	N.m	3.0	5.4	10.8
Peak current	A	10	11	13
Resistance	ohms@20℃	0.85	0.85	1.25
Inductance	mH	3.0	3.0	8.2
Torque constant	mNm/A	315	505	831
Back EMF	Vrms/KRPM	23.3	37.4	61.5
Rotor inertia	g.cm ²	1800	3000	6000
Body length	mm	32	36	46
Mass	Kg	1.4	2.2	4.1

● DIMENSIONS



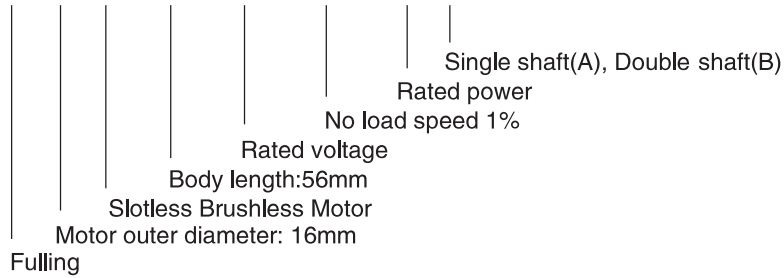
*Product developing, only available for samples.

Slotless Brushless DC Motor

FL16SBL SERIES

● INDICATIONS OF THE MODELS

FL 16 SBL 56-24V-300-XX A



● GENERAL SPECIFICATIONS

Winding type	Star
Radial play	0.025mm@360g
End play	0.3mm@1000g
Max. radial force	15N
Max. axial force	5N
Insulation class	Class F
Dielectric strength	300VAC for one minute
Insulation resistance	100M Ω Min., 500VDC

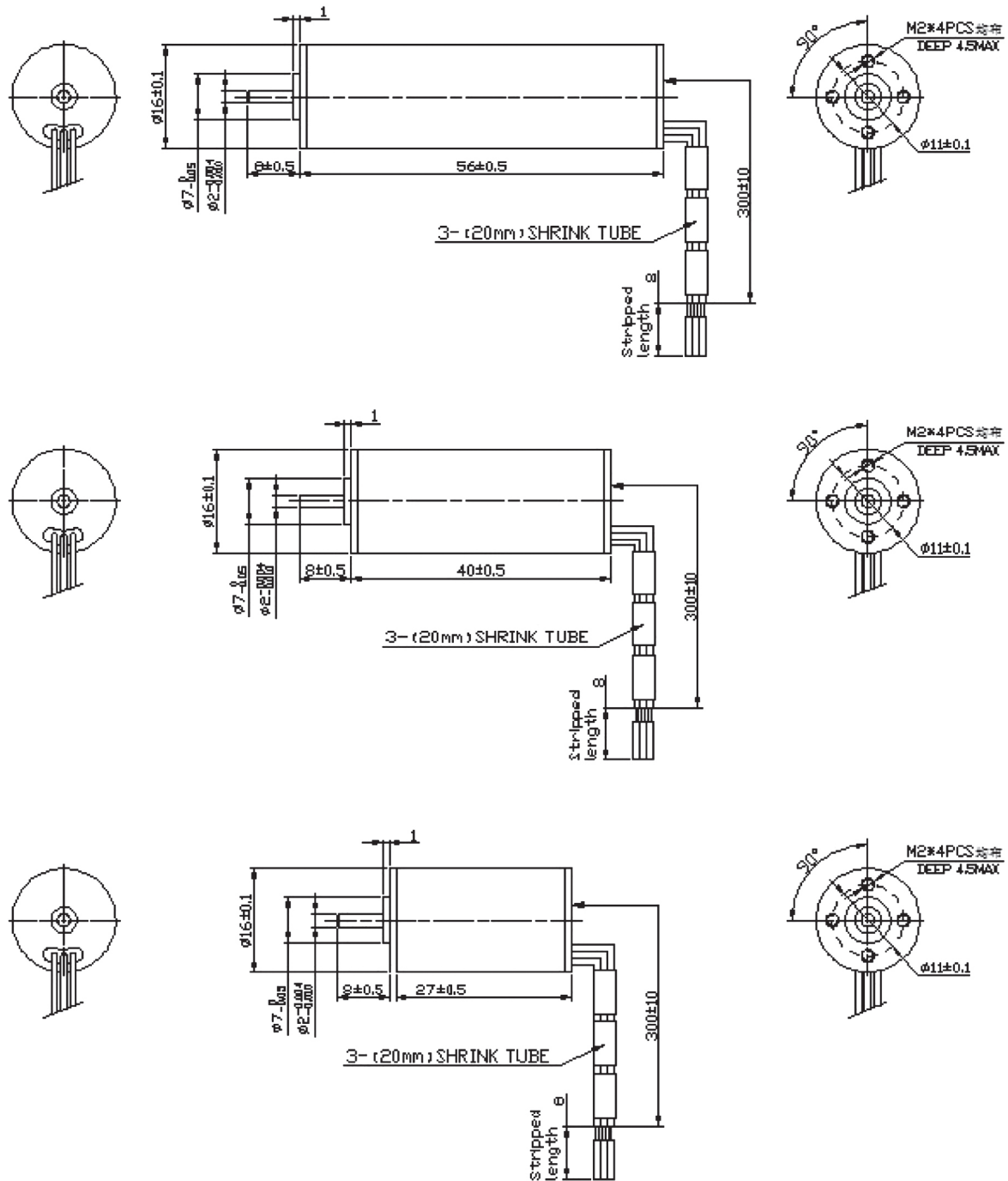
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	YEL	UL1332 AWG22	Motor U	
2	BLU		Motor V	
3	GRN		Motor W	

● ELECTRICAL SPECIFICATIONS

Model		FL16SBL28-12V-270-4A	FL16SBL40-24V-300-10A	FL16SBL56-24V-300-24A
Number of poles		2	2	2
Number of phase		3	3	3
Rated voltage	VDC	12	24	24
No load speed	RPM	27000	30000	30000
No load current	A	0.11	0.12	0.16
Rated speed	RPM	22000	25000	25000
Rated torque	mN.m	1.6	4	9
Rated power	W	3.7	10	24
Peak torque	mN.m	4.8	12	27
Peak current	A	1.4	1.9	4.0
Line to line resistance	ohms@25°C	5.4 Ω	6.6 Ω	3.15 Ω
Line to line inductance	mH	0.17	0.21	0.15
Torque constant	mNm/A	4.18	7.42	7.42
Back E.M.F	Vrms/kRPM	0.31	0.55	0.55
Rotor inertia	g.cm ²	0.4	0.66	1.02
Body length	mm	28	40	56
Weight	g	29	42	64

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

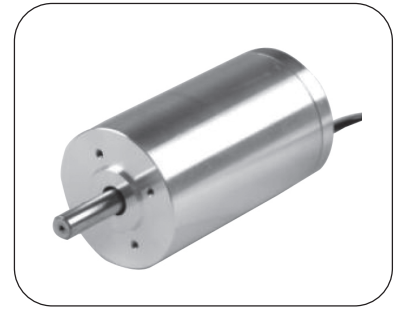
Slotless Brushless DC Motor

FL27SBL SERIES

● INDICATIONS OF THE MODELS

FL 27 SBL 114- 320V- 432- 1125 A

Single shaft(A), Double shaft(B)
Peak torque: 1125 mNm
No load speed : 43200RPM
Rated voltage: 320VDC
Body length: 114mm
Slotless Brushless Motor
Motor outer diameter: 27mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	20N@10mm from the flange
Max. axial force	8N
Insulation class	Class H
Dielectric strength	2500VAC,3 seconds, limit of 5mA.
Insulation resistance	100MΩ Min., 500VDC

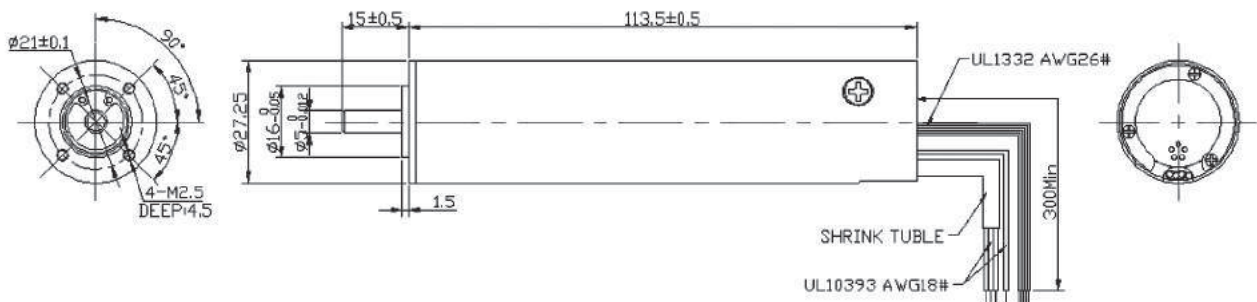
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	RED	UL1332 AWG26	Vcc	5-24V
2	BRN		Hall A	
3	WHT		Hall B	
4	ORG		Hall C	
5	BLK	UL10393 AWG18	GND	Hall negative
6	YEL		Motor U	
7	BLU		Motor V	
8	GRN		Motor W	
9	YEL/GRN		GND	GROUND

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL27SBL114-320V-432-1125A
Number of poles		2
Number of phase		3
Rated voltage	VDC	320
Ldling speed	RPM	43270
Peak torque	mN.m	1125
Peak current	A	17
Line to line resistance	ohms@25℃	9.0
Line to line inductance	mH	3.8
Torque constant	mNm/A	70.6
Back E.M.F constant	Vrms/kRPM	5.23
Rotor inertia	g.cm ²	10.2
Body length(L)	mm	113.5
Weight	g	320

● DIMENSIONS



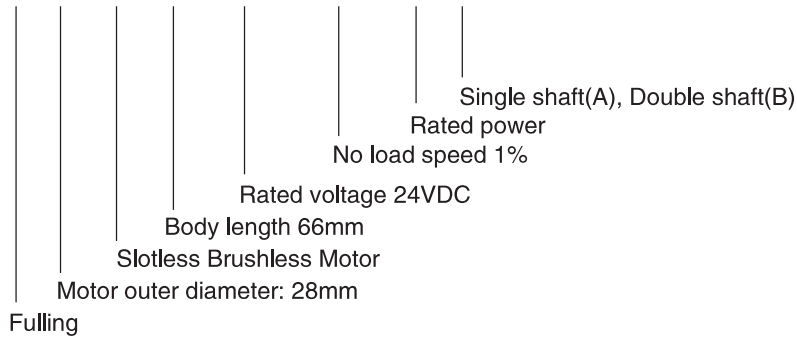
*This motor can be designed & manufactured with customized request.

Slotless Brushless DC Motor

FL28SBL SERIES

● INDICATIONS OF THE MODELS

FL 28 SBL 66 – 24V – 170 – XX A



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Radial play	0.025mm@460g
End play	0.3mm@4000g
Max. radial force	60N
Max. axial force	15N
Insulation class	Class F
Dielectric strength	500VDC for one minute
Insulation resistance	100MΩ Min., 500VDC

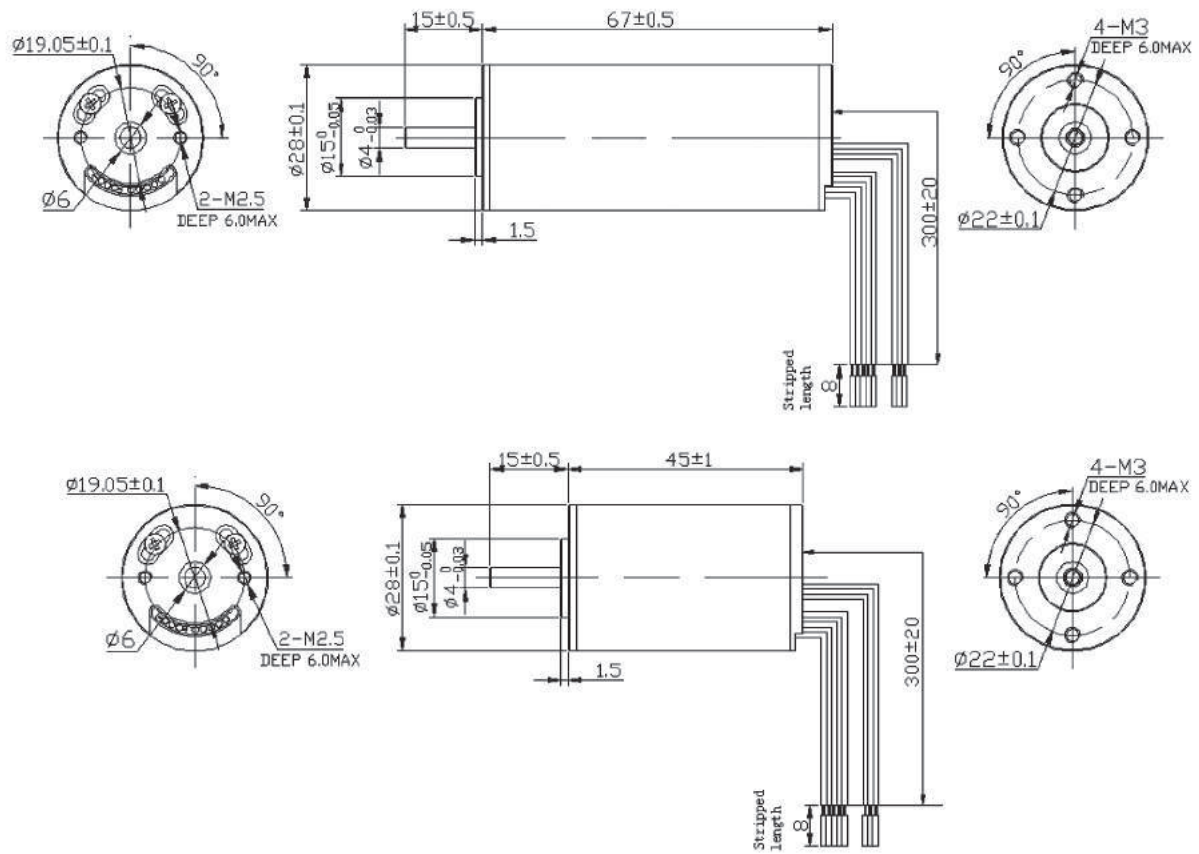
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	RED	UL1332 AWG26	Vcc	5–24V
2	BRN		Hall A	
3	WHT		Hall B	
4	ORG		Hall C	
5	BLK		GND	Hall negative
6	YEL	UL1332 AWG22	Motor U	
7	BLU		Motor V	
8	GRN		Motor W	

● ELECTRICAL SPECIFICATIONS

		FL28SBL66–24V–170–79A	FL28SBL44–24V–170–37A
Number of poles		2	2
Number of phase		3	3
Rated voltage	VDC	24	24
No load speed	RPM	17000	17000
No load current	A	0.4	0.35
Rated speed	RPM	14000	14000
Rated torque	mN.m	54	24
Rated power	W	79	37
Peak torque	mN.m	162	75
Peak current	A	12.8	6.3
Line to line resistance	ohms@25℃	0.6	2.1
Line to line inductance	mH	0.064	0.22
Torque constant	mNm/A	13.2	13.2
Back E.M.F constant	Vrms/kRPM	0.98	0.98
Rotor inertia	g.cm ²	14.5	7.5
The length of the fuselage	mm	66	44
Weight	g	225	135

● DIMENSIONS



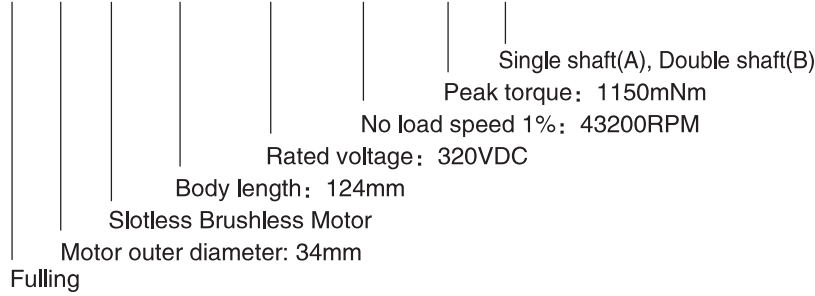
*This motor can be designed & manufactured with customized request.

Slotless Brushless DC Motor

FL34SBL SERIES

● INDICATIONS OF THE MODELS

FL 34 SBL 124- 320V- 432 -1150 A



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120 degree electrical angle
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N@20mm from the flange
Max. axial force	10N
Insulation class	Class H
Dielectric strength	2500VAC.3 seconds, limit of 5mA.
Insulation resistance	100MΩ Min., 500VDC

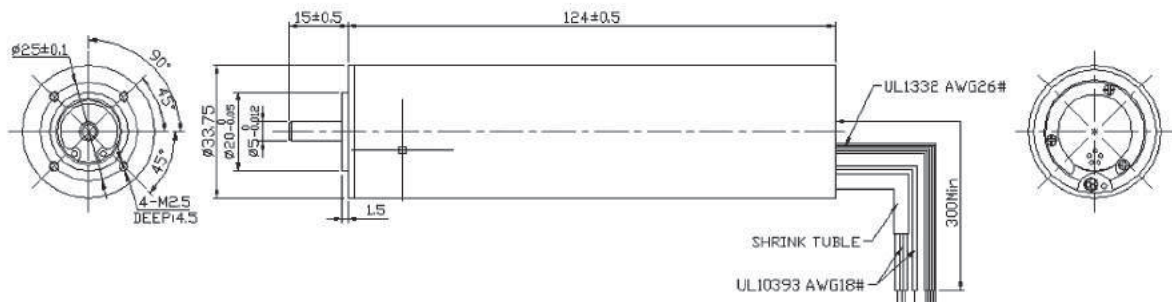
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	Function	Description
1	RED	UL1332 AWG26	Vcc	5-24V
2	BRN		Hall A	
3	WHT		Hall B	
4	ORG		Hall C	
5	BLK	UL10393 AWG18	GND	GROUND
6	YEL		Motor U	
7	BLU		Motor V	
8	GRN		Motor W	
9	YEL/GRN		GND	GROUND

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL34SBL124-320V-432-1150A
Number of poles		2
Number of phase		3
Rated voltage	VDC	320
No load speed	RPM	43200
Rated torque(lastng 2s to 5s)	mN.m	460
Peak torque	mN.m	1150
Peak current	A	17
Line to line resistance	ohms@25℃	9.0
Line to line inductance	mH	3.8
Torque constant	mNm/A	68.9
Back E.M.F constant	Vrms/kRPM	5.1
Rotor inertia	g.cm ²	52.5
Body length(L)	mm	124
Weight	g	532

● DIMENSIONS



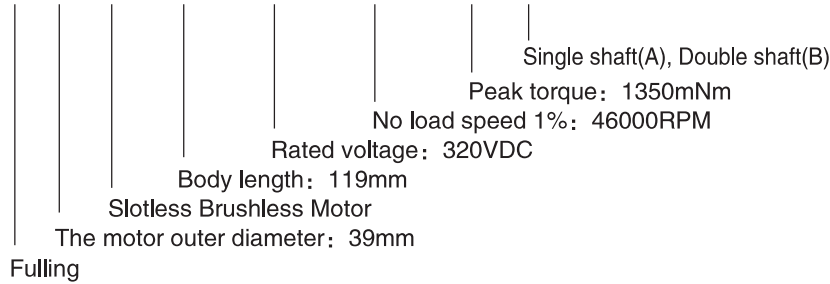
*This motor can be designed & manufactured with customized request.

Slotless Brushless DC Motor

FL39SBL SERIES

● INDICATIONS OF THE MODELS

FL 39 SBL 119—320V— 460 —1350 A



● GENERAL SPECIFICATIONS

Winding type	star
Hall effect angle	120degree electrical angle
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	30N@20mm from the flange
Max. axial force	12N
Insulation class	Class H
Dielectric strength	2500VDC.3 seconds, limit of 5mA.
Insulation resistance	100MΩ , 500VDC

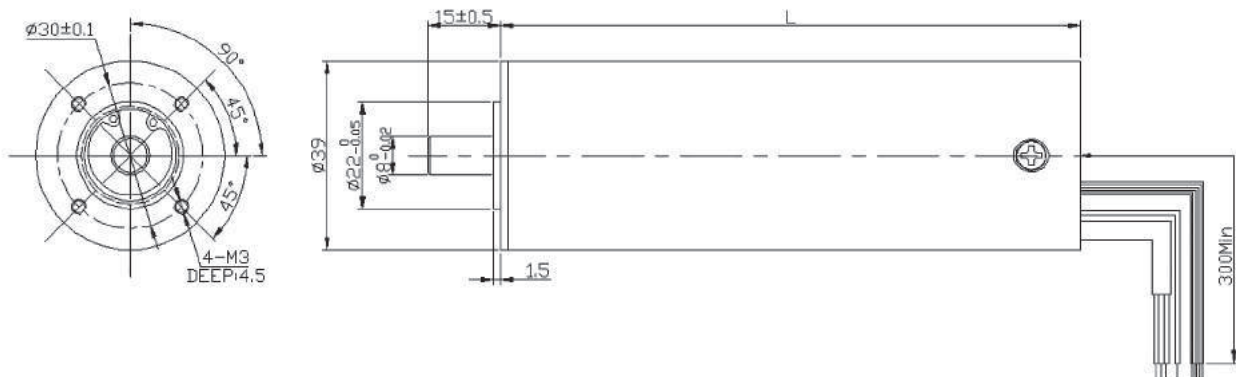
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Vcc	Hall positive:+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG16/ 18/20/22	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	
9	Yellow/ White		GND	GROUND

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL39SBL119—320V—460—1350A
Number of poles		2
Number of phase		3
Rated voltage	VDC	320
No load speed	RPM	46000
Peak torque	mN.m	1375
Peak current	A	22
Line to line resistance	ohms@20℃	1.65
Line to line inductance	mH	1.84
Torque constant	mNm/A	66.2
Back E.M.F constant	Vrms/kRPM	4.9
Rotor inertia	g.cm ²	50.9
Body length(L)	mm	119
Weight	g	696

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

Slotless Brushless DC Motor

FL45SBL SERIES

● INDICATIONS OF THE MODELS

FL45SBL125—320V—395—1700 A

Single shaft(A), Double shaft(B)
Peak torque: 1700mNm
No load speed 1%: 39500rpm
Rated voltage: 320VDC
Body length: 125mm
Slotless Brushless Motor
Motor outer diameter: 45mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	star
Hall effect angle	120degree electrical angle
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	30N@20mm from the flange
Max. axial force	12N
Insulation class	Class H
Dielectric strength	2500VDC.3 seconds, limit of 5mA.
Insulation resistance	100MΩ , 500VDC

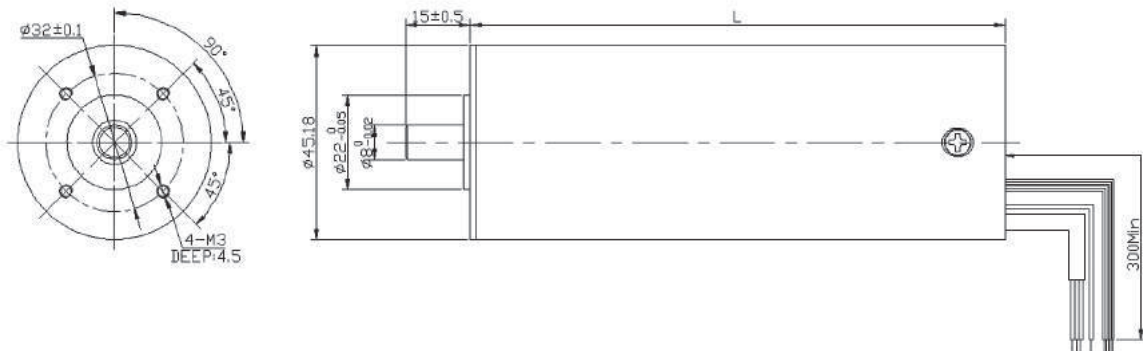
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Vcc	HALL positive:+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG16/ 18/20/22	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	
9	Yellow/ White		GND	GROUND

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL45SBL125-320V-395-1700A
Number of poles		2
Number of phase		3
Rated voltage	VDC	320
No load speed	RPM	39500
Peak torque	mNm	1763
Peak current	A	27
Line to line resistance	ohms@20℃	1.35
Line to line inductance	mH	0.75
Torque constant	mNm/A	71.6
Back E.M.F constant	Vrms/kRPM	5.3
Rotor inertia	g.cm ²	233
Body length(L)	mm	125
Weight	g	710

● DIMENSIONS



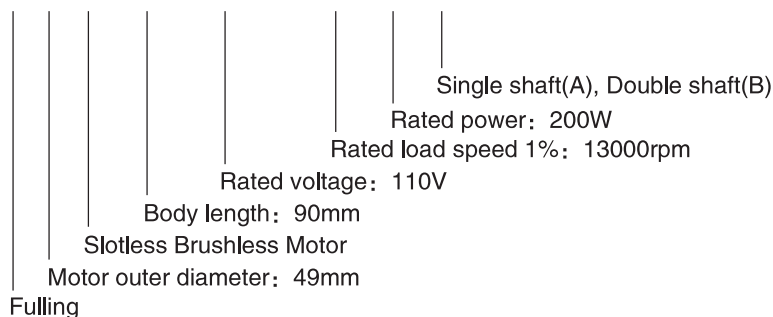
*This motor can be designed & manufactured with customized request.

Slotless Brushless DC Motor

FL49SBL SERIES

● INDICATIONS OF THE MODELS

FL49SBL90—110V—130 200 A



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120degree electrical angle
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N@20mm from the flange
Max. axial force	12N
Insulation class	Class B/F/H
Dielectric strength	2500VDC, 3 seconds, limit of 5mA.
Insulation resistance	100MΩ, 500VDC

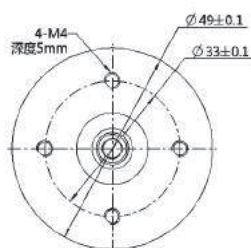
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Vcc	HALL positive:+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG16/ 18/20/22	GND	HALL negative
6	Yellow		U	
7	Red		V	
8	Black		W	
9	Yellow/White		GND	GROUND

● ELECTRICAL SPECIFICATIONS

	Unit	FL49SBL180—320V —3201000A	FL49SBL90—110V —130200A	FL49SBL120—48V —240500A
Number of poles		2		
Number of phase		3		
Rated voltage	VDC	320	110	48
Rated speed	RPM	32000	13000	24000
Continuous running torque	mN.m	360	168	240
Rated torque	mN.m	300	140	200
Rated power	W	1000	200	500
Peak torque	mN.m	900	420	600
Peak current	A	12	7.6	34
Line to line resistance	ohms@20℃	0.82	3.4	0.08
Line to line inductance	mH	0.90	2.5	0.07
Torque constant	mNm/A	89	74	18.8
Back E.M.F constant	Vrms/KRPM	6.6	5.5	1.4
Rotor inertia	g.cm ²	340	110	174
Body length(L)	mm	180	90	120
Weight	Kg	2.2	1.1	1.5

● DIMENSIONS



*Product developing, only available for samples.

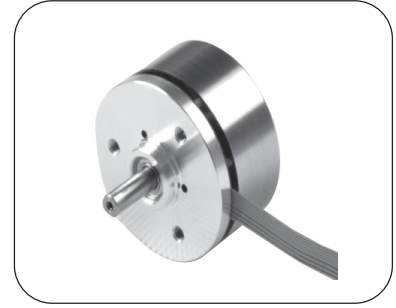
Outer Rotor Brushless DC Motor

FL32BLW SERIES

● INDICATIONS OF THE MODELS

FL 32 BLW 18 - 24V - 45 07 A

Single shaft(A)
(B: double shaft)
Rated power 7W
No load speed 1%
Rated voltage 24V
Body length: 18mm
Brushless outrotor motor
The motor outer diameter: 32mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	Star
Electrical degree	120e
Radial play	0.02mm@4N
End play	0.14mm@4N
Max. radial force	14N
Max. axial force	4.8N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

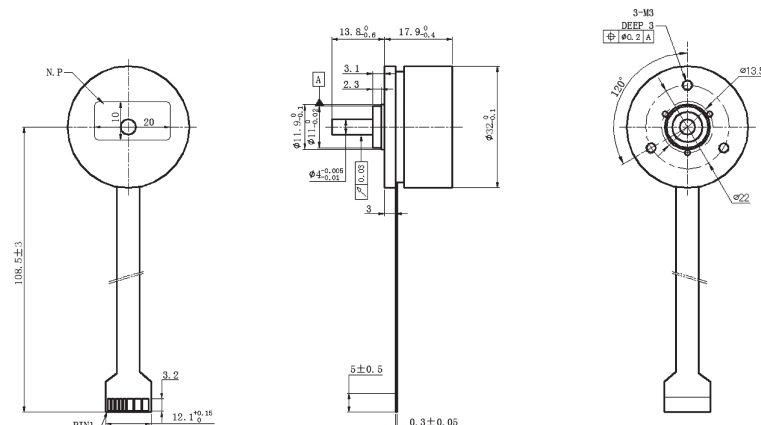
● ELECTRIC CONNECTION

Connector No.	Pin No	Function	Description
FPC	1	Vcc	Power supply positive of r hall :+5VDC--+24VDC
	2	HALLC	
	3	HALLA	
	4	HALLB	
	5	GND	Power supply negative of Hall
	6	Motor W	
	7	Motor V	
	8	Motor U	

● ELECTRICAL SPECIFICATIONS

	Unit	Tolerance	FL32BLW18-9V-3706A	FL32BLW18-12V-4607A	FL32BLW18-24V-4507A	FL32BLW18-48V-4808A
Number of poles			8	8	8	8
Number of phases			3	3	3	3
Rated voltage	VDC		9	12	24	48
Noload speed	RPM	± 10%	3750	4650	4550	4800
No load current	A		0.252	0.29	0.14	0.077
Rated current	A		1.06	1	0.5	0.257
Rated speed	RPM	± 10%	2100	2800	2760	2950
Rated torque	mN.m		24.6	25.1	25.5	24.7
Rated power	W		6	7	7	8
Peak torque	mN.m		73.8	75.3	76.5	74.1
Peak current	A	± 10%	3.4	3.2	1.7	0.97
Line to line resistance	ohms@25℃	± 10%	2.87	3.43	13.7	53
Line to line inductance	mH	± 20%	1.61	1.87	7.73	27.8
Torque constant	mNm/A	± 10%	23	24.8	51	96.1
Back E.M.F constant	Vrms/RPM	± 10%	1.7	1.83	3.77	7.1
Rotor inertia	g.cm ²		35	35	35	35
Weight	g		50	50	50	50

● DIMENSIONS



*Product developing, only available for samples.

Outer Rotor Brushless DC Motor

FL45BLW SERIES

● INDICATIONS OF THE MODELS

FL 45 BLW 18 - 24V - 65 30 A
 Fulling Outer rotor BLDC motor The motor outer diameter: 45mm
 Body length: 18mm
 Rated voltage: 24V
 No load speed 1%
 Rated power: 30W
 Single shaft(A)
 (B: double shaft)



● GENERAL SPECIFICATIONS

Winding type	Star
Electrical degree	120
Radial play	0.02mm@4N
End play	0.14mm@4N
Max. radial force	28N
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

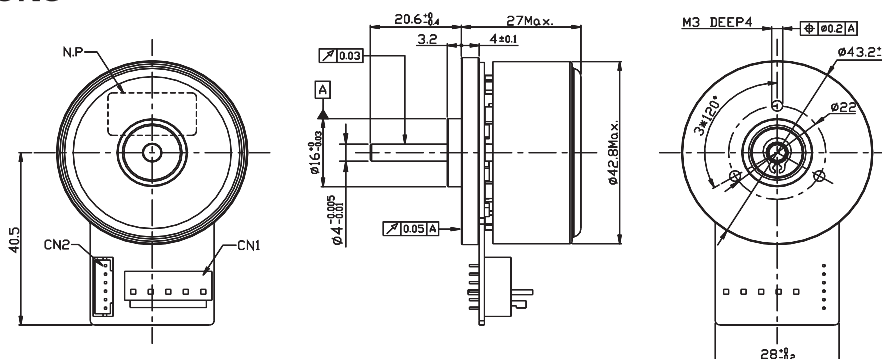
● ELECTRIC CONNECTION

Connector No.	Pin No.	Function	Description
CN1	1	Motor U	
	2	Motor V	
	3	Motor W	
CN2	1	GND	Ground for hall sensors
	2	Vcc	Supply voltage for hall sensors+5VDC→+24VDC
	3	HALL A	
	4	HALL B	
	5	HALL C	

● ELECTRICAL SPECIFICATIONS

Model	Unit	Tolerance	FL45BLW18-24V-6530A	FL45BLW21-24V-6750A	FL45BLW27-24V-6170A
Number of poles			16	16	16
Number of phase			3	3	3
Rated voltage	VDC		24	24	24
Noload speed	RPM	± 10%	6500	6700	6100
No load current	A	<0.5A	0.27	0.33	0.38
Rated speed	RPM	± 10%	5000	5260	4840
Rated torque	mN.m		50	84	130
Rated power	W		30	50	70
Peak torque	mN.m		150	250	390
Peak current	A	± 10%	4.8	7.8	11
Resistance	ohms@25℃	± 10%	1.42Ω	0.70Ω	0.56Ω
Inductance	mH	± 20%	0.59	0.33	0.27
Torque constant	mNm/A	± 10%	35.3	34.2	37.2
BackE.M.F constant	Vrms/KRPM	± 10%	2.61	2.53	2.75
Rotor inertia	g.cm ²		99	135	181
Weight	g		80	120	150

● DIMENSIONS



*This motor can be designed & manufactured with customized request.

Outer Rotor Brushless DC Motor With built-in Driver

FL68BLW SERIES

● INDICATIONS OF THE MODELS

FL 68 BLW 54 — 24V—35 36 A — IE Integrated drive
 Fulling
 The motor outer diameter: 68mm
 Brushless outer rotor motor
 Body length: 54mm
 Rated voltage: 24V
 Rated load speed 1%: 3500rpm
 Rated power: 36W
 Single shaft (A)
 Double shaft (B)



INTEGRATED DRIVE ELECTRIC CONNECTION

GND	+Vp	SV	PG
O	O	O	O
1	2	3	4
			5

- 1 GND--- Ground
- 2 +Vp---Input voltage +24VDC
- 3 Empty--- **NC**
- 4 SV--- Speed regulating voltage 0—5VDC
- 5 PG--- Speed pulse output (TTL),36 PULSE/REV

● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	50N @ 10mm from the flange
Max. axial force	20N
Insulation class	Class B/F
Dielectric strength	500VAC 1 min.
Insulation resistance	100MΩ, 500VDC

● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Positive of Hall	+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG18-22	Negative of Hall	
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

	Unit	FL68BLW54-24V-3536A-IE	FL68BLW49-24V-2060A	FL68BLW100-36V-6135B	FL68BLW35-24V-1021B
Number of poles		12	12	22	22
Number of phase		3	3	3	3
Rated voltage	VDC	24	24	36	24
Rated speed	RPM	3500	2000	630	1000
Continuous running torque	N.m	0.12	0.30	2.52	0.24
Rated torque	N.m	0.10	0.25	2.10	0.20
Rated power	W	36	53	138	21
Peak torque	N.m	0.30	0.75	6.30	0.60
Peak current	A	6	9	14.7	3.8
Line to line resistance	ohms@20℃	0.4	0.9	0.8	2.7
Line to line inductance	mH	0.56	2.1	2.0	3.4
Torque constant	mNm/A	55.4	86.5	439	174
Back E.M.F	Vrms/KRPM	4.1	6.4	32.5	12.9
Rotor inertia	g.cm ²	1050	1050	4250	450
Body length(L)	mm	54	49	100	35
Weight	Kg	0.6	0.5	1.8	0.6

● DIMENSIONS

12 poles FL68BLW motor see figure 1

22 poles FL68BLW motor see figure 2

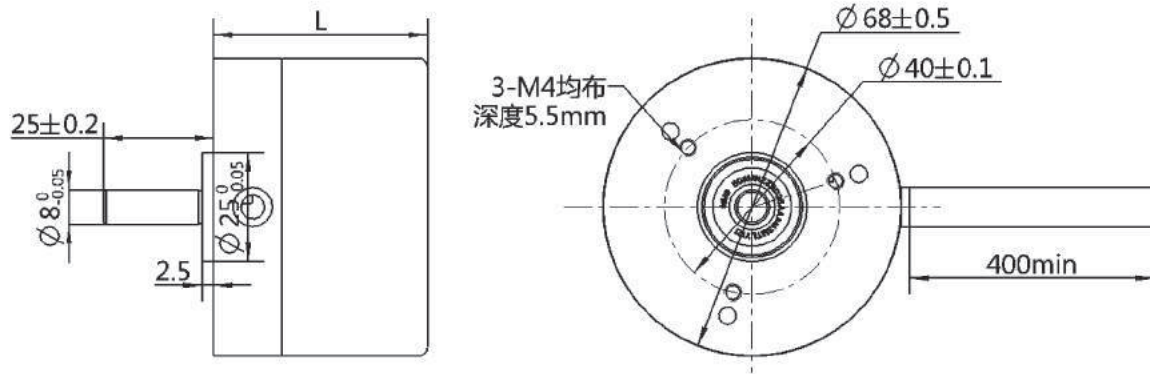


Figure 1

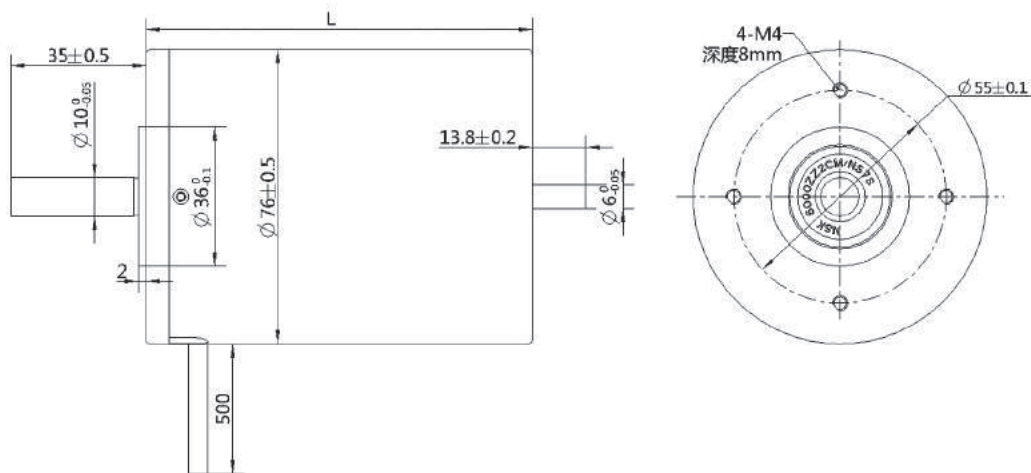


Figure 2

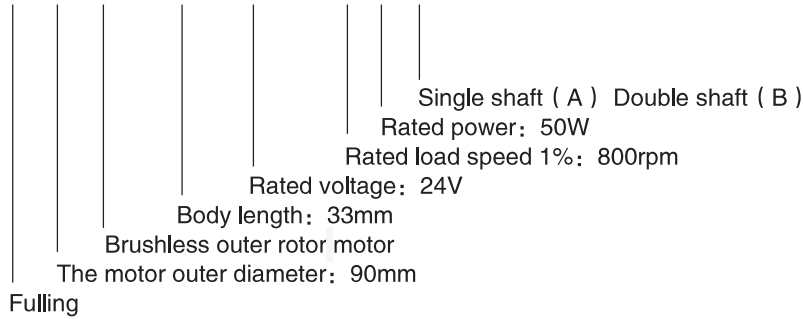
*Product developing, only available for samples.

Outer Rotor Brushless DC Motor

FL90BLW SERIES

● INDICATIONS OF THE MODELS

FL 90 BLW 33—24V— 8 50 A



● GENERAL SPECIFICATIONS

Winding type	Star
Hall effect angle	120degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	110N @ 10mm from the flange
Max. axial force	45N
Insulation class	Class B/F
Dielectric strength	500VAC 1 min.
Insulation resistance	100MΩ, 500VDC

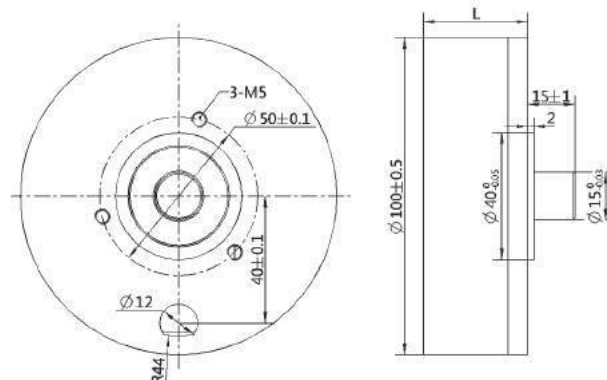
● ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG26	Positive of Hall	+5—+24V
2	Blue		Hall U	
3	Green		Hall V	
4	White		Hall W	
5	Black	AWG16/18 /20/22	Negative of Hall	
6	Yellow		U	
7	Red		V	
8	Black		W	

● ELECTRICAL SPECIFICATIONS

	Unit	FL90BLW33—24V—850A	FL90BLW55—48V—5100A
Number of poles		22	22
Number of phase		3	3
Rated voltage	VDC	24	48
Rated speed	RPM	800	500
Continuous running torque	N.m	0.72	2.4
Rated torque	N.m	0.60	2.0
Rated power	W	50	100
Peak torque	N.m	1.8	6.0
Peak current	A	9.5	8.5
Line to line resistance	ohms@20℃	1.1	2.1
Line to line inductance	mH	1.4	5.0
Torque constant	mNm/A	193	736
Back E.M.F	Vrms/KRPM	14.3	54.5
Rotor inertia	g.cm ²	2000	4000
Body length(L)	mm	33	55
Weight	Kg	1.4	2.4

● DIMENSIONS

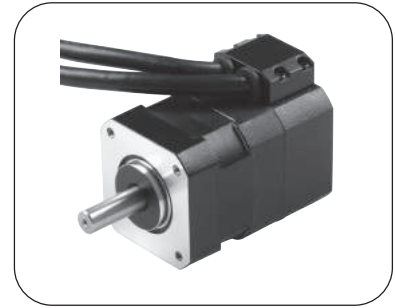
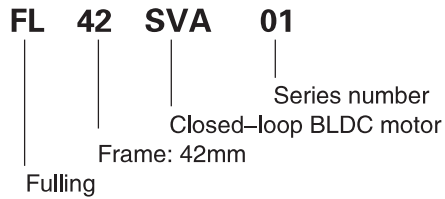


*Product developing, only available for samples.

Closed-loop Brushless DC Motor

FL42SVA SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N @ 20mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

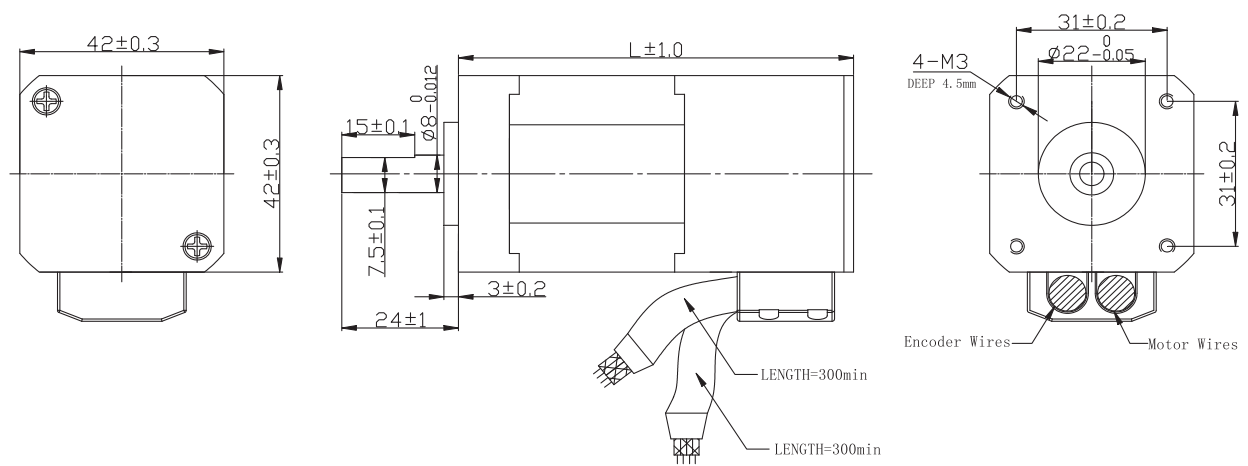
● ELECTRIC CONNECTION

No.	Lead Color	Lead Gauge	Function	CONNECTOR
1	Red/White	cable 26AWG	GND	AMP1-172169-9
2	Red		VCC:+5VDC	
3	Blue		EA-	
4	Blue/Black		EA+	
5	Black		EB-	
6	Black/White		EB+	
7	Brown		HALL A	
8	orange		HALL B	
9	Yellow		HALL C	
1	Yellow	cable 18AWG	U	AMP1-172167-9
2	Red		V	
3	Black		W	

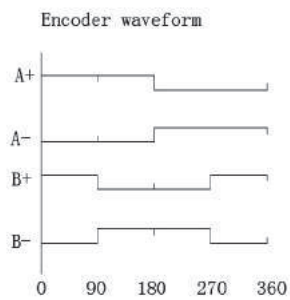
● ELECTRICAL SPECIFICATIONS

Model		FL42SVA01	FL42SVA02	FL42SVA03	FL42SVA04
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	5000			
Continuous stall torque	N.m	0.075	0.15	0.22	0.3
Rated torque	N.m	0.0625	0.125	0.185	0.25
Rated power	W	33	65.5	97	131
Peak torque	N.m	0.19	0.38	0.56	0.75
Peak current	A	6.5	12.5	18.3	24.4
Line to line resistance	ohms	1.15	0.5	0.28	0.25
Line to line inductance	mH	1.75	0.9	0.51	0.38
Torque constant	Nm/A	0.03	0.031	0.031	0.031
Back EMF	V/Krpm	2.23	2.3	2.32	2.28
Rotor inertia	g.cm ²	24	48	72	96
Body length	mm	61.3	81.3	101.3	121.3
Mass	Kg	0.3	0.45	0.65	0.8

● DIMENSIONS



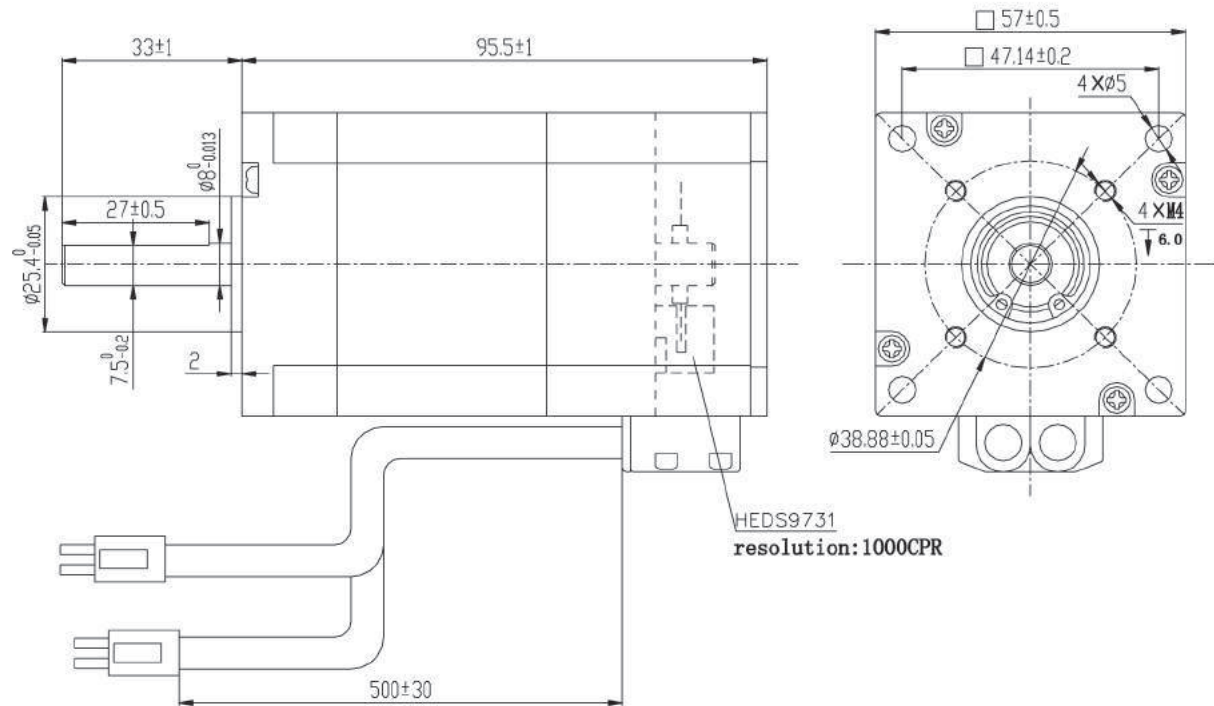
● Encoder Output



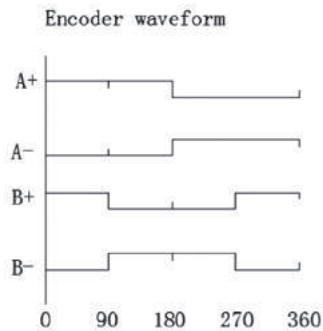
Resolution ratio is 1000 CPR, other ratio is optional.

*This motor can be designed & manufactured with customized request.

● DIMENSIONS



● Encoder Waveform



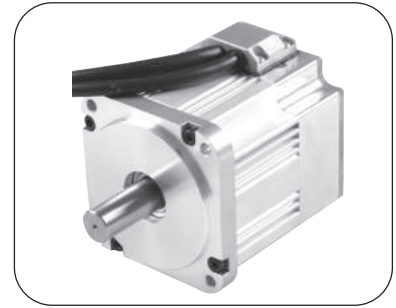
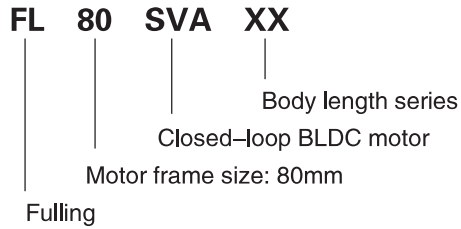
Resolution ratio is 1000 CPR, other ratio is optional.

*This motor can be designed & manufactured with customized request.

Closed-loop Brushless DC Motor

FL80SVA SERIES

● INDICATIONS OF THE MODELS



● GENERAL SPECIFICATIONS

Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.05mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	@20mm from the flange
Max. axial force	45N
Insulation class	Class F
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

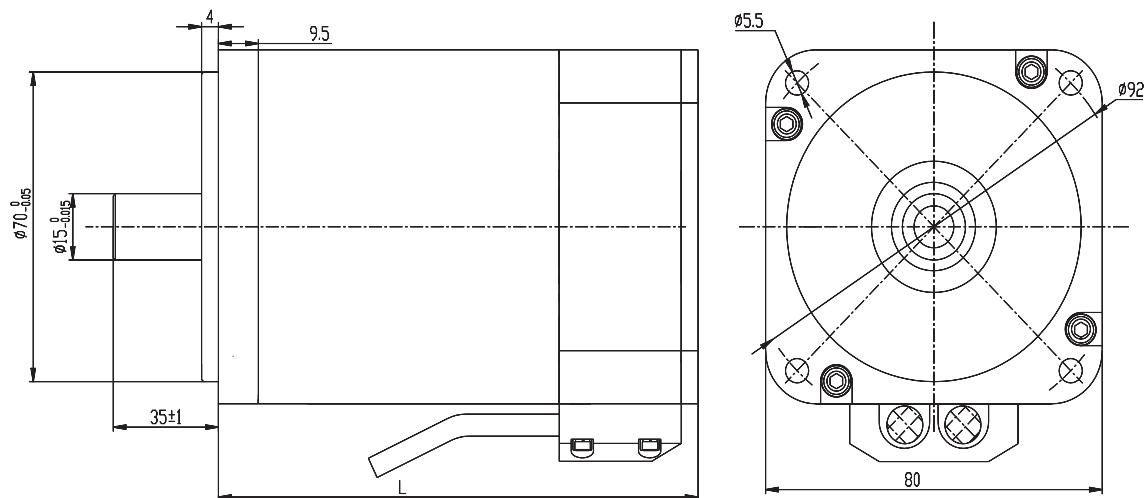
● ELECTRIC CONNECTION

No.	Lead Color	Lead Gauge	Function	Connector
1	RED/WHT	cable 26AWG	GND	AMP1-172169-9
2	RED		VCC	
3	BLU		EA-	
4	BLU/BLK		EA+	
5	BLK		EB-	
6	BLK/WHT		EB+	
7	BRW		Hall A	
8	ORG		Hall B	
9	YEL		Hall C	
1	YEL	cable 18AWG	U	AMP1-172167-9
2	RED		V	
3	BLK		W	

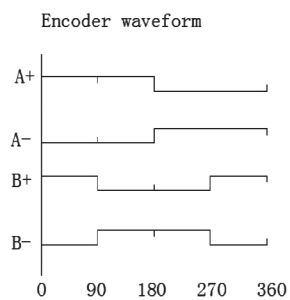
● ELECTRICAL SPECIFICATIONS

Model		FL80SVA01	FL80SVA02
Number of poles		8	
Number of phase		3	
Rated voltage	VDC	48	
Rated speed	RPM	3000	
Rated torque	N.m	0.9	1.6
Rated power	W	280	500
Peak torque	N.m	2.5	4.5
Peak current	A	21.5	40.5
Resistance	ohms	0.25	0.10
Inductance	mH	1.3	0.6
Torque constant	Nm/A	0.118	0.113
Back E.M.F	Vrms/KRPM	8.7	8.4
Rotor inertia	g.cm ²	544	1020
Body length(L)	mm	86	107
Weight	Kg	1.6	2

● DIMENSIONS



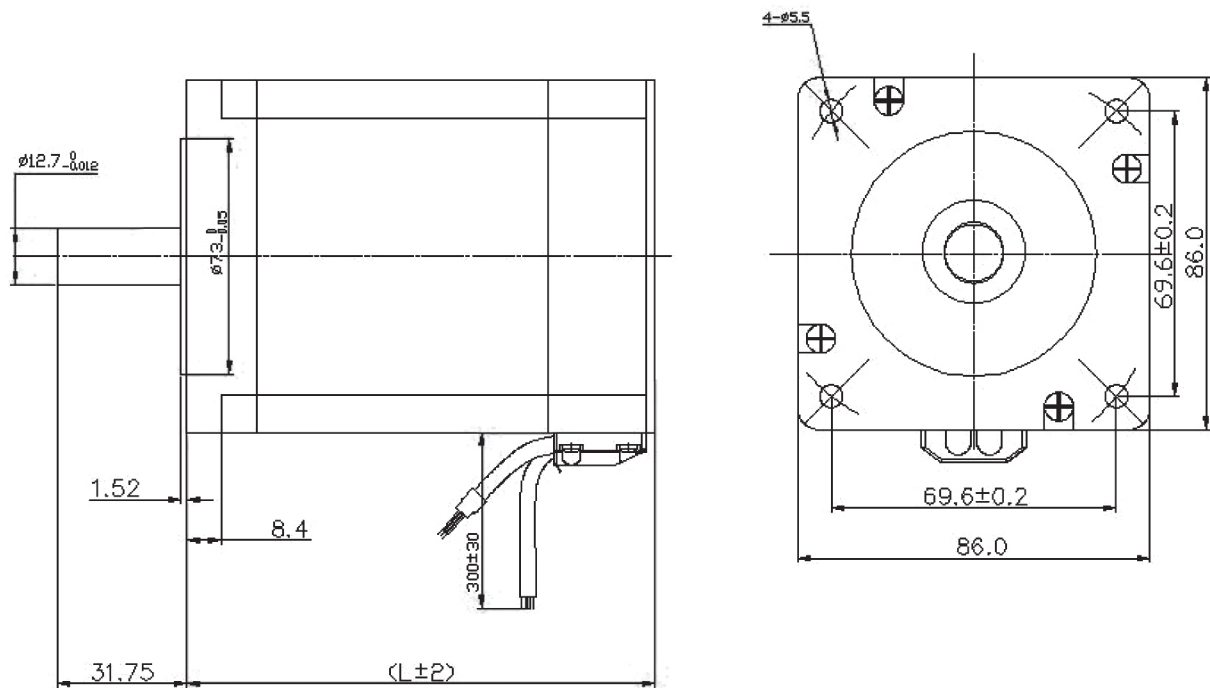
● Encoder Output



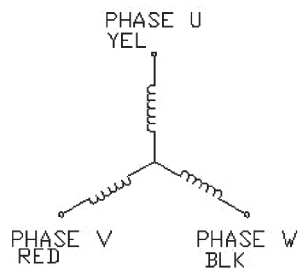
Resolution ratio is 1000 CPR, other ratio is optional.

*This motor can be designed & manufactured with customized request.

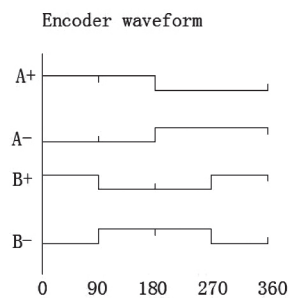
● DIMENSIONS



THREE-PHASE CONNECTING



● Encoder Output



Resolution ratio is 1000 CPR, other ratio is optional.

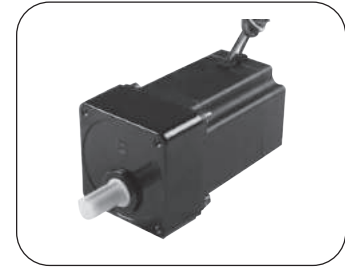
*This motor can be designed & manufactured with customized request.

FL86BLS-90JB Spur Geared BLDC Motor

● Indications of the models

FL 86 BLS 58 – 90 JB 30

Ratio: 1:30
Spur gearbox
Gearbox frame: 90mm*90mm
Motor model: same specs with FL86BLS series motor



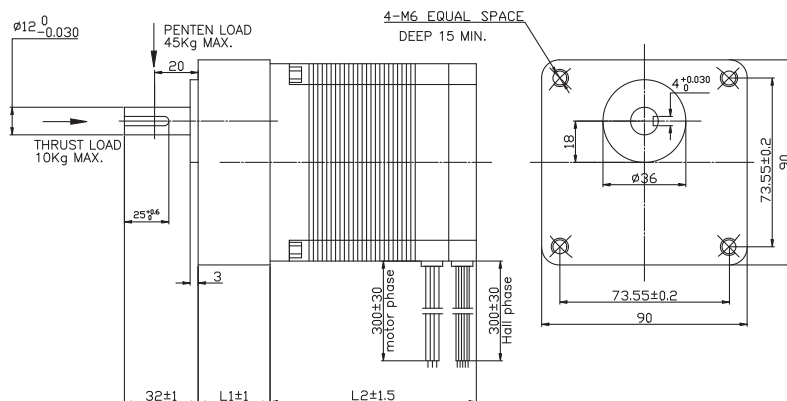
● Spur Gearbox Specifications

Ratio	3	5	6	7.5	9	10	12.5	15	18	20	25	30	36	40	50	60	75	90	100	120	
Weight	1.3kg									1.5kg											
Number of gear trains	2									3					4						
Nominal torque	30N.m																				
Ultimate torque	45N.m																				
Efficiency	81%									73%					66%						
Backlash	4 deg									3.5deg					2.5deg						

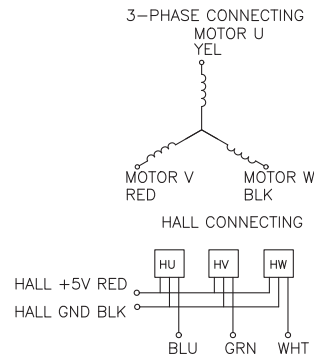
● Spur Geared BLDC Motor Specifications

	Ratio	3	5	6	7.5	9	10	12.5	15	18	20	25	30	36	40	50	60	75	90	100	120
FL86BLS58-90JB	Rated torque(N.m)	0.85	1.42	1.70	2.13	2.55	2.84	3.54	4.25	4.60	5.11	6.38	7.67	9.20	9.24	11.6	13.8	17.3	20.8	23.1	27.7
	Rated speed(RPM)	1000	600	500	400	333	300	240	200	167	150	120	100	83.3	75	60	50	40	33.3	30	25
	Ultimate torque(N.m)	2.55	4.25	5.10	6.38	7.65	8.52	10.6	12.7	13.8	15.3	19.1	23	27.6	27.7	34.8	41.4	45			
FL86BLS71-90JB	Rated torque(N.m)	1.70	2.84	3.4	4.25	5.10	5.67	7.08	8.50	9.20	10.2	12.8	15.3	18.4	18.5	23.1	27.7	---	---	---	---
	Rated speed(RPM)	1000	600	500	400	333	300	240	200	167	150	120	100	83.3	75	60	50	---	---	---	---
	Ultimate torque(N.m)	5.1	8.52	10.2	12.7	15.3	17.0	21.2	25.5	27.6	30.6	38.4	45					---	---	---	---
FL86BLS98-90JB	Rated torque(N.m)	3.4	5.67	6.80	8.50	10.2	11.3	14.2	17	18.4	20.4	25.5	30.6	---	---	---	---	---	---	---	---
	Rated speed(RPM)	1000	600	500	400	333	300	240	200	167	150	120	100	---	---	---	---	---	---	---	---
	Ultimate torque(N.m)	10.2	17.0	20.4	25.5	30.6	33.9	42.6	45				---	---	---	---	---	---	---	---	---
FL86BLS125-90JB	Rated torque(N.m)	5.1	8.5	10.2	12.7	15.3	17.0	21.2	25.5	27.5	30.6	---	---	---	---	---	---	---	---	---	---
	Rated speed(RPM)	1000	600	500	400	333	300	240	200	167	150	---	---	---	---	---	---	---	---	---	---
	Ultimate torque(N.m)	15.3	25.5	30.6	38.1	45							---	---	---	---	---	---	---	---	---

● DIMENSIONS



● WIRE DIAGRAM



RATIO	L2(mm)				L1(mm)
	FL86BLS58-90JB	FL86BLS71-90JB	FL86BLS98-90JB	FL86BLS125-90JB	
3---15	72	86	112	139	42
18---120					60

Φ22 行星减速器, 允许转矩范围: 0.05N.m~0.5N.m
22mm OD Planetary Gearbox,
Permissible Load Range: 0.05N.m~0.5N.m

U	V	W	Vcc	Ha	Hb	Hc	GND
红	棕	黑	蓝	黄	棕	红	绿
26AWG UL1430			28AWG UL1430				



电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值转矩 Reak torque mN.m	峰值电流 Peak current A	电 阻 Line toline resistance ohms	电 感 Line toline inductance mH
FL22RBL45-1270	8	3	12	7000	4800	8.0	4.0	24	2.2	5.25	1.6
FL22RBL45-2470	8	3	24	7000	4800	8.0	4.0	24	1.1	23	6.2

减 速 比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4	
减速器长度(L)	Length(L)	mm	24.4	24.4	31.0	31.0	31.0	37.4	37.4	37.4	37.4	43.8	43.8	43.8
空载转速	No-load speed	r/min	1887	1351	500	368	259	137	99	70	50	37	27	19
额定转速	Rated speed	r/min	1240	888	329	242	170	90	65	46	33	24	17	12
额定转矩	Rated torque	N.m	0.027	0.037	0.091	0.12	0.17	0.30	0.41	0.58	0.81	1	1.39	1.95
最大瞬间允许负载 Max. permissible load in a short time	N.m		0.3	0.3	1.2	1.2	1.2	2.5	2.5	2.5	2.5	3	3	3

FL22RBL68/22JN10K

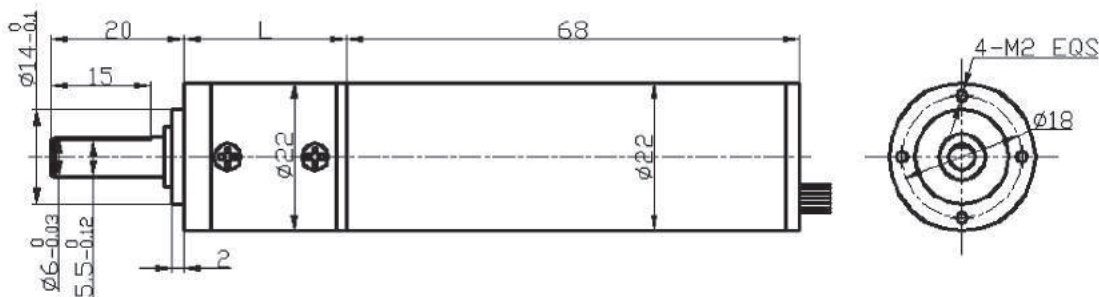
Φ22 行星减速器, 允许转矩范围: 0.1N.m~1.0N.m
22mm OD Planetary Gearbox,
Permissible Load Range: 0.1N.m~1.0N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
红	棕	黑	蓝	黄	棕	红	绿
26AWG UL1430			28AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL22RBL68-1265	8	3	12	6500	3800	20.0	8.0	60	3.4	2.7	1.0
FL22RBL68-2460	8	3	24	6000	3800	20.0	8.0	60	1.7	11.6	4.3

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL22RBL68-1265 无刷直流电机 (FL22RBL68-1265 DC Brushless Motor)

减速比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3
减速器长度(L)	Length(L)	mm	24.4	24.4	31.0	31.0	31.0	37.4	37.4	37.4
空载转速	No-load speed	r/min	1756	1250	464	342	240	127	91.5	65
额定转速	Rated speed	r/min	1027	730	271	200	140	74	53	38
额定转矩	Rated torque	N.m	0.067	0.093	0.23	0.31	0.44	0.74	1.0	1.46
最大瞬间允许负载 Max. permissible load in a short time	N.m	0.3	0.3	1.2	1.2	1.2	3	3	3	3

配置 FL22RBL68-2460 无刷直流电机 (FL22RBL68-2460 DC Brushless Motor)

减速比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3
减速器长度(L)	Length(L)	mm	24.4	24.4	33.0	33.0	33.0	41.5	41.5	41.5
空载转速	No-load speed	r/min	1617	1158	429	316	222	118	85	60
额定转速	Rated speed	r/min	1027	730	271	200	140	74	53	38
额定转矩	Rated torque	N.m	0.067	0.093	0.23	0.31	0.44	0.74	1.0	1.46
最大瞬间允许负载 Max. permissible load in a short time	N.m	0.3	0.3	1.2	1.2	1.2	3	3	3	3

FL28BL38/28JN30K

Φ28 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

28mm OD Planetary Gearbox,

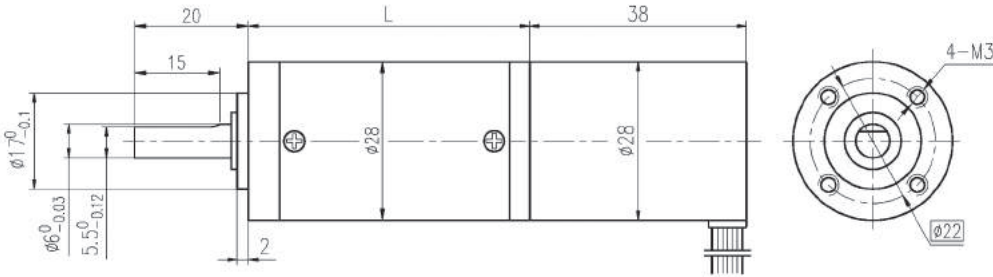
Permissible Load Range: 0.3N.m~3.0N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
绿	红	黑	黄	蓝	橙	棕	白
26AWG UL1430							



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电 阻 Line to line resistance ohms	电 感 Line to line inductance mH
FL28BL38-2430	4	3	24	3000	2000	5	1.0	15	0.45	93.3	28
FL28BL38-2440	4	3	24	4000	2700	7	1.9	21	0.60	55	18.3

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL28BL38-2430 无刷直流电机 (FL28BL38-2430 DC Brushless Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L)	mm	29.0	29.0	36.1	36.1	36.1	43.0	43.0	43.0	49.9	49.9	49.9	49.9	49.9
空载转速 No-load speed	r/min	809	576	214	158	111	59	42	30	22	16	8.1	5.8	4.2
额定转速 Rated speed	r/min	539	386	143	105	74	39	28	20	14	11	7.6	5.4	3.9
额定转矩 Rated torque	N.m	0.017	0.023	0.057	0.077	0.11	0.19	0.26	0.37	0.51	0.62	0.87	1.2	1.7
最大瞬间允许负载 Max. permissible load in a short time	N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9.0	9.0	9.0	9.0

配置 FL28BL38-2440 无刷直流电机 (FL28BL38-2440 DC Brushless Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L)	mm	29.0	29.0	36.1	36.1	36.1	43.0	43.0	43.0	49.9	49.9	49.9	49.9	49.9
空载转速 No-load speed	r/min	1078	772	286	211	148	78	56	40	29	21	15	11	7.8
额定转速 Rated speed	r/min	728	521	193	142	100	53	38	27	19	14	10	7.3	5.2
额定转矩 Rated torque	N.m	0.023	0.033	0.079	0.11	0.15	0.26	0.36	0.51	0.71	0.86	1.2	1.7	2.3
最大瞬间允许负载 Max. permissible load in a short time	N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9.0	9.0	9.0	9.0

FL28BL77/28JN30K

Φ28 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

28mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

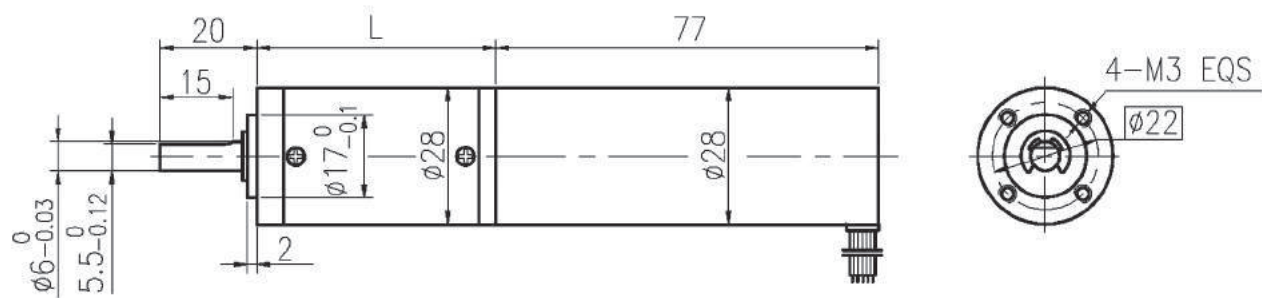
● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
绿	红	黑	黄	蓝	橙	棕	白

26AWG UL1430



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL28BL77-2460	4	3	24	6000	4000	50	20	150	3	4.2	2.3

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL28BL77-2460 无刷直流电机 (FL28BL77-2460 DC Brushless Motor)

减速比	Reduction ratio		3.7	5.2	14	19	27	51	71	100	139
减速级数	Number of gear train		1	1	2	2	2	3	3	3	3
减速器长度(L)	Length(L)	mm	29.0	29.0	36.1	36.1	36.1	43.0	43.0	43.0	43.0
空载转速	No-load speed	r/min	1617	1158	429	316	222	118	85	60	43
额定转速	Rated speed	r/min	1080	769	285	210	148	78	56	40	29
额定转矩	Rated torque	N.m	0.17	0.23	0.57	0.77	1.1	1.9	2.6	3.6	5.0
最大瞬间允许负载 Max. permissible load in a short time		N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5

无刷直流行星齿轮减速电机 (内齿圈材质: 金属)
BLDC Planetary Gear Motor (Ring Gear Material: Metal)

FL33BL38/32JXE30K

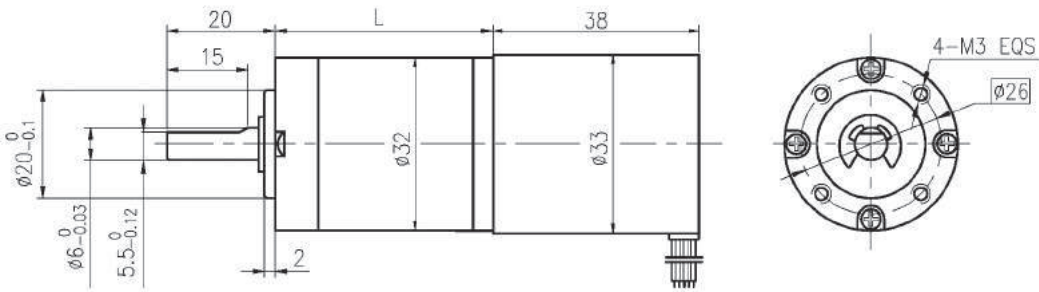
Φ32 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m
32mm OD Planetary Gearbox,
Permissible Load Range: 0.3N.m~3.0N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
绿	红	黑	黄	蓝	橙	棕	白
26AWG UL1430							



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值转矩 Peak torque mN.m	峰值电流 Peak current A	电 阻 Line to line resistance ohms	电 感 Line to line inductance mH
FL33BL38-2445	4	3	24	4500	3000	22	7	66	0.64	12.8	7

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL33BL38-2445 无刷直流电机 (FL33BL38-2445 DC Brushless Motor)

减 速 比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4
减速器长度(L)	Length(L)	mm	25.7	25.7	32.8	32.8	32.8	39.7	39.7	39.7	46.6	46.6	46.6
空载转速	No-load speed	r/min	1216	865	321	237	167	88	63	45	32	24	17
额定转速	Rated speed	r/min	810	576	214	158	111	59	42	30	22	16	11
额定转矩	Rated torque	N.m	0.073	0.10	0.25	0.34	0.48	0.82	1.1	1.6	2.2	2.7	3.8
最大瞬间允许负载 Max. permissible load in a short time		N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9.0	9.0

FL33BL80/32JXE30K

Φ32 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

32mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

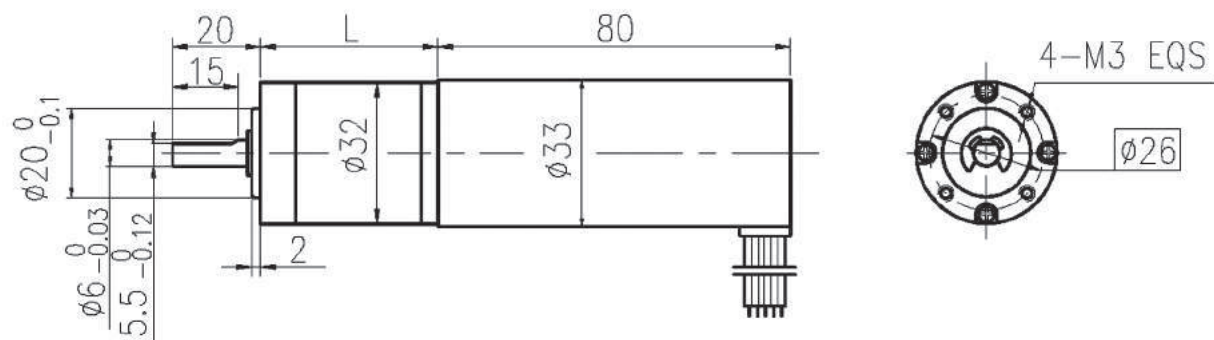
● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
绿	红	黑	黄	蓝	橙	棕	白

26AWG UL1430



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL33BL80-2490	4	3	24	9000	7800	50	40	350	11	0.86	0.55

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL33BL80-2490 无刷直流电机 (FL33BL80-2490 DC Brushless Motor)

减 速 比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3
减速器长度(L)	Length(L)	mm	25.7	25.7	32.8	32.8	32.8	39.7	39.7	39.7
空载转速	No-load speed	r/min	2424	1737	643	474	333	176	127	90
额定转速	Rated speed	r/min	2108	1506	557	411	289	153	110	78
额定转矩	Rated torque	N.m	0.17	0.23	0.57	0.77	1.1	1.9	2.5	3.6
最大瞬间允许负载 Max. permissible load in a short time		N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5

无刷直流行星齿轮减速电机 (内齿圈材质: 金属)
BLDC Planetary Gear Motor (Ring Gear Material: Metal)

Φ36 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

36mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

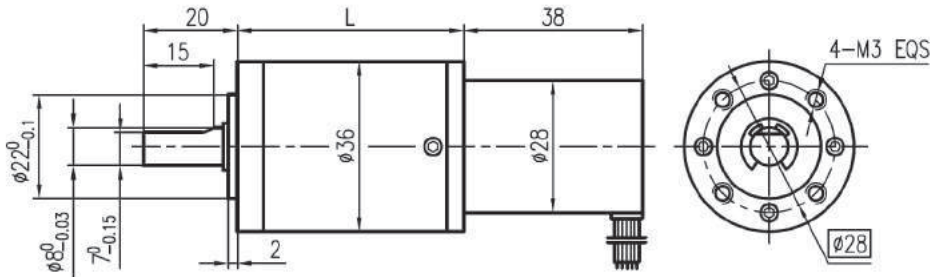
FL28BL38/36JX30K

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
绿	红	黑	黄	蓝	橙	棕	白
26AWG UL1430							



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Reak torque mN.m	峰值电流 Peak current A	电 阻 Line to line resistance ohms	电 感 Line to line inductance mH
FL28BL38-2450	4	3	24	5000	3450	9	3.2	27	0.8	31	11.8
FL28BL38-2460	4	3	24	6000	4350	10	4.5	30	1.0	19	7.8

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear motor Technical Data

配置 FL28BL38-2450 无刷直流电机 (FL28BL38-2450 DC Brushless Motor)

减 速 比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L)	Length(L)	mm	31.0	31.0	38.5	38.5	38.5	48.2	48.2	48.2	55.4	55.4	55.4	55.4	55.4
空载转速	No-load speed	r/min	1348	965	357	263	185	98	70	50	36	26	19	14	9.7
额定转速	Rated speed	r/min	930	666	246	182	128	68	49	35	25	18	13	9.4	6.7
额定转矩	Rated torque	N.m	0.03	0.04	0.10	0.14	0.19	0.33	0.46	0.65	0.91	1.1	1.56	2.2	3.0
最大瞬间允许负载 Max. permissible load in a short time	N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9	9

配置 FL28BL38-2460 无刷直流电机 (FL28BL38-2460 DC Brushless Motor)

减 速 比	Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数	Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L)	Length(L)	mm	31.0	31.0	38.5	38.5	38.5	48.2	48.2	48.2	55.4	55.4	55.4	55.4	55.4
空载转速	No-load speed	r/min	1617	1158	429	316	222	118	85	60	43	32	23	16	11.6
额定转速	Rated speed	r/min	1172	840	310	229	161	85	61	43	31	23	16	11.7	8.4
额定转矩	Rated torque	N.m	0.03	0.04	0.11	0.15	0.21	0.37	0.51	0.73	1.0	1.2	1.7	2.4	3.4
最大瞬间允许负载 Max. permissible load in a short time	N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9	9

36JXE30K/FL36RBL

Φ32 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

32mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

可在两种材料的内齿圈中进行选择: 粉末金属 (型号 36JXF30K), 金属 (型号 36JXE30K)

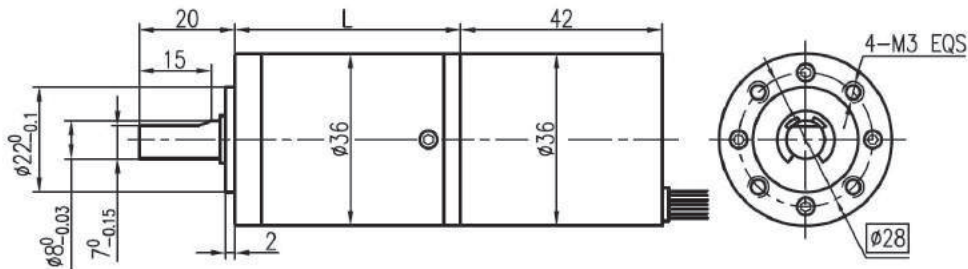
Ring gear can be selected within the two materials: Powder metal (Type:36JXF30K), Metal (Type:36JXE30K)

● 接线方式 Wire Diagram

U	V	W	+5V	GND	Hu	Hv	Hw
黄	红	黑	红	黑	蓝	绿	白
22AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m
FL36RBLS40-24V-4818A	4	3	24	7000	4800	36	18	108
FL36RBLS57-24V-4524A	4	3	24	5800	4500	50	24	150

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL36RBLS40-24V-4818A 无刷直流电机 (FL36RBLS40-24V-4818A DC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	96	115	182	219	254
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4
减速器长度(L) Length(L) mm	31.0	31.0	40.1	40.1	40.1	49.0	49.0	49.0	49.0	57.9	57.9	57.9
空载转速 No-load speed r/min	1887	1351	500	368	259	137	99	73	61	38	32	28
额定转速 Rated speed r/min	1294	927	343	253	178	94	68	50	42	26	22	19
额定转矩 Rated torque N.m	0.12	0.17	0.41	0.55	0.79	1.3	1.9	2.5	3	3	3	3
最大瞬间允许负载 Max. permissible load in a short time N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	7.5	9	9

配置 FL36RBLS57-24V-4524A 无刷直流电机 (FL36RBLS57-24V-4524A DC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	96	115	182	219	254
减速级数 Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4
减速器长度(L) Length(L) mm	31.0	31.0	40.1	40.1	40.1	49.0	49.0	49.0	49.0	57.9	57.9	57.9
空载转速 No-load speed r/min	1563	1120	414	305	215	114	82	60	50	32	26	23
额定转速 Rated speed r/min	1213	869	321	237	167	88	63	47	39	25	21	18
额定转矩 Rated torque N.m	0.17	0.23	0.57	0.77	1.1	1.9	2.6	3	3	3	3	3
最大瞬间允许负载 Max. permissible load in a short time N.m	1.0	1.0	3.5	3.5	3.5	7.5	7.5	7.5	7.5	7.5	9	9

FL42RBL60/42JXG50K

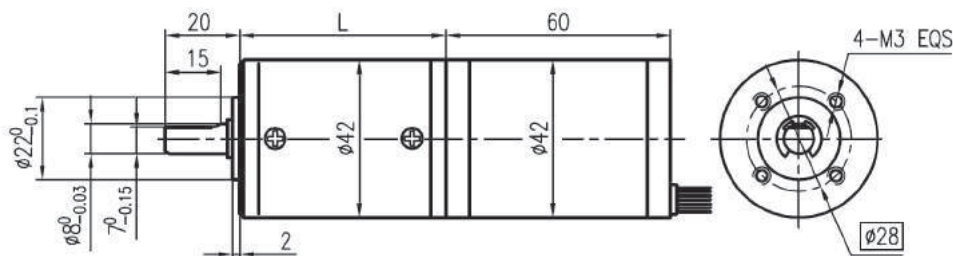
Φ42 行星减速器, 允许转矩范围: 0.5N.m~5.0N.m
42mm OD Planetary Gearbox,
Permissible Load Range: 0.5N.m~5.0N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
红	棕	黑	蓝	黄	棕	红	绿
22AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值转矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL42RBL60-2420	8	3	24	2000	1400	40	5.8	180	1.5	11.9	15.0
FL42RBL60-2430	8	3	24	3000	2100	50	11.0	150	2.6	6.0	6.4

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL42RBL60-2420 无刷直流电机 (FL42RBL60-2420 DC Brushless Motor)

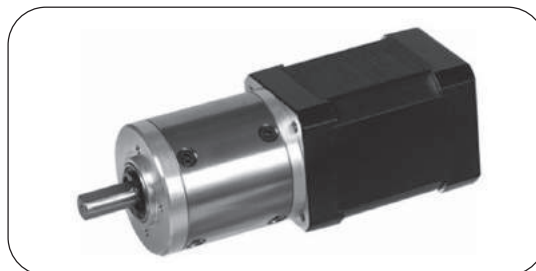
减速比 Reduction ratio	3.8	4.9	15	19	24	56	71	91	116	212	271	346
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4
减速器长度(L) Length(L) mm	35.2	35.2	45.7	45.7	45.7	56.0	56.0	56.0	56.0	66.3	66.3	66.3
空载转速 No-load speed r/min	524	410	133	105	83	36	28	22	17	9.4	7.4	5.8
额定转速 Rated speed r/min	366	287	93	74	58	25	20	15	12	6.6	5.2	4.0
额定转矩 Rated torque N.m	0.14	0.18	0.49	0.62	0.78	1.6	2.1	2.7	3.4	5.6	7.1	9.1
最大瞬间允许负载 Max. permissible load in a short time N.m	1.5	1.5	6	6	6	12	12	12	12	15	15	15

配置 FL42RBL60-2430 无刷直流电机 (FL42RBL60-2430 DC Brushless Motor)

减速比 Reduction ratio	3.8	4.9	15	19	24	56	71	91	116	212	271
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4
减速器长度(L) Length(L) mm	35.2	35.2	45.7	45.7	45.7	56.0	56.0	56.0	56.0	66.3	66.3
空载转速 No-load speed r/min	785	615	200	158	125	54	42	33	26	14	11
额定转速 Rated speed r/min	550	430	140	111	88	38	30	23	18	10	7.7
额定转矩 Rated torque N.m	0.17	0.22	0.61	0.77	0.97	2.0	2.6	3.3	4.2	7.0	8.9
最大瞬间允许负载 Max. permissible load in a short time N.m	1.5	1.5	6	6	6	12	12	12	12	15	15

型号中的代号 G, 是在出轴级行星轮配置了滚针轴承的长寿命减速器

U	V	W	Vcc	Ha	Hb	Hc	GND
黄	红	黑	红	蓝	绿	白	黑
20AWG UL1430			26AWG UL1430				



The technical drawing shows two views of the motor:

- Side View (Left):** Shows the motor's profile with dimensions: total length 25, mounting flange width 20, main body diameter $\phi 42$, and a section cut dimension of $7_{-0.15}^0$. The distance from the mounting face to the center of the main body is L.
- Front View (Right):** Shows the circular mounting flange with a diameter of 42 ± 0.3 mm. It features four M3 screws (labeled "4-M3 EQS") spaced evenly around the flange. A central hole has a diameter of $\phi 28$.

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值转矩 Reak torque mN.m	峰值电流 Peak current A	电 阻 Line to line resistance ohms	电 感 Line to line inductance mH
FL42BLA02	10	3	24	4000	3000	160	50	650	11.8	1.1	0.96

配置 FL42BLA02 无刷直流电机 (FL42BLA02 BLDC Motor)

减 速 比	Reduction ratio		3.8	4.9	15	19	24
减速级数	Number of gear trains		1	1	2	2	2
减速器长度(L)	Length(L)	mm	35.2	35.2	45.7	45.7	45.7
空载转速	No-load speed	r/min	1047	820	267	211	167
额定转速	Rated speed	r/min	785	615	200	158	125
额定转矩	Rated torque	N.m	0.55	0.70	1.9	2.5	3
最大瞬间允许负载 Max. permissible load in a short time		N.m	1.5	1.5	6	6	6

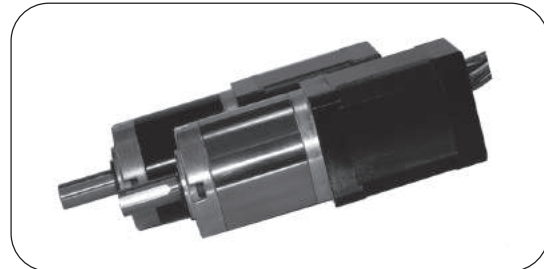
FL42BLA/42JXE100K

Φ42 行星减速器, 允许转矩范围: 1N.m~15N.m
42mm OD Planetary Gearbox,
Permissible Load Range: 1N.m~15N.m

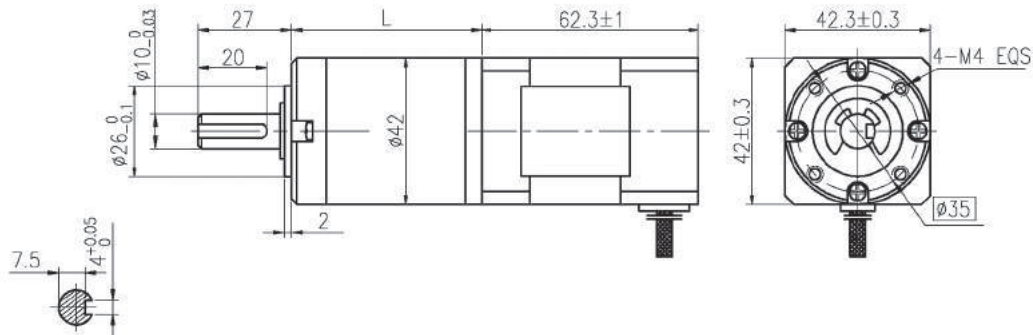
可在两种材质的内齿圈中进行选择: 粉末金属 (型号 42JXF100K), 金属 (型号 42JXE100K)
Ring gear can be selected within the two materials: Powder metal (Type: 42JXF100K), Metal (Type: 42JXE100K)

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
黄	红	黑	红	蓝	绿	白	黑
20AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL42BLA02	10	3	24	4000	3000	160	50	650	11.8	1.1	0.96

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL42BLA02 无刷直流电机 (FL42BLA02 DC Motor)

减速比	Reduction ratio	3.71	5.18	14	19	27	49	59	68	82	96	115	181
减速级数	Number of gear train	1	1	2	2	2	3	3	3	3	3	3	4
减速器长度(L)	Length(L)	mm	31.5	31.5	42.1	42.1	42.1	52.5	52.5	52.5	52.5	52.5	62.9
空载转速	No-load speed	r/min	1078	772	286	211	148	82	68	59	49	42	35
额定转速	Rated speed	r/min	809	579	214	158	111	61	51	44	37	31	26
额定转矩	Rated torque	N.m	0.53	0.75	1.8	2.5	3.5	5.7	6.9	7.9	9.6	11	13
最大瞬间允许负载	Max. permissible load in a short time	N.m	3	3	12	12	12	36	36	36	36	36	45

FL42BLA/42JXGT200K

Φ42 行星减速器, 允许转矩范围: 2N.m~20N.m
42mm OD Planetary Gearbox,
Permissible Load Range: 2N.m~20N.m

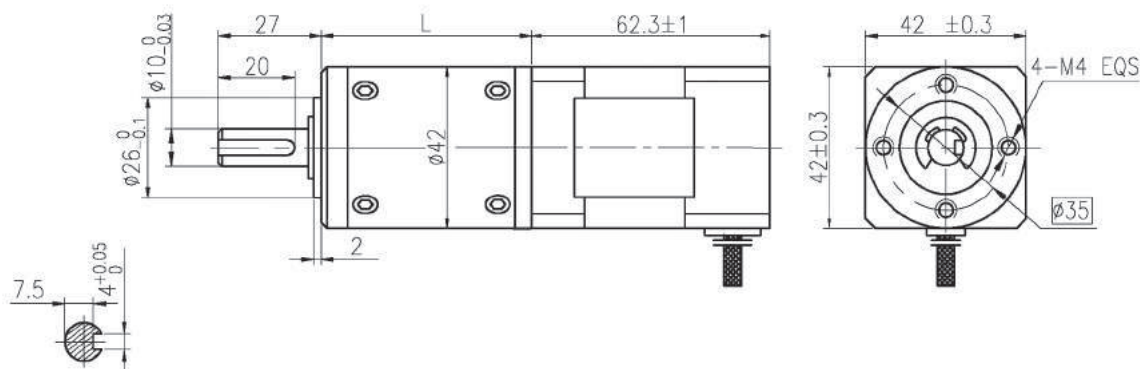
型号中的代号 G, 是在出轴级行星轮配置了滚针轴承的长寿命减速器

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
黄	红	黑	红	蓝	绿	白	黑
20AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL42BLA02	10	3	24	4000	3000	160	50	650	11.8	1.1	0.96

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL42BLA02 无刷直流电机 (FL42BLA02 DC Motor)

减速比	Reduction ratio		17	22	65	83	106	247
减速级数	Number of gear trains		2	2	3	3	3	4
减速器长度(L)	Length(L)	mm	48.0	48.0	58.3	58.3	58.3	68.6
空载转速	No-load speed	r/min	235	182	62	48	38	16
额定转速	Rated speed	r/min	176	136	46	36	28	12
额定转矩	Rated torque	N.m	2.2	2.9	7.6	9.7	12	20
最大瞬间允许负载 Max. permissible load in a short time		N.m	25	25	50	50	50	60

FL42RBL60/42JXGT200K

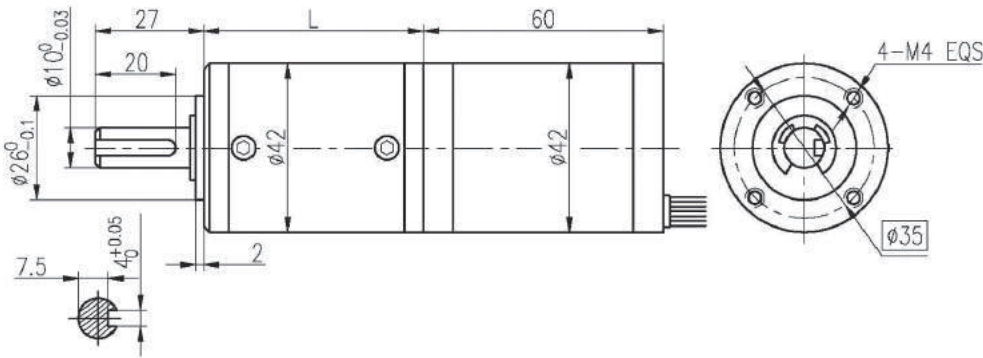
Φ42 行星减速器, 允许转矩范围: 2N.m~20N.m
42mm OD Planetary Gearbox,
Permissible Load Range: 2N.m~20N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
红	棕	黑	蓝	黄	棕	红	绿
22AWG UL1007			26AWG UL1007				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL42RBL60-2430	8	3	24	3000	2100	50	11.0	150	2.6	6.0	6.4

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL42RBL60-2430 无刷直流电机 (FL42RBL60-2430 DC Brushless Motor)

减速比 Reduction ratio		65	83	106	247	316	403	515	944
减速级数 Number of gear trains		3	3	3	4	4	4	4	5
减速器长度(L) Length(L)	mm	58.3	58.3	58.3	68.6	68.6	68.6	68.6	78.9
空载转速 No-load speed	r/min	46	36	28	12	9.5	7.4	5.8	3.2
额定转速 Rated speed	r/min	32	25	20	9	6.6	5.2	4.1	2.2
额定转矩 Rated torque	N.m	2.4	3.0	3.9	8.1	10.4	13.3	17	28
最大瞬间允许负载 Max. permissible load in a short time	N.m	50	50	50	60	60	60	60	60

FL42RBL60/48JXG50K

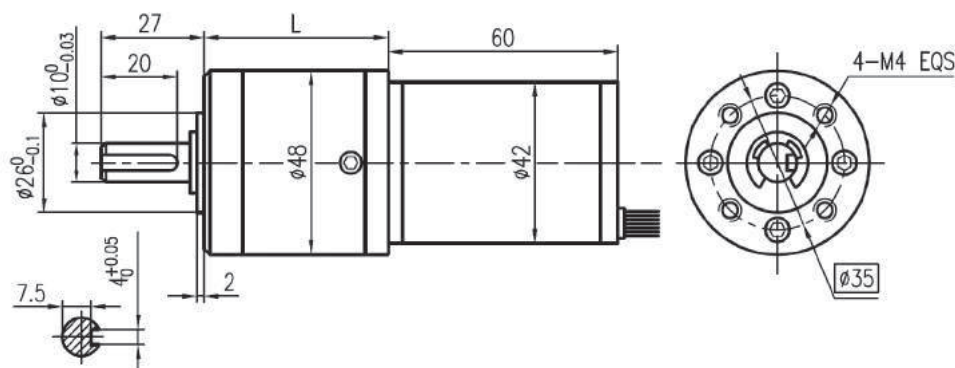
Φ48 行星减速器, 允许转矩范围: 0.5N.m~5.0N.m
48mm OD Planetary Gearbox,
Permissible Load Range: 0.5N.m~5.0N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
红	棕	黑	蓝	黄	棕	红	绿
22AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值转矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL42RBL60-2440	8	3	24	4000	2800	70	20.5	210	4.2	3.0	3.5

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear motor Technical Data

配置 FL42RBL60-2440 无刷直流电机 (FL42RBL60-2440 DC Brushless Motor)

减速比 Reduction ratio		15	19	24	56	71	91	116
减速级数 Number of gear train		2	2	2	3	3	3	3
减速器长度(L) Length(L)	mm	48.0	48.0	48.0	58.2	58.2	58.2	58.2
空载转速 No-load speed	r/min	267	211	167	71	56	44	34
额定转速 Rated speed	r/min	187	147	117	50	39	31	24
额定转矩 Rated torque	N.m	0.85	1.1	1.4	2.9	3.6	4.6	5.9
最大瞬间允许负载 Max. permissible load in a short time	N.m	6	6	6	12	12	12	12

FL42RBL60/48JXGT200K

Φ48 行星减速器, 允许转矩范围: 2N.m~20N.m

48mm OD Planetary Gearbox,

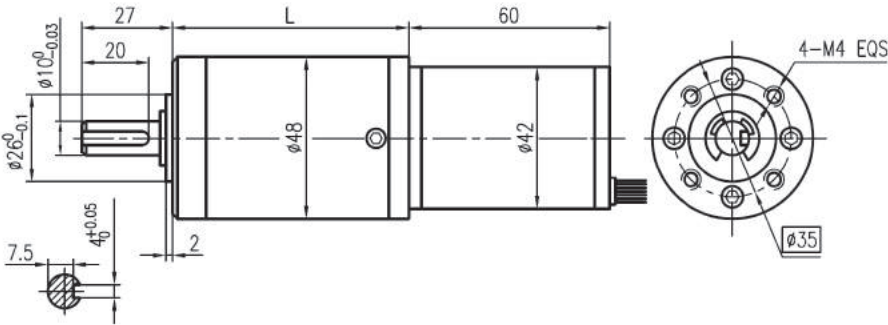
Permissible Load Range: 2N.m~20N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
红	棕	黑	蓝	黄	棕	红	绿
22AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque mN.m	额定功率 Rated power W	峰值扭矩 Peak torque mN.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL42RBL60-2420	8	3	24	2000	1400	40	5.8	180	1.5	11.9	15.0
FL42RBL60-2430	8	3	24	3000	2100	50	11.0	150	2.6	6.0	6.4

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear motor Technical Data

配置 FL42RBL60-2420 无刷直流电机 (FL42RBL60-2420 DC Brushless Motor)

减速比	Reduction ratio	247	316	403	515	944	1206	1540	2510
减速级数	Number of gear tra	4	4	4	4	5	5	5	5
减速器长度(L)	Length(L)	mm	70.4	70.4	70.4	70.4	80.6	80.6	80.6
空载转速	No-load speed	r/min	8.1	6.3	5.0	3.9	2.1	1.7	1.3
额定转速	Rated speed	r/min	5.7	4.4	3.5	2.7	1.5	1.2	0.9
额定转矩	Rated torque	N.m	6.5	8.3	10.6	13.6	22	28.6	36.5
最大瞬间允许负载	N.m	60	60	60	60	60	60	60	60
Max. permissible load in a short time									

配置 FL42RBL60-2430 无刷直流电机 (FL42ZWN60-2430 DC Brushless Motor)

减速比	Reduction ratio	247	316	403	515
减速级数	Number of gear tra	4	4	4	4
减速器长度(L)	Length(L)	mm	70.4	70.4	70.4
空载转速	No-load speed	r/min	12.1	9.5	7.4
额定转速	Rated speed	r/min	8.5	6.6	5.2
额定转矩	Rated torque	N.m	8.1	10.4	13.3
最大瞬间允许负载	N.m	60	60	60	60
Max. permissible load in a short time					

56JX300K/FL57BL01

Φ57 行星减速器, 允许转矩范围: 3N.m~30N.m

57mm OD Planetary Gearbox,

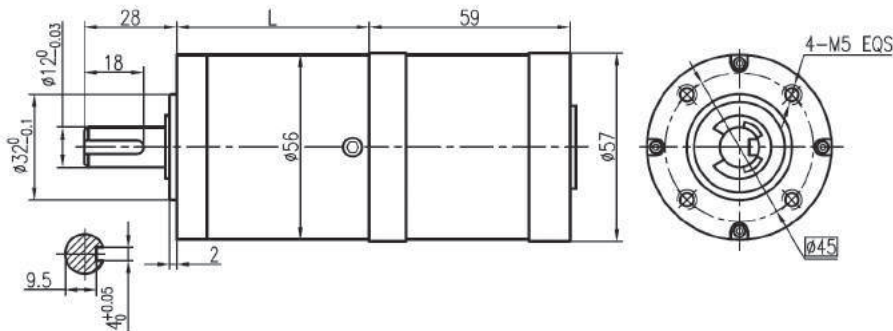
Permissible Load Range: 3N.m~30N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
黄	红	黑	红	蓝	绿	白	黑
20AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque N.m	额定功率 Rated power W	峰值转矩 Peak torque N.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL57BL01-24V-1300	4	3	24	2000	1300	0.085	10	0.255	2.6	5.2	13.7
FL57BL01-24V-2250	4	3	24	3000	2250	0.110	25	0.330	5.4	2.53	6.3

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL57BL01-24V-1300 无刷直流电机 (FL57BL01-24V-1300 DC Motor)

减速比 Reduction ratio	13	15	18	23	47	55	65	77	96	121	153	187	220	260	307	409	514
减速级数 Number of gear trains	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4
减速器长度(L) Length(L) mm	45.8	45.8	45.8	45.8	57.1	57.1	57.1	57.1	57.1	57.1	68.4	68.4	68.4	68.4	68.4	68.4	68.4
空载转速 No-load speed r/min	154	133	111	87	43	36	31	26	21	17	13	11	9.1	7.7	6.5	4.9	3.9
额定转速 Rated speed r/min	100	87	7.2	57	28	24	20	17	14	11	8.5	7.0	5.9	5.0	4.2	3.2	2.5
额定转矩 Rated torque N.m	0.90	1.0	1.2	1.6	2.9	3.4	4.0	4.8	6.0	7.5	8.5	10	12	14	17	23	28
最大瞬间允许负载 Max. permissible load in a short time N.m	36	36	36	36	72	72	72	72	72	72	90	90	90	90	90	90	90

配置 FL57BL01-24V-2250 无刷直流电机 (FL57BL01-24V-2250 DC Motor)

减速比 Reduction ratio	13	15	18	23	47	55	65	77	96	121	153	187	220	260	307	409	514
减速级数 Number of gear trains	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4
减速器长度(L) Length(L) mm	45.8	45.8	45.8	45.8	57.1	57.1	57.1	57.1	57.1	57.1	68.4	68.4	68.4	68.4	68.4	68.4	68.4
空载转速 No-load speed r/min	231	200	167	130	64	55	46	39	31	25	20	16	14	12	9.8	7.3	5.8
额定转速 Rated speed r/min	173	150	125	98	48	41	35	29	23	19	15	12	10	8.7	7.3	5.5	4.4
额定转矩 Rated torque N.m	1.2	1.3	1.6	2.0	3.8	4.4	5.2	6.2	7.7	9.7	11	13	16	19	22	29	30
最大瞬间允许负载 Max. permissible load in a short time N.m	36	36	36	36	72	72	72	72	72	72	90	90	90	90	90	90	90

56JX300K/FL57BL02

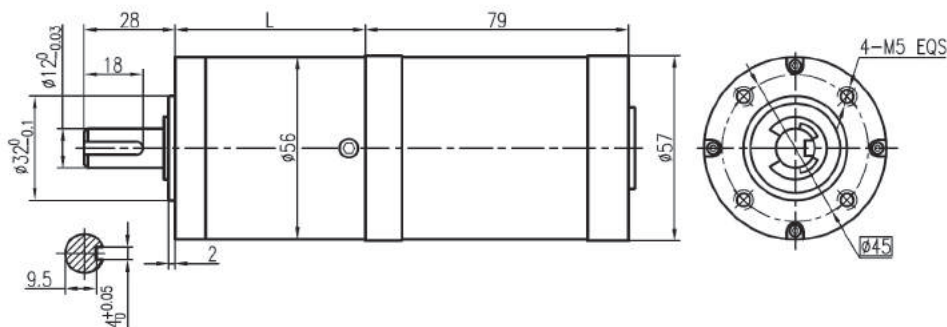
Φ57 行星减速器, 允许转矩范围: 3N.m~30N.m
57mm OD Planetary Gearbox,
Permissible Load Range: 3N.m~30N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
黄	红	黑	红	蓝	绿	白	黑
20AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque N.m	额定功率 Rated power W	峰值扭矩 Peak torque N.m	峰值电流 Peak current A	电阻 Line to line resistance ohms	电感 Line to line inductance mH
FL57BL02-24V-1200	4	3	24	2000	1200	0.30	40	0.9	7.9	2.1	6.1
FL57BL02-24V-2000	4	3	24	3000	2000	0.30	60	0.9	13.1	0.95	2.9

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL57BL02-24V-1200 无刷直流电机 (FL57BL02-24V-1200 DC Motor)

减速比 Reduction ratio	3.6	4.25	13	15	18	23	47	55	65	77	96	121	153	187	220
减速级数 Number of gear trains	1	1	2	2	2	2	3	3	3	3	3	3	4	4	4
减速器长度(L) Length(L) mm	34.5	34.5	45.8	45.8	45.8	45.8	57.1	57.1	57.1	57.1	57.1	57.1	68.4	68.4	68.4
空载转速 No-load speed r/min	556	471	154	133	111	87	43	36	31	26	21	17	13	11	9.1
额定转速 Rated speed r/min	333	282	92	80	67	52	26	22	18	16	13	10	7.8	6.4	5.5
额定转矩 Rated torque N.m	0.97	1.2	3.2	3.6	4.4	5.6	10	12	14	17	21	24	30	30	30
最大瞬间允许负载 Max. permissible load in a short time N.m	9	9	36	36	36	36	72	72	72	72	72	72	90	90	90

配置 FL57BL02-24V-2000 无刷直流电机 (FL57BL02-24V-2000 DC Motor)

减速比 Reduction ratio	3.6	4.25	13	15	18	23	47	55	65	77	96	121	153	187	220
减速级数 Number of gear trains	1	1	2	2	2	2	3	3	3	3	3	3	4	4	4
减速器长度(L) Length(L) mm	34.5	34.5	45.8	45.8	45.8	45.8	57.1	57.1	57.1	57.1	57.1	57.1	68.4	68.4	68.4
空载转速 No-load speed r/min	833	706	231	200	167	130	64	55	46	39	31	25	20	16	14
额定转速 Rated speed r/min	556	471	154	133	111	87	43	36	31	26	21	17	13	11	9.1
额定转矩 Rated torque N.m	0.97	1.2	3.2	3.6	4.4	5.6	10	12	14	17	21	24	30	30	30
最大瞬间允许负载 Max. permissible load in a short time N.m	9	9	36	36	36	36	72	72	72	72	72	72	90	90	90

56JX300K/FL57BL03

Φ57 行星减速器, 允许转矩范围: 3N.m~30N.m

57mm OD Planetary Gearbox,

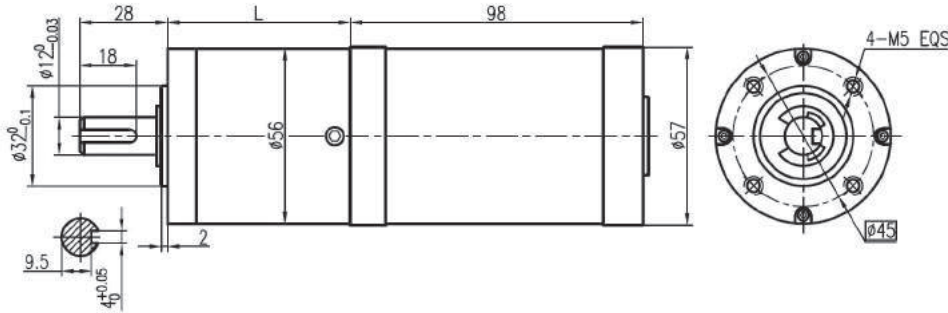
Permissible Load Range: 3N.m~30N.m

● 接线方式 Wire Diagram

U	V	W	Vcc	Ha	Hb	Hc	GND
黄	红	黑	红	蓝	绿	白	黑
20AWG UL1430			26AWG UL1430				



● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	额定转速 Rated speed r/min	额定转矩 Rated torque N.m	额定功率 Rated power W	峰值转矩 Peak torque N.m	峰值电流 Peak current A	电 阻 Line to line resistance ohms	电 感 Line to line inductance mH
FL57BL03-24V-1270	4	3	24	2000	1270	0.40	53	1.2	11.2	1.35	4.6
FL57BL03-24V-2000	4	3	24	3000	2000	0.40	80	1.2	17.5	0.65	2.25

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

配置 FL57BL03-24V-1270 无刷直流电机 (FL57BL03-24V-1270 DC Motor)

减 速 比	Reduction ratio	3.6	4.25	13	15	18	23	47	55	65	77	96	121
减速级数	Number of gear train	1	1	2	2	2	2	3	3	3	3	3	3
减速器长度(L)	Length(L)	mm	34.5	34.5	45.8	45.8	45.8	57.1	57.1	57.1	57.1	57.1	57.1
空载转速	No-load speed	r/min	556	471	154	133	111	87	43	36	31	26	21
额定转速	Rated speed	r/min	403	341	112	97	81	93	31	26	22	19	15
额定转矩	Rated torque	N.m	1.3	1.5	4.2	4.9	5.8	7.5	14	16	19	23	24
最大瞬间允许负载 Max. permissible load in a short time	N.m	9	9	36	36	36	36	72	72	72	72	72	72

配置 FL57BL03-24V-2000 无刷直流电机 (FL57BL03-24V-2000 DC Motor)

减 速 比	Reduction ratio	3.6	4.25	13	15	18	23	47	55	65	77	96	121
减速级数	Number of gear train	1	1	2	2	2	2	3	3	3	3	3	3
减速器长度(L)	Length(L)	mm	34.5	34.5	45.8	45.8	45.8	57.1	57.1	57.1	57.1	57.1	57.1
空载转速	No-load speed	r/min	833	706	231	200	167	130	64	55	46	39	31
额定转速	Rated speed	r/min	556	471	154	133	111	87	43	36	31	26	21
额定转矩	Rated torque	N.m	1.3	1.5	4.2	4.9	5.8	7.5	14	16	19	23	24
最大瞬间允许负载 Max. permissible load in a short time	N.m	9	9	36	36	36	36	72	72	72	72	72	72

22JXE3K/B2418

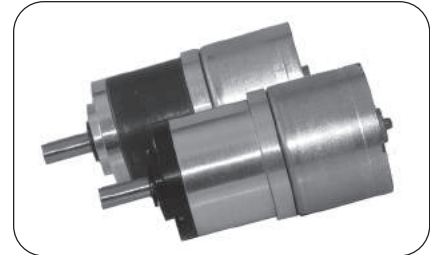
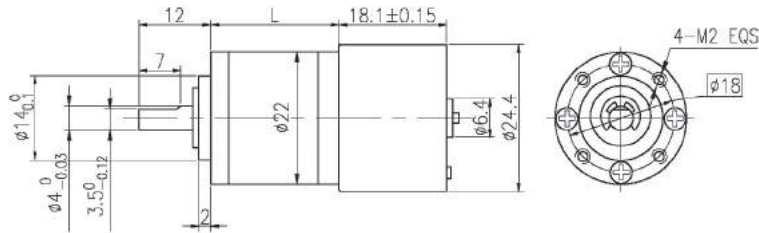
Φ22 行星减速器, 允许转矩范围: 0.03N.m~0.3N.m

22mm OD Planetary Gearbox,

Permissible Load Range: 0.03N.m~0.3N.m

- 无刷电机内置驱动器, 具有正反转、调速的功能。
(Brushless motor built-in driver, with a positive inversion, speed control function)
- 减速器的内齿圈, 可以在两种材料中进行选择: 金属内齿圈 (型号 22JXE3K), 粉末金属内齿圈 (型号 22JXF3K)。
Ring gear can be selected within the two materials: Metal (Type:22JXE3K), Powder metal (Type:22JXF3K)。

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current mA	额定功率 Rated power W
B2418-1275	12	3	9V~16V	12	7500	100	30	5800	320	1.8
B2418-2475	12	3	9V~26V	24	7500	85	30	5800	200	1.8

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

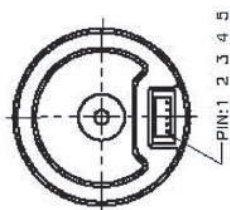
配置 B2418-1275 无刷电机 (B2418-1275 BLDC Motor)

减 速 比 Reduction ratio	4	4.75	16	19	22	64	76	90	107	256	304	361	429	506
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	14.4	14.4	17.8	17.8	17.8	21.5	21.5	21.5	21.5	25.4	25.4	25.4	25.4	25.4
空载转速 No-load speed r/min	1875	1579	469	395	341	117	99	83	70	29	25	21	18	15
额定转速 Rated speed r/min	1391	1171	348	293	253	87	73	62	52	22	18	15	13	11
额定转矩 Rated torque N.m	0.008	0.009	0.027	0.032	0.037	0.10	0.12	0.14	0.16	0.3	0.3	0.3	0.3	0.3
最大瞬间允许负载 Max. permissible load in a short time N.m	0.09	0.09	0.45	0.45	0.45	0.75	0.75	0.75	0.75	0.9	0.9	0.9	0.9	0.9

配置 B2418-2475 无刷电机 (B2418-2475 BLDC Motor)

减 速 比 Reduction ratio	4	4.75	16	19	22	64	76	90	107	256	304	361	429	506
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	14.4	14.4	17.8	17.8	17.8	21.5	21.5	21.5	21.5	25.4	25.4	25.4	25.4	25.4
空载转速 No-load speed r/min	1875	1579	469	395	341	117	99	83	70	29	25	21	18	15
额定转速 Rated speed r/min	1391	1171	348	293	253	87	73	62	52	22	18	15	13	11
额定转矩 Rated torque N.m	0.008	0.009	0.027	0.032	0.037	0.10	0.12	0.14	0.16	0.3	0.3	0.3	0.3	0.3
最大瞬间允许负载 Max. permissible load in a short time N.m	0.09	0.09	0.45	0.45	0.45	0.75	0.75	0.75	0.75	0.9	0.9	0.9	0.9	0.9

● 接线方式 Wire Diagram



PIN 1# (White) Speed regulation: PWM Mode, input signal frequency 1~50kHz.

PIN 2# (Black) Negative of power source.

PIN 3# (Blue) Rotation direction: CW if make a short circuit between PIN3# & PIN2#, CCW if open.

PIN 4# (Yellow) Speed feedback: $n=60 \cdot F/P$, F: feedback frequency, P: number of pole-pairs(6).

PIN 5# (Red) Positive of power source.

Note: (1) CCW when Red is connected to positive of source, Black & White are connected to negative of source.

(2) CW when Red is connected to positive of source, Black, White & Blue are connected to negative of source.

(3) The motor will run at full speed when White is connected to negative of source.

When speed regulation, White is input PWM signal.

24JN10K/B2430 $\Phi 24$ 行星减速器, 允许转矩范围: 0.1N.m~1.0N.m

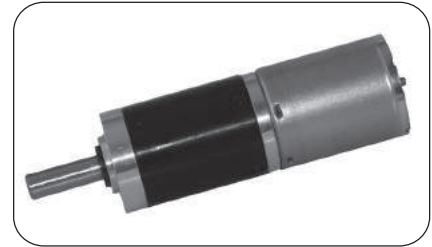
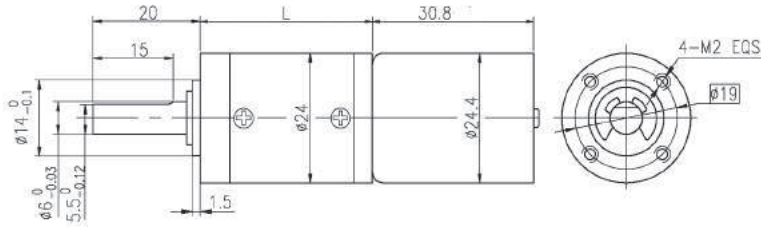
24mm OD Planetary Gearbox,

Permissible Load Range: 0.1N.m~1.0N.m

无刷电机内置驱动器, 具有正反转、调速的功能。

Brushless motor built-in driver, with a positive inversion, speed control function

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current mA	额定功率 Rated power W
B2430-1280	12	3	9V~16V	12	8000	180	60	6000	420	3.7
B2430-2480	12	3	9V~26V	24	8000	100	60	6200	210	3.8

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

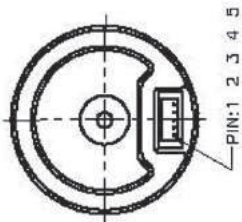
配置 B2430-1280 无刷电机 (B2430-1280 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	25.0	25.0	31.6	31.6	31.6	38.0	38.0	38.0	38.0	44.4	44.4	44.4	44.4	44.4
空载转速 No-load speed r/min	2156	1544	571	421	296	157	113	80	58	42	30	22	16	11
额定转速 Rated speed r/min	1617	1158	429	316	222	118	85	60	43	32	23	16	12	8.3
额定转矩 Rated torque N.m	0.020	0.028	0.067	0.091	0.13	0.22	0.31	0.43	0.60	0.72	1	1	1	1
最大瞬间允许负载 Max. permissible load in a short time N.m	0.3	0.3	1.2	1.2	1.2	2.4	2.4	2.4	2.4	3	3	3	3	3

配置 B2430-2480 无刷电机 (B2430-2480 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	25.0	25.0	31.6	31.6	31.6	38.0	38.0	38.0	38.0	44.4	44.4	44.4	44.4	44.4
空载转速 No-load speed r/min	2156	1544	571	421	296	157	113	80	58	42	30	22	16	11
额定转速 Rated speed r/min	1671	1197	443	326	230	122	87	62	45	33	23	17	12	8.6
额定转矩 Rated torque N.m	0.020	0.028	0.067	0.091	0.13	0.22	0.31	0.43	0.60	0.72	1	1	1	1
最大瞬间允许负载 Max. permissible load in a short time N.m	0.3	0.3	1.2	1.2	1.2	2.4	2.4	2.4	2.4	3	3	3	3	3

● 接线方式 Wire Diagram



PIN 1# (White) Speed regulation: PWM Mode, input signal frequency 1~50kHz.

PIN 2# (Black) Negative of power source.

PIN 3# (Blue) Rotation direction: CW if make a short circuit between PIN3# & PIN2#, CCW if open.

PIN 4# (Yellow) Speed feedback: $n=60 \cdot F/P$, F: feedback frequency, P: number of pole-pairs(6).

PIN 5# (Red) Positive of power source.

Note: (1) CCW when Red is connected to positive of source, Black & White are connected to negative of source.

(2) CW when Red is connected to positive of source, Black, White & Blue are connected to negative of source.

(3) The motor will run at full speed when White is connected to negative of source.

When speed regulation, White is input PWM signal.

28JN10K/B2838

Φ28 行星减速器, 允许转矩范围: 0.1N.m~1.0N.m

28mm OD Planetary Gearbox,

Permissible Load Range: 0.1N.m~1.0N.m

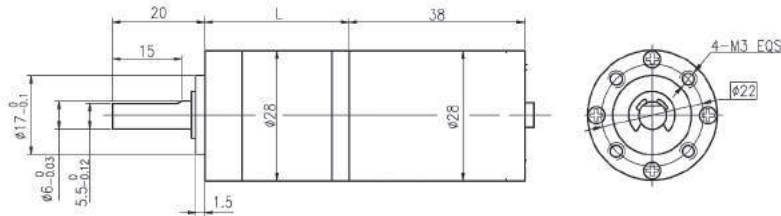
- 无刷电机内置驱动器, 具有正反转、调速、制动(刹车)的功能。

Brushless motor built-in driver, with a positive inversion, speed control, brake (brake) function.

- 减速器的内齿圈, 可以在两种材料中进行选择: 金属内齿圈 (型号 28JN10K), 粉末金属内齿圈 (型号 28JNF10K)。

Ring gear can be selected within the two materials: Metal (Type:28JN10K), Powder metal (Type:28JNF10K)。

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current mA	额定功率 Rated power W
B2838-1236	4	3	9V~16V	12	3570	70	50	2800	250	1.4
B2838-2436	4	3	9V~26V	24	3570	50	50	2800	140	1.4

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

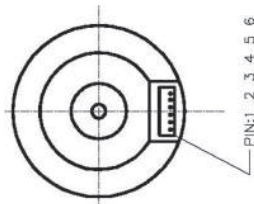
配置 B2838-1236 无刷电机 (B2838-1236 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	22.6	22.6	29.2	29.2	29.2	35.6	35.6	35.6	35.6	42.0	42.0	42.0	42.0	42.0
空载转速 No-load speed r/min	962	689	255	188	132	70	50	36	26	19	14	9.7	6.9	5.0
额定转速 Rated speed r/min	755	541	200	147	104	55	39	28	20	15	11	7.6	5.4	3.9
额定转矩 Rated torque N.m	0.016	0.023	0.056	0.075	0.11	0.18	0.25	0.36	0.50	0.60	0.84	1	1	1
最大瞬间允许负载 Max. permissible load in a short time N.m	0.3	0.3	1.2	1.2	1.2	2.4	2.4	2.4	2.4	3	3	3	3	3

配置 B2838-2436 无刷电机 (B2838-2436 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	22.6	22.6	29.2	29.2	29.2	35.6	35.6	35.6	35.6	42.0	42.0	42.0	42.0	42.0
空载转速 No-load speed r/min	962	689	255	188	132	70	50	36	26	19	14	9.7	6.9	5.0
额定转速 Rated speed r/min	755	541	200	147	104	55	39	28	20	15	11	7.6	5.4	3.9
额定转矩 Rated torque N.m	0.016	0.023	0.056	0.075	0.11	0.18	0.25	0.36	0.50	0.60	0.84	1	1	1
最大瞬间允许负载 Max. permissible load in a short time N.m	0.3	0.3	1.2	1.2	1.2	2.4	2.4	2.4	2.4	3	3	3	3	3

● 接线方式 Wire Diagram



PIN 1# (Blue) Brake

PIN 2# (Orange) Speed regulation: PWM Mode, input signal frequency:20~30kHz.

PIN 3# (Black) Negative of power source.

PIN 4# (White) Rotation direction: CW if make a short circuit between PIN4# & PIN3#, CCW if open.

PIN 5# (Green) Speed feedback n=60°F/P, F: feedback frequency, P: number of pole-pairs(2)

PIN 6# (Red) Positive of power source.

30JN30K/B2847

Φ28 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

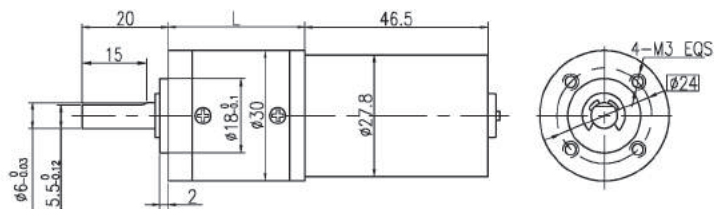
28mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

无刷电机内置驱动器, 具有正反转、调速、制动 (刹车) 的功能。

(Brushless motor built-in driver, with a positive inversion, speed control, brake (brake) function)

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current A	额定功率 Rated power W
B2847-1273	4	3	9V~16V	12	7300	270	130	5500	1.3	7.3
B2847-2473	4	3	9V~26V	24	7300	180	130	6000	0.7	8.0

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

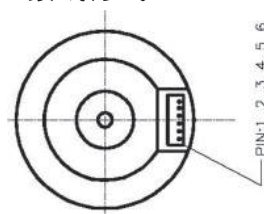
配置 B2847-1273 无刷电机 (B2847-1273 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	29.0	29.0	36.1	36.1	36.1	43.0	43.0	43.0	43.0	49.9	49.9	49.9	49.9	49.9
空载转速 No-load speed r/min	1968	1409	521	384	270	143	103	73	53	39	28	20	14	10
额定转速 Rated speed r/min	1482	1062	393	289	204	108	77	55	40	29	21	15	11	7.6
额定转矩 Rated torque N.m	0.042	0.059	0.14	0.20	0.28	0.47	0.66	0.93	1.3	1.6	2.2	3	3	3
最大瞬间允许负载 Max. permissible load in a short time N.m	1	1	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9	9

配置 B2847-2473 无刷电机 (B2847-2473 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	189	264	369	516	720
减速级数 Number of gear train	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	29.0	29.0	36.1	36.1	36.1	43.0	43.0	43.0	43.0	49.9	49.9	49.9	49.9	49.9
空载转速 No-load speed r/min	1968	1409	521	384	270	143	103	73	53	39	28	20	14	10
额定转速 Rated speed r/min	1617	1158	429	316	222	118	85	60	43	32	23	16	12	8.3
额定转矩 Rated torque N.m	0.042	0.059	0.14	0.20	0.28	0.47	0.66	0.93	1.3	1.6	2.2	3	3	3
最大瞬间允许负载 Max. permissible load in a short time N.m	1	1	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9	9

● 接线方式 Wire Diagram



PIN 1# (Blue) Brake

PIN 2# (Orange) Speed regulation: PWM Mode, input signal frequency:20~30kHz.

PIN 3# (Black) Negative of power source.

PIN 4# (White) Rotation direction: CW if make a short circuit between PIN4# & PIN3#, CCW if open.

PIN 5# (Green) Speed feedback $n=60 \cdot F/P$, F: feedback frequency, P: number of pole-pairs(2)

PIN 6# (Red) Positive of power source.

无刷直流齿轮减速电机 (内置驱动器)

BLDC Planetary Gear Motor (Built-in driver)

37JB10K/B3630

Φ37 齿轮减速器, 允许转矩范围: 1.0N.m

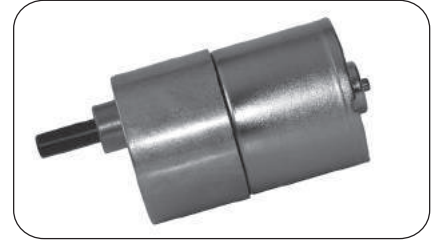
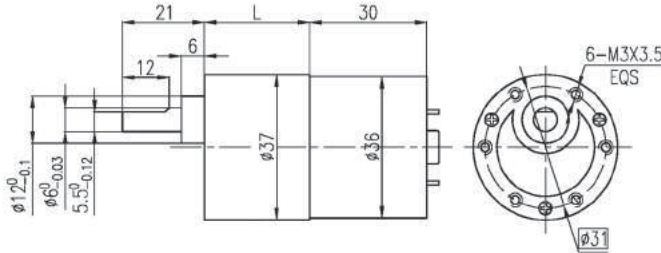
37mm OD Standard Gearbox,

Permissible Load Range: 1.0N.m

无刷电机内置驱动器, 具有正反转、调速、制动(刹车)的功能。

Brushless motor built-in driver, with a positive inversion, speed control, brake (brake) function.

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current mA	额定功率 Rated power W
B3630-1247	8	3	9V~16V	12	4680	270	90	3500	820	3.2
B3630-2447	8	3	9V~26V	24	4680	140	90	3500	410	3.2

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

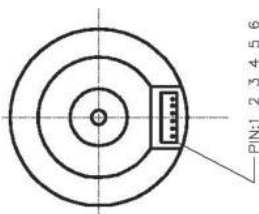
配置 B3630-1247 无刷电机 (B3630-1247 BLDC Motor)

减 速 比 Reduction ratio	6	10	18	30	50	75	100	150	200	250	300
减速级数 Number of gear trains	2	2	3	3	4	4	4	5	5	5	5
减速器长度(L) Length(L) mm	21.5	21.5	26.5	26.5	29.0	29.0	29.0	31.5	31.5	31.5	31.5
空载转速 No-load speed r/min	780	468	260	156	94	62	47	31	23	19	16
额定转速 Rated speed r/min	583	350	194	117	70	47	35	23	18	14	12
额定转矩 Rated torque N.m	0.043	0.071	0.12	0.19	0.29	0.43	0.57	0.78	1	1	1
最大瞬间允许负载 Max. permissible load in a short time N.m	0.5	0.5	1	1	2	2	2	3	3	3	3

配置 B3630-2447 无刷电机 (B3630-2447 BLDC Motor)

减 速 比 Reduction ratio	6	10	18	30	50	75	100	150	200	250	300
减速级数 Number of gear trains	2	2	3	3	4	4	4	5	5	5	5
减速器长度(L) Length(L) mm	21.5	21.5	26.5	26.5	29.0	29.0	29.0	31.5	31.5	31.5	31.5
空载转速 No-load speed r/min	780	468	260	156	94	62	47	31	23	19	16
额定转速 Rated speed r/min	583	350	194	117	70	47	35	23	18	14	12
额定转矩 Rated torque N.m	0.043	0.071	0.12	0.19	0.29	0.43	0.57	0.78	1	1	1
最大瞬间允许负载 Max. permissible load in a short time N.m	0.5	0.5	1	1	2	2	2	3	3	3	3

● 接线方式 Wire Diagram



PIN 1# (Blue) Brake

PIN 2# (Orange) Speed regulation: PWM Mode, input signal frequency:20~30kHz.

PIN 3# (Black) Negative of power source.

PIN 4# (White) Rotation direction: CW if make a short circuit between PIN4# & PIN3#, CCW if open.

PIN 5# (Green) Speed feedback $n=60 \cdot F/P$, F: feedback frequency, P: number of pole-pairs(4)

PIN 6# (Red) Positive of power source.

36JXE30K/B3640

Φ36 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

36mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

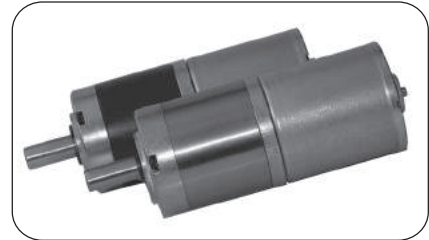
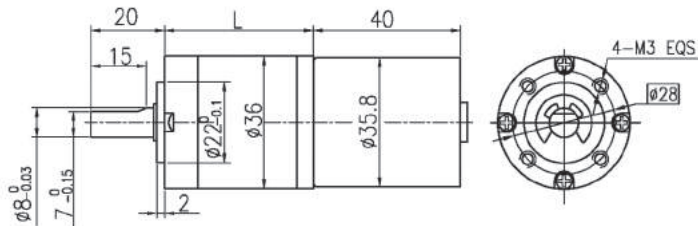
- 无刷电机内置驱动器, 具有正反转、调速、制动 (刹车) 的功能。

Brushless motor built-in driver, with a positive inversion, speed control, brake (brake) function.

- 减速器的内齿圈, 可以在两种材料中进行选择: 金属内齿圈 (型号 36JXE30K), 粉末金属内齿圈 (型号 36JXF30K)。

Ring gear can be selected within the two materials: Metal (Type:36JXE30K), Powder metal (Type:36JXF30K)。

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极 数 Number of poles	相 数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current A	额定功率 Rated power W
B3640-1279	8	3	9V~16V	12	7930	470	270	5800	2.4	16.0
B3640-2479	8	3	9V~26V	24	7930	250	270	6100	1.2	16.9

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

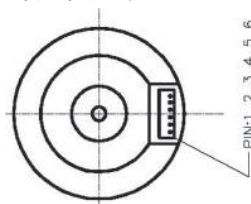
配置 B3640-1279 无刷电机 (B3640-1279 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	181	219	254	306	354
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	26.5	26.5	33.6	33.6	33.6	40.5	40.5	40.5	40.5	47.4	47.4	47.4	47.4	47.4
空载转速 No-load speed r/min	2137	1531	566	417	294	155	112	79	57	44	36	31	26	22
额定转速 Rated speed r/min	1563	1120	414	305	215	114	82	58	42	32	27	23	19	16
额定转矩 Rated torque N.m	0.088	0.12	0.30	0.41	0.52	1.0	1.4	1.9	2.2	2.7	3	3	3	3
最大瞬间允许负载 Max. permissible load in a short time N.m	1	1	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9	9

配置 B3640-2479 无刷电机 (B3640-2479 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	181	219	254	306	354
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L) mm	26.5	26.5	33.6	33.6	33.6	40.5	40.5	40.5	40.5	47.4	47.4	47.4	47.4	47.4
空载转速 No-load speed r/min	2137	1531	566	417	294	155	112	79	57	44	36	31	26	22
额定转速 Rated speed r/min	1644	1178	436	321	226	120	86	61	44	34	28	24	20	17
额定转矩 Rated torque N.m	0.088	0.12	0.30	0.41	0.52	1.0	1.4	1.9	2.2	2.7	3	3	3	3
最大瞬间允许负载 Max. permissible load in a short time N.m	1	1	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9	9

● 接线方式 Wire Diagram



PIN 1# (Blue) Brake

PIN 2# (Orange) Speed regulation: PWM Mode, input signal frequency:20~30kHz.

PIN 3# (Black) Negative of power source.

PIN 4# (White) Rotation direction: CW if make a short circuit between PIN4# & PIN3#, CCW if open.

PIN 5# (Green) Speed feedback n=60°/P, F: feedback frequency, P: number of pole-pairs(4)

PIN 6# (Red) Positive of power source.

36JXE30K/B3650

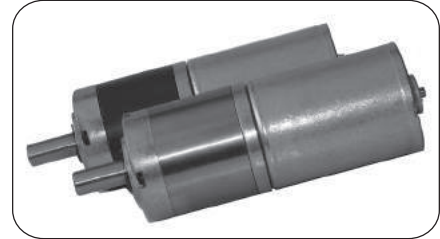
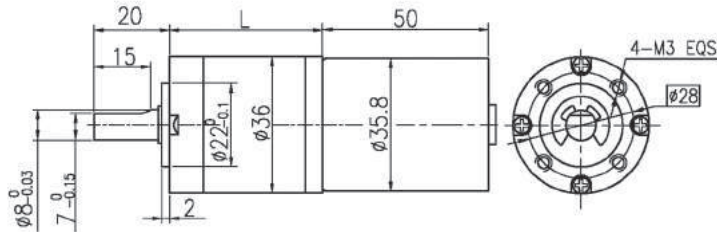
Φ36 行星减速器, 允许转矩范围: 0.3N.m~3.0N.m

36mm OD Planetary Gearbox,

Permissible Load Range: 0.3N.m~3.0N.m

- 无刷电机内置驱动器, 具有正反转、调速、制动(刹车)的功能。
Brushless motor built-in driver, with a positive inversion, speed control, brake (brake) function.
- 减速器的内齿圈, 可以在两种材料中进行选择: 金属内齿圈 (型号 36JXE30K), 粉末金属内齿圈 (型号 36JXF30K)。
Ring gear can be selected within the two materials: Metal (Type:36JXE30K), Powder metal (Type:36JXF30K)。

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current A	额定功率 Rated power W
B3650-1253	4	3	9V~16V	12	5300	440	350	4000	2.5	14.4
B3650-2453	4	3	9V~26V	24	5300	270	350	4500	1.1	16.2

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

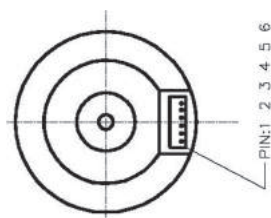
配置 B3640-1253 无刷电机 (B3640-1253 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	181	219	254	306	354
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L)	mm	26.5	26.5	33.6	33.6	33.6	40.5	40.5	40.5	40.5	47.4	47.4	47.4	47.4
空载转速 No-load speed	r/min	1429	1023	379	279	196	104	75	53	38	29	24	21	17
额定转速 Rated speed	r/min	1078	772	286	211	148	78	56	40	35	29	22	18	13
额定转矩 Rated torque	N.m	0.12	0.16	0.39	0.53	0.68	1.3	1.8	2.5	2.9	3	3	3	3
最大瞬间允许负载 Max. permissible load in a short time	N.m	1	1	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9

配置 B3640-2453 无刷电机 (B3640-2453 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	181	219	254	306	354
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4
减速器长度(L) Length(L)	mm	26.5	26.5	33.6	33.6	33.6	40.5	40.5	40.5	40.5	47.4	47.4	47.4	47.4
空载转速 No-load speed	r/min	1429	1023	379	279	196	104	75	53	38	29	24	21	17
额定转速 Rated speed	r/min	1213	869	321	237	167	88	63	45	39	32	25	21	15
额定转矩 Rated torque	N.m	0.12	0.16	0.39	0.53	0.68	1.3	1.8	2.5	2.9	3	3	3	3
最大瞬间允许负载 Max. permissible load in a short time	N.m	1	1	3.5	3.5	3.5	7.5	7.5	7.5	7.5	9	9	9	9

● 接线方式 Wire Diagram



- PIN 1# (Blue) Brake
- PIN 2# (Orange) Speed regulation: PWM Mode, input signal frequency:20~30kHz.
- PIN 3# (Black) Negative of power source.
- PIN 4# (White) Rotation direction: CW if make a short circuit between PIN4# & PIN3#, CCW if open.
- PIN 5# (Green) Speed feedback $n=60 \cdot F/P$, F: feedback frequency, P: number of pole-pairs(2)
- PIN 6# (Red) Positive of power source.

42JXE100K/B4260

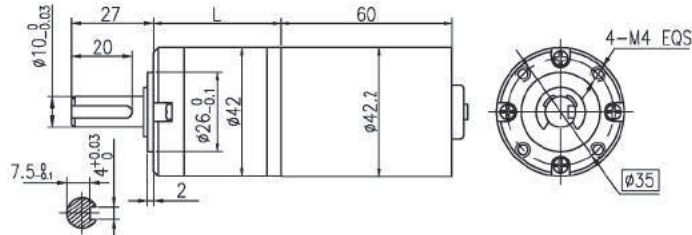
Φ42 行星减速器, 允许转矩范围: 1N.m~10N.m

42mm OD Planetary Gearbox,

Permissible Load Range: 1N.m~10N.m

- 无刷电机内置驱动器, 具有正反转、调速、制动(刹车)的功能。
Brushless motor built-in driver, with a positive inversion, speed control, brake (brake) function.
- 减速器的内齿圈, 可以在两种材料中进行选择: 金属内齿圈 (型号 42JXE100K), 粉末金属内齿圈 (型号 42JXF100K)。
Ring gear can be selected within the two materials: Metal (Type:42JXE100K), Powder metal (Type:42JXF100K)。

● 外形和安装尺寸 Dimensions



● 无刷电动机主要技术参数 Brushless Motor Technical Data

电机型号 TYPE	极数 Number of poles	相数 Number of phase	电压范围 Operating Range	额定电压 Rated voltage VDC	空载转速 No-load speed r/min	空载电流 No-load current mA	额定转矩 Rated torque g.cm	额定转速 Rated speed r/min	额定电流 Rated current A	额定功率 Rated power W
B4260-1260	4	3	9V~16V	12	6000	680	370	5000	2.8	19.0
B4260-2460	4	3	9V~26V	24	6000	350	370	5300	1.4	20.1

● 无刷行星齿轮减速电机主要技术参数 Brushless Gear Motor Technical Data

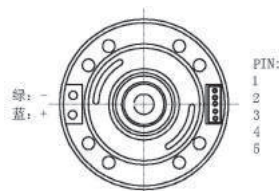
配置 B4260-1260 无刷电机 (B4260-1260 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	181	219	254	306	354	427	495
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4	4	4
减速器长度(L) Length(L)	mm	31.5	31.5	42.1	42.1	42.1	52.4	52.4	52.4	62.9	62.9	62.9	62.9	62.9	62.9	62.9
空载转速 No-load speed	r/min	1617	1158	429	316	222	118	85	60	43	33	27	24	20	17	14
额定转速 Rated speed	r/min	1348	965	357	263	185	98	70	50	36	28	23	20	16	14	12
额定转矩 Rated torque	N.m	0.12	0.17	0.41	0.56	0.79	1.4	1.9	2.6	3.7	4.3	5.2	6.0	7.2	8.4	10
最大瞬间允许负载 Max. permissible load in a short time	N.m	3	3	12	12	12	25	25	25	25	30	30	30	30	30	30

配置 B2460-2460 无刷电机 (B4260-2460 BLDC Motor)

减 速 比 Reduction ratio	3.7	5.2	14	19	27	51	71	100	139	181	219	254	306	354	427	495
减速级数 Number of gear trains	1	1	2	2	2	3	3	3	3	4	4	4	4	4	4	4
减速器长度(L) Length(L)	mm	31.5	31.5	42.1	42.1	42.1	52.4	52.4	52.4	62.9	62.9	62.9	62.9	62.9	62.9	62.9
空载转速 No-load speed	r/min	1617	1158	429	316	222	118	85	60	43	33	27	24	20	17	14
额定转速 Rated speed	r/min	1429	1023	379	279	196	104	75	53	38	29	24	21	17	15	12
额定转矩 Rated torque	N.m	0.12	0.17	0.41	0.56	0.79	1.4	1.9	2.6	3.7	4.3	5.2	6.0	7.2	8.4	10
最大瞬间允许负载 Max. permissible load in a short time	N.m	3	3	12	12	12	25	25	25	25	30	30	30	30	30	30

● 接线方式 Wire Diagram

PIN 1# Speed feedback: $n=60 \cdot F/P$, F: feedback frequency, P: number of pole-pairs(2).

PIN 2# Brake

PIN 3# Speed regulation: PWM Mode, input signal frequency: 20~30kHz.

PIN 4# Rotation direction: CCW if make a short circuit between PIN4# & PIN2#, CW if open.

PIN 5# Negative .

When blue lead wire is connected to positive of power source & green lead wire is connected to negative of power Source, at the same time, short circuit between PIN3# & PIN5#, motor will run at full speed.

Then short circuit between PIN3#, PIN4# & PIN5#, the rotation direction will be changed.

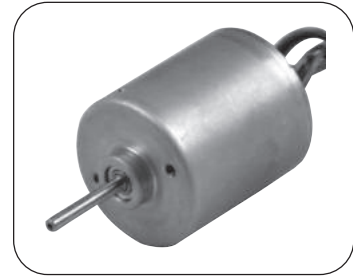
Brushless DC Motor With built-in driver

FL36CBL-IE SERIES

● INDICATIONS OF THE MODELS

FL 36 CBL 57 — 24V— 45 33 A — IE — Integrated electronics

Single shaft (A)
Double shaft (B)
Rated power: 33W
Rated speed 1%: 4500rpm
Rated voltage: 24V
Body length: 57mm
Round Brushless motor, low cost
Motor frame size: 36mm
Fulling



● GENERAL SPECIFICATIONS

Winding type	star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B/F
Dielectric strength	500VAC, 1 min.
Insulation resistance	100MΩ, 500VDC

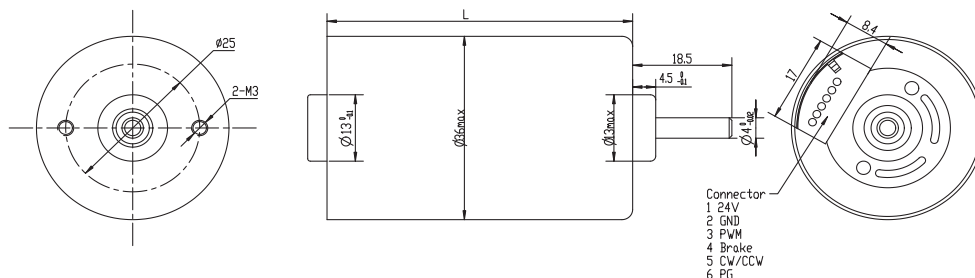
● ELECTRIC CONNECTION

PIN No.	FUNCTION	DESCRIPTION
1	Vcc	+24V
2	GND	GND
3	PWM	Speed Control
4	Brake	Brake
5	CW/CCW	Rotating Direction
6	PG	Tacho out

● ELECTRICAL SPECIFICATIONS

Model	Unit	FL36CBL60-24 V-4840A-IE	FL36CBL57-24 V-4533A-IE	FL36CBL40-24 V-4818A-IE	FL36CBL30-24 V-488A-IE
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	4800	4500	4800	4800
Continuous running torque	mN.m	96	84	42	18
Rated torque	mN.m	80	70	35	15
Rated power	W	40	33	18	8
Peak torque	mN.m	108	115	105	45
Peak current	A	3.0	3.0	3.0	1.5
Line to line resistance	ohms@20℃	0.93	1.3	2.7	7.8
Line to line inductance	mH	1.3	1.6	2.6	5.5
Torque constant	mNm/A	38.5	41.2	37.1	33.8
Back E.M.F	Vrms/KRPM	2.85	3.05	2.75	2.5
Rotor inertia	g.cm ²	30	27	12	6
Body length(L)	mm	60	57	40	30
Weight	Kg	0.28	0.25	0.16	0.12

● DIMENSIONS



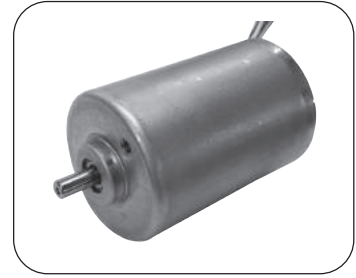
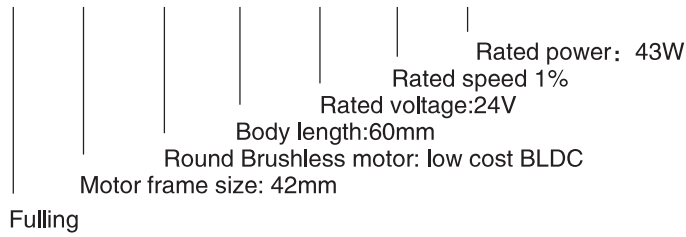
*This motor can be designed & manufactured with customized request.

Brushless DC Motor With built-in driver

FL42CBL -IE SERIES

● Indications of the models

FL 42 CBL 60 - 24V - 59 43 - IE — Integrated electronics



● General Specifications

Winding type	star
Hall effect angle	120degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	15N @ 10mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min, 500VDC

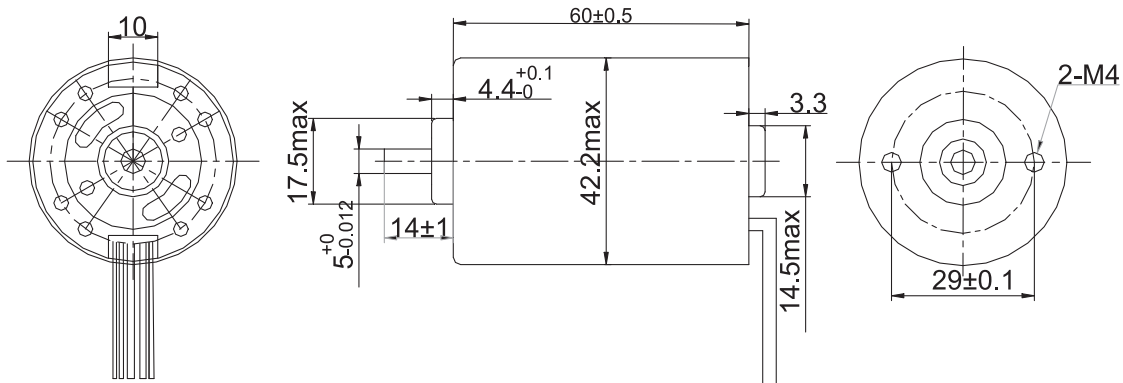
● Electric Connection

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	AWG22	Vcc	+24V
2	Black		GND	GND
3	Green	AWG26	CW/CCW	Rotating Direction
4	White		PWM	Speed Control
5	Blue		BRAKE	
6	Yellow		FG	Tacho out

● Electrical Specifications

Model	Unit	FL42CBL60-24V-5943-IE
Number of poles		4
Number of phase		3
Rated voltage	VDC	24
Rated speed	RPM	5900
Rated torque	mN.m	68
Rated power	W	43
Peak current	A	3
Resistance	ohms	0.82
Inductance	mH	0.75
Torque constant	mNm/A	32
Rotor inertia	g.cm ²	44
Body length(L)	mm	60
Weight	Kg	0.35

● Dimensions



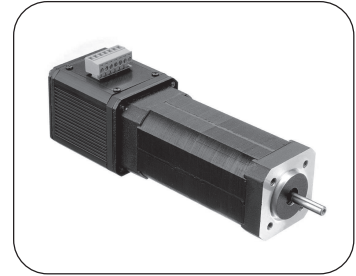
*This motor can be designed & manufactured with customized request.

Brushless DC Motor With Built-in Driver

FL42BLS-IE SERIES

● INDICATIONS OF THE MODELS

FL 42 BLS 01 - IE
 Fulling | Frame: 42mm | BLS: Brushless motor with square front end bell | Series number | Integrated electronics



● GENERAL SPECIFICATIONS

+5V	F/R	SV	PG	GND	GND	+Vp
0	0	0	0	0	0	0
1	2	3	4	5	6	7

7 +Vp---DC POWER INPUT +24VDC
 6 GND---COMMON GROUND OF SYSTEM
 5 GND---COMMON GROUND OF SYSTEM
 4 PG---SPEED PULSE OUTPUT(TTL), 24 PULSE/REV
 3 SV---SPEED VOLTAGE 0—5VDC
 2 F/R---ROTATING DIRECTION, Hi=CW
 1 +5V---+5V VOLTAGE OUTPUT
 NOTE: SPEED CLOSE LOOP CONTROL 6000RPM MAX. AT SV=5VDC

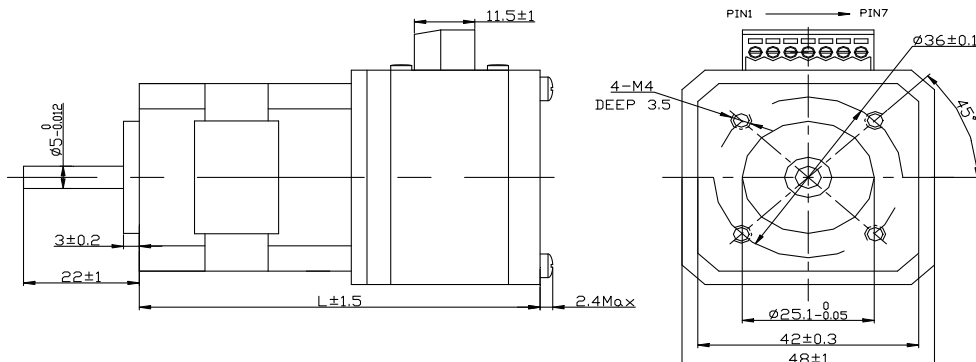
● CONNECTING INDICATING

Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.02mm@450g
End play	0.08mm@450g
Max. radial force	28N @ 20mm from the flange
Max. axial force	10N
Insulation class	Class B
Dielectric strength	500VAC for one minute
Insulation resistance	100MΩ Min., 500VDC

● ELECTRICAL SPECIFICATIONS

Model		FL42BLS01-IE	FL42BLS02-IE	FL42BLS03-IE	FL42BLS04-IE
Number of poles		8			
Number of phase		3			
Rated voltage	VDC	24			
Rated speed	RPM	4000			
Rated torque	N.m	0.0625	0.125	0.185	0.25
Rated power	W	26	52	78	104
Line to line resistance	ohms	1.5	0.8	0.43	0.3
Line to line inductance	mH	2.1	1.2	0.71	0.5
Torque constant	Nm/A	0.033	0.036	0.037	0.035
Back E.M.F	Vrms/KRPM	2.45	2.71	2.74	2.62
Rotor inertia	g.cm ²	24	48	72	96
Body length(L)	mm	77	97	137	157

● DIMENSIONS

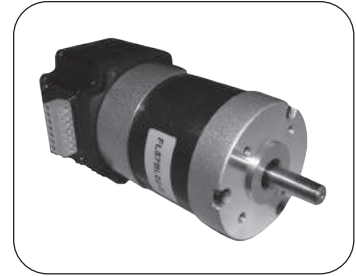
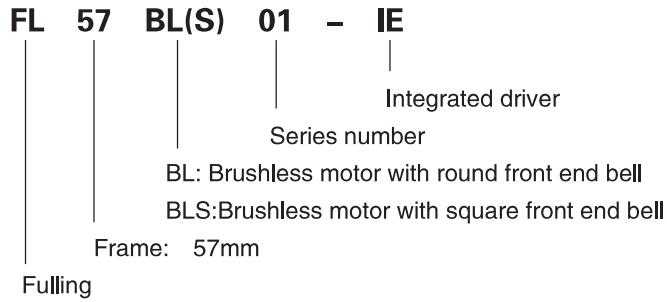


* This motor can be designed & manufactured with customized request.

Brushless DC Motor With Built-in Driver

FL57BL(S)–IE SERIES

● Indications of the models



● General Specifications

+Vp	GND	GND	PG	SV	F/R	+5V
0	0	0	0	0	0	0
1	2	3	4	5	6	7

- 1 +Vp---DC POWER INPUT +36VDC
- 2 GND---COMMON GROUND OF SYSTEM
- 3 GND---COMMON GROUND OF SYSTEM
- 4 PG---SPEED PULSE OUTPUT(TTL), 6 PULSE/REV
- 5 SV---SPEED VOLTAGE 0—5VDC
- 6 F/R---ROTATING DIRECTION
- 7 +5V---+5V VOLTAGE OUTPUT

● Connecting Indicating

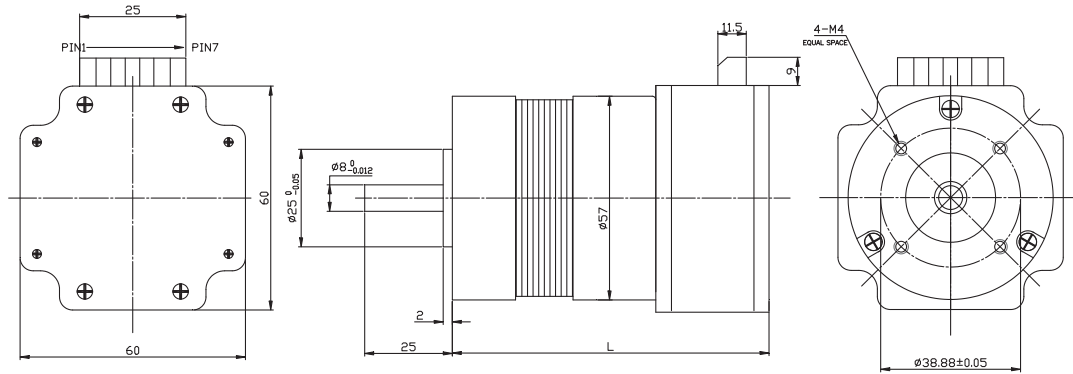
Winding type	Delta
Hall effect angle	120 degree electrical angle
Shaft run out	0.025mm
Radial play	0.025mm@460g
End play	0.025mm@4000g
Max. radial force	75N @ 20mm from the flange
Max. axial force	15N
Insulation class	Class B
Dielectric strength	500VDC for one minute
Insulation resistance	100MΩ Min., 500VDC

● Electrical Specifications

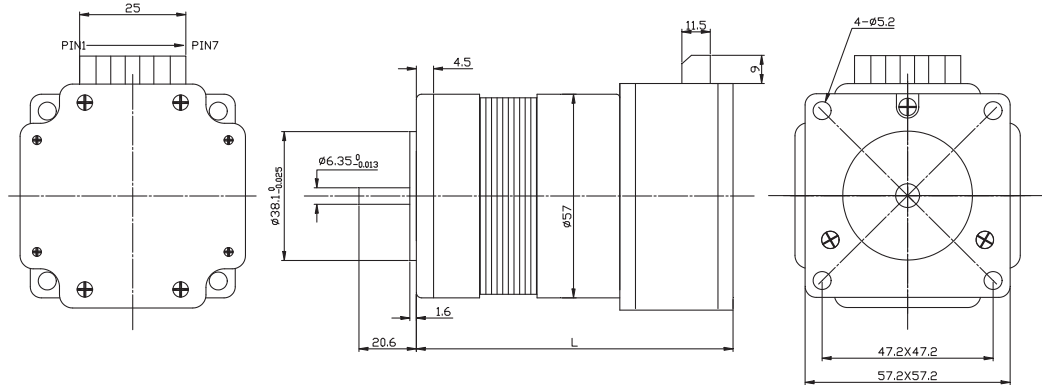
Model		FL57BL(S)005–IE	FL57BL(S)01–IE	FL57BL(S)02–IE	FL57BL(S)03–IE
Number of poles		4			
Number of phase		3			
Rated voltage	VDC	36			
Rated speed	RPM	4000	4000	4000	4000
Rated torque	N.m	0.055	0.11	0.22	0.33
Rated power	W	25	46	99	138
Peak torque	N.m	0.16	0.39	0.7	1
Peak current	A	3.5	6.8	12	16
Line to line resistance	ohms	4.3	1.63	0.64	0.45
Line to line inductance	mH	10	4.4	2	1.5
Torque constant	Nm/A	0.052	0.061	0.060	0.065
Back E.M.F	Vrms/KRPM	3.8	4.5	4.45	4.8
Rotor inertia	g.cm ²	30	75	119	173
Body length(L)	mm	90	100	139	159
Weight	Kg	0.56	0.67	0.9	1.2

● Dimensions

FL57BLxx-IE



FL57BLSxx-IE

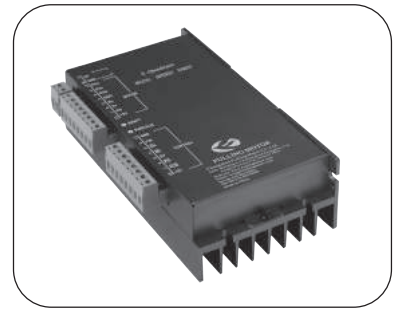
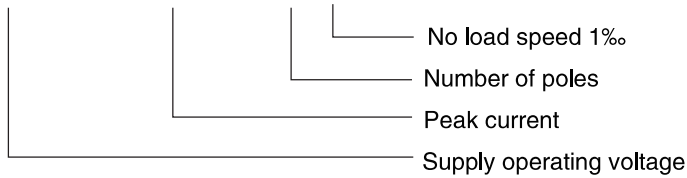


* This motor can be designed & manufactured with customized request.

BLDC Driver B Series

● Model Indications

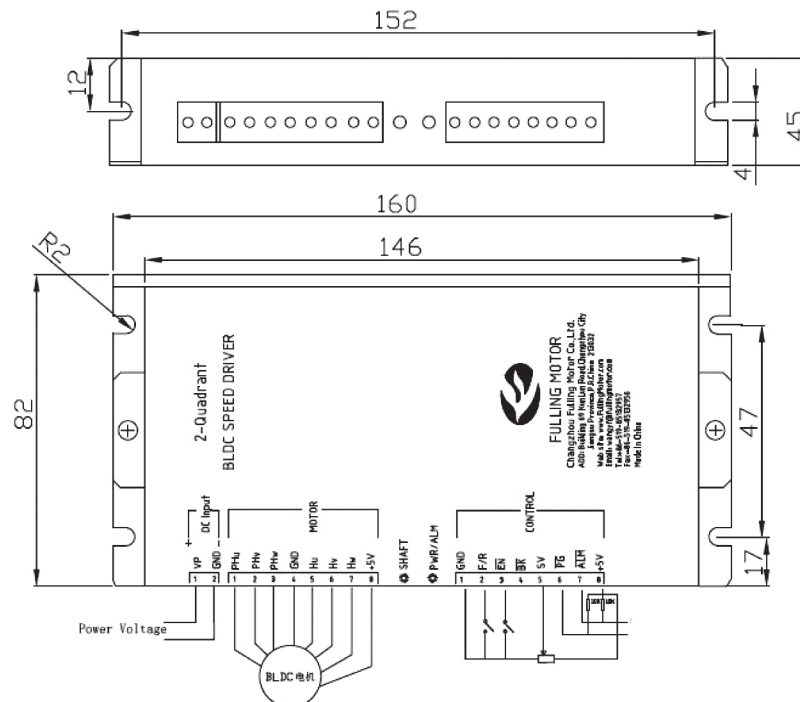
XX ZWSK XX—B—X XX



● Functions

Supply voltage	18VDC ~ 55VDC
Operating current	Continuous current: 10A/15A Peak current: 20A/30A (Ambient temperature below 25℃)
Power range	≤700 W
Adapted motor	Brushless DC hall motor (120°)
Working mode	Hall speed closed - loop mode
Speed adjustment mode	Support external potentiometer speed control, external voltage speed control and PWM velocity command.
Protective function	Over voltage protection, Under voltage protection, Over current protection, The power Reverse protection.
Working environment	No corrosive, flammable, explosive, conductive gas, liquid and dust.
Heat dissipation mode	Natural cooling or external radiator.
Dimension	160mm × 82mm × 45mm

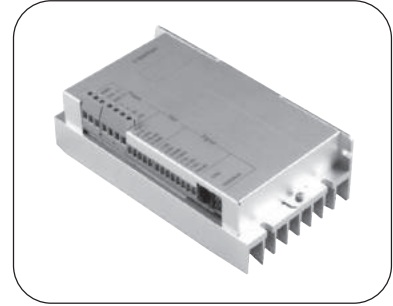
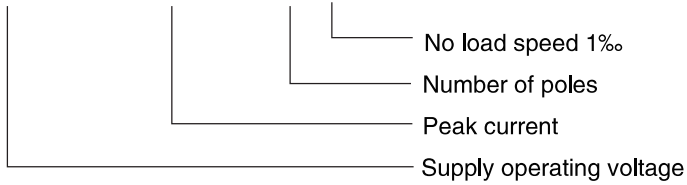
● Installation dimension



BLDC Driver B Series (Support CAN2.0B protocol)

● Model Indications

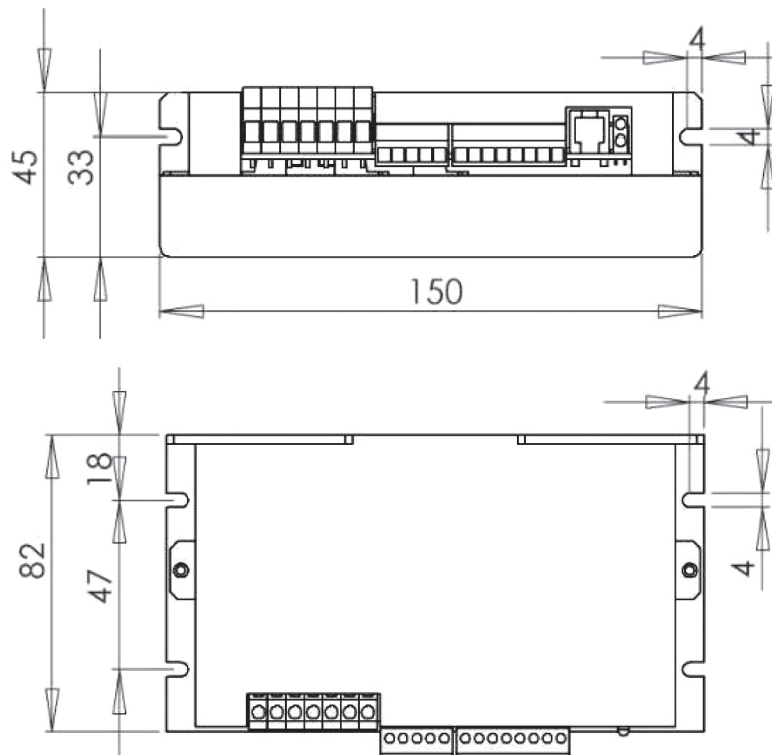
XX ZWSK XX—B—X XX



● Functions

Supply voltage	18VDC ~ 60VDC
Operating current	Continuous current: 20A, Peak current: 40A (Ambient temperature below 25℃)
Power range	≤1200 W
Speed range	100~20000rpm
Adapted motor	Brushless DC hall motor (120°)
Working mode	Hall speed closed - loop mode(Factory Default), Open - loop mode(Optional)
Speed adjustment mode	Support external potentiometer speed control, external voltage speed control and PWM velocity command, Communication(CAN/Serial port)
Protective function	Over voltage protection, Under voltage protection, Over current protection , Over temperature protection, Soft - Start and hall signal fault alarm function.
Working environment	No corrosive, flammable, explosive, conductive gas, liquid and dust.
Heat dissipation mode	Natural cooling or external radiator.
Dimension	150mm × 82mm × 45mm

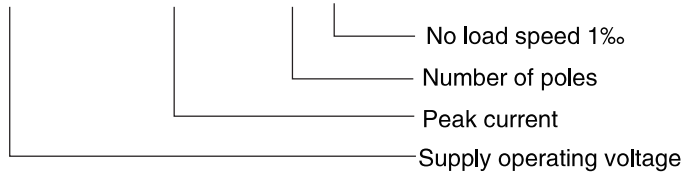
● Installation dimension



BLDC Driver N Series

● Model Indications

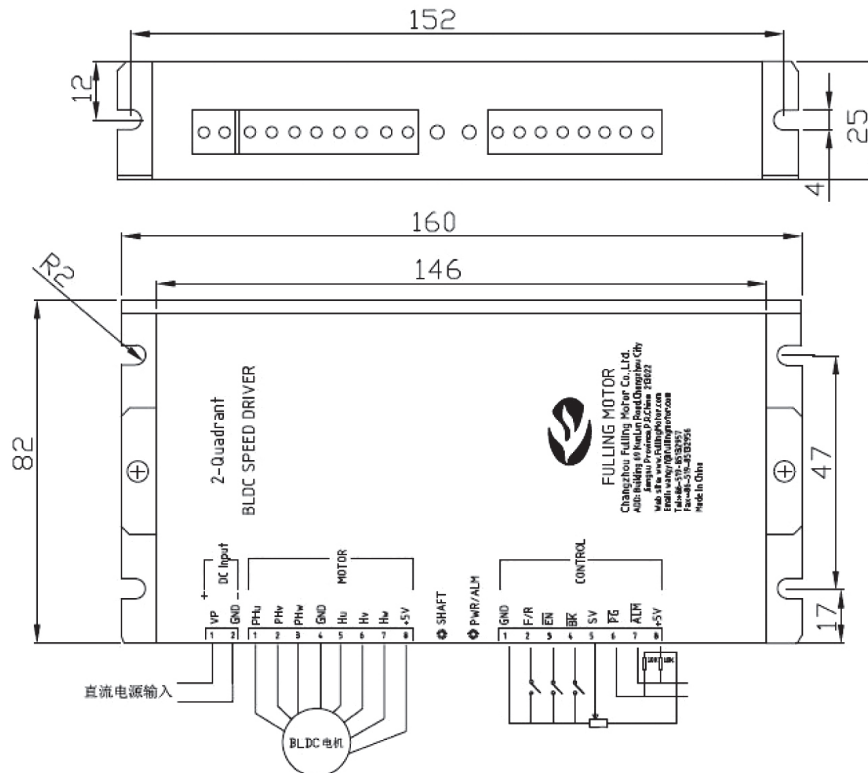
XX ZWSK XX—N—X XX



● Functions

Supply voltage	18VDC ~ 55VDC
Operating current	Continuous current: 5A/7A Peak current: 10A/15A (Ambient temperature below 25℃)
Power range	≤350 W
Adapted motor	Brushless DC hall motor (120°)
Working mode	Hall speed closed - loop mode
Speed adjustment mode	Support external potentiometer speed control, external voltage speed control and PWM velocity command.
Protective function	Over voltage protection, Under voltage protection, Over current protection, The power Reverse protection.
Working environment	No corrosive, flammable, explosive, conductive gas, liquid and dust.
Heat dissipation mode	Natural cooling or external radiator.
Dimension	160mm × 82mm × 25mm

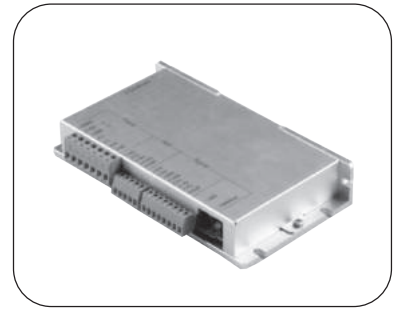
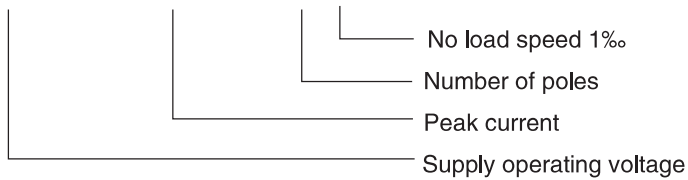
● Installation dimension:



BLDC Driver N Series (Support CAN2.0B protocol)

● Model Indications

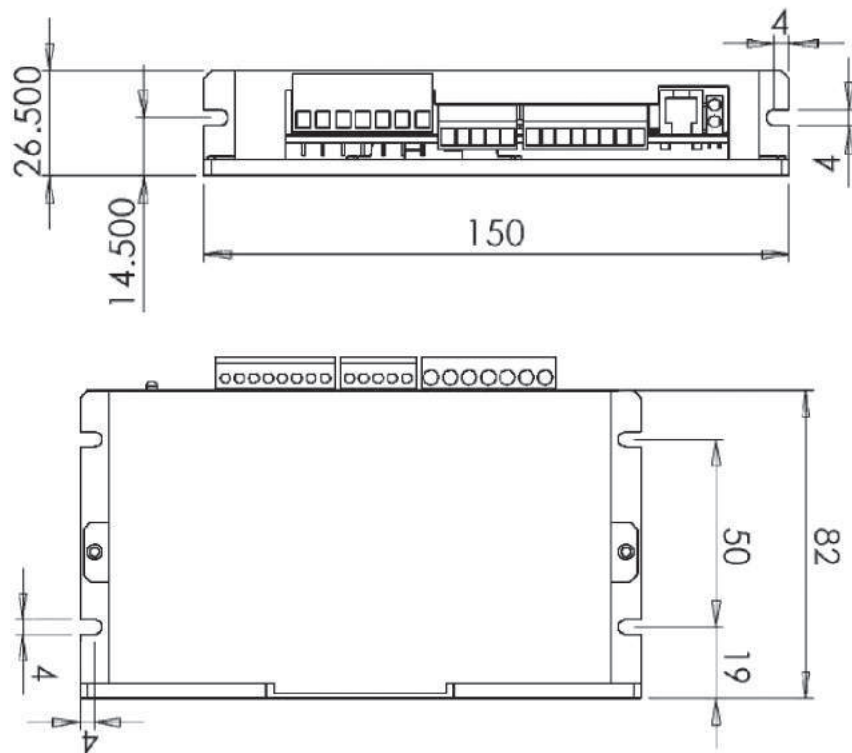
XX ZWSK XX—N—X XX



● Functions

Supply voltage	12VDC ~ 40VDC
Operating current	Continuous current: 10A, Peak current: 20A (Ambient temperature below 25℃)
Power range	≤400 W
Speed range	100~20000rpm
Adapted motor	Brushless DC hall motor (120°)
Working mode	Hall speed closed - loop mode(Factory Default) , Open - loop mode(Optional)
Speed adjustment mode	Support external potentiometer speed control, external voltage speed control and PWM velocity command, Communication(CAN/Serial port)
Protective function	Over voltage protection, Under voltage protection, Over current protection , Over temperature protection, Soft - Start and hall signal fault alarm function.
Working environment	No corrosive, flammable, explosive, conductive gas, liquid and dust.
Heat dissipation mode	Natural cooling or external radiator.
Dimension	150mm × 82mm × 26.5mm

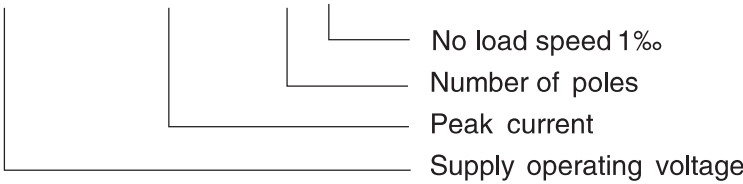
● Installation dimension



BLDC Driver S Series (Support CAN2.0B protocol)

● Model Indications

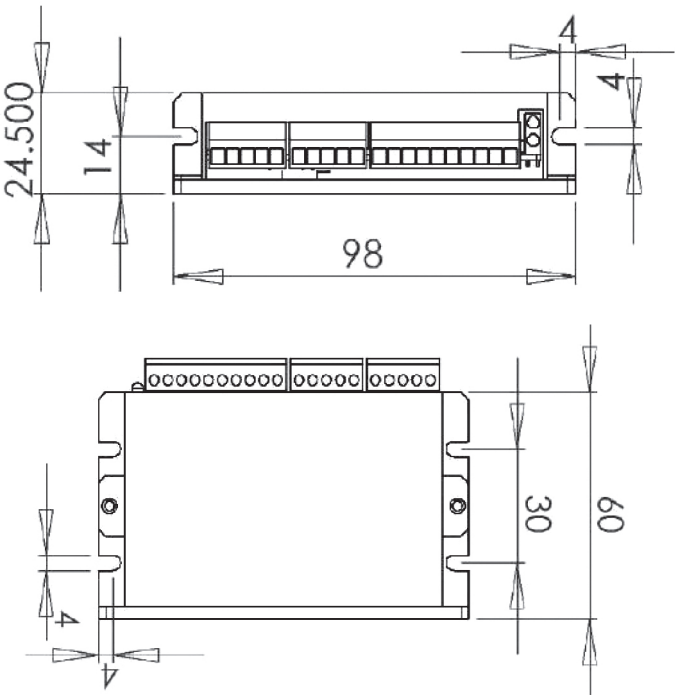
XX ZWSK XX—S—X XX



● Functions

Supply voltage	8VDC ~ 30VDC
Operating current	Continuous current: 3A , Peak current: 6A (Ambient temperature below 25℃)
Power range	≤80 W
Speed range	100~20000rpm
Adapted motor	Brushless DC hall motor (120°)
Working mode	Hall speed closed - loop mode(Factory Default) , Open - loop mode(Optional)
Speed adjustment mode	Support external potentiometer speed control, external voltage speed control and PWM velocity command.
Protective function	Over voltage protection, Under voltage protection, Over current protection , Over temperature protection, Soft - Start and hall signal fault alarm function.
Working environment	No corrosive, flammable, explosive, conductive gas, liquid and dust.
Heat dissipation mode	Natural cooling or external radiator.
Dimension	98mm × 60mm × 24.5mm

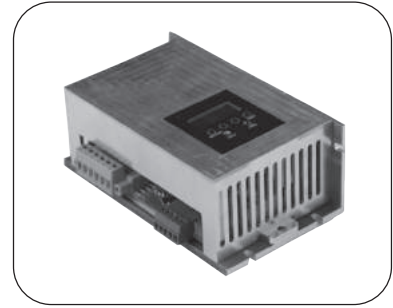
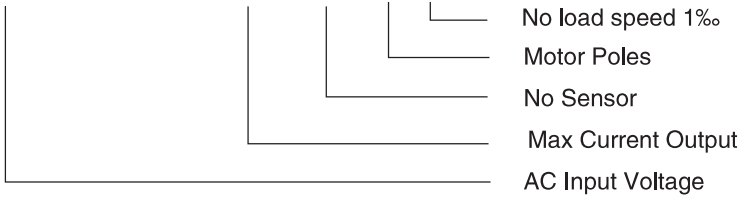
● Installation dimension



High-voltage Sensorless BLDC Driver

● Model Indications

220VAC ZWSK XX—NH—X XX



● Functions

Supply voltage	100VAC~230VAC
Operating current	Rated Current 2.5A(Ambient Temperature < 25℃)
Power range	≤300 W
Speed range	600~8000rpm
Adapted motor	110VAC/220VAC 3-phase high voltage BLDC Motor without Hall Sensor, Planetary connection
Working mode	Speed closed - loop control
Speed adjustment mode	Built - in potentiometer control speed
Protective function	Over voltage protection, Under voltage protection, Over current protection , Stalled protection, Soft start function
Working environment	No corrosive, flammable, explosive, conductive gas, liquid and dust.
Heat dissipation mode	Natural cooling or external radiator.
Dimension	140mm × 82mm × 54.5mm

● Installation dimension

