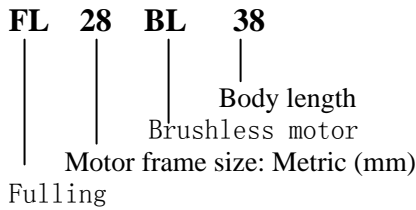


Brushless DC Motor

C1

FL28BL SERIES

◆ INDICATIONS OF THE MODELS



◆ GENERAL SPECIFICATIONS

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

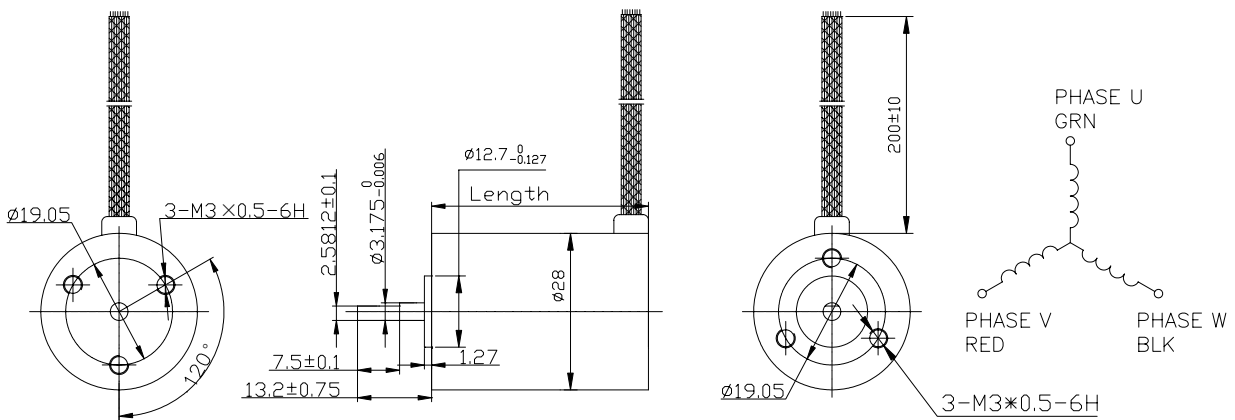
ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Yellow	UL1007 26AWG	Vcc	SUPPLY VOLTAGE FOR HALL SENEORS
2	Blue		HALL A	
3	Orange		HALL B	
4	Brown		HALL C	
5	White		GND	GROUND FOR HALL SENEORS
6	Green		PHASE U	
7	Red		PHASE V	
8	Black		PHASE W	

ELECTRICAL SPECIFICATIONS

Model		FL28BL26	FL28BL38	FL28BL77
Number of poles		4	4	4
Number of phase		3	3	3
Rated voltage	VDC	15	24	24
Rated speed	RPM	8000	10000	3700
Continuous stall torque	mN.m	8.4	17	60
Rated torque	mN.m	7	14.12	50
Rated power	W	6	14.78	16
Peak torque	mN.m	21	42.4	150
Peak current	A	2.5	2.8	3
Line to line resistance	ohms	8	4.63	4.67
Line to line inductance	mH	2	3	3.5
Torque constant	mNm/A	13.7	16	50
Rotor inertia	g.cm ²	1.23	2.12	5.98
Body length	mm	26	38	77
Mass	Kg	0.060	0.082	0.280

◆ DIMENSIONS:

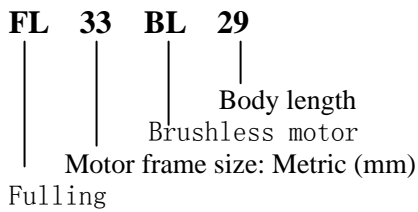


Brushless DC Motor

C2

FL33BL SERIES

◆ INDICATIONS OF THE MODELS



◆ GENERAL SPECIFICATIONS

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

ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Yellow	UL1007 26AWG	VCC	SUPPLY VOLTAGE FOR HALL SENEORS
2	Blue		HALL A	
3	Orange		HALL B	
4	Brown		HALL C	
5	White		GND	GROUND FOR HALL SENEORS
6	Green		PHASE U	
7	Red		PHASE V	
8	Black		PHASE W	

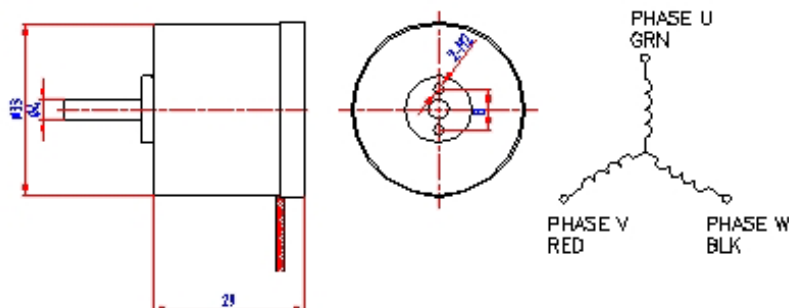
ELECTRICAL SPECIFICATIONS

Model

FL33BL29

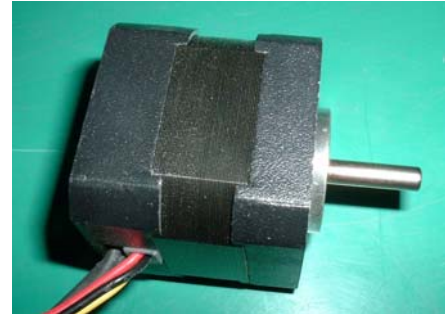
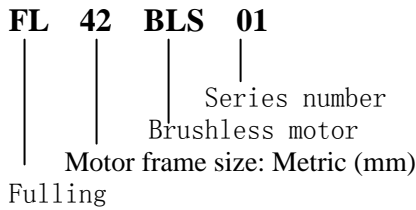
Number of poles		4
Number of phase		3
Rated voltage	VDC	36
Rated speed	RPM	4000
Continuous stall torque	mN.m	14
Rated torque	mN.m	12
Rated power	W	4
Peak torque	mN.m	35
Peak current	A	0.64
Line to line resistance	ohms	29.2
Line to line inductance	mH	11.83
Torque constant	mNm/A	18.75
Rotor inertia	g.cm ²	7.95
Body length	mm	29
Mass	Kg	0.085

◆ DIMENSIONS:



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	500VDC for one minute
Insulation resistance	100M Ω Min., 500VDC

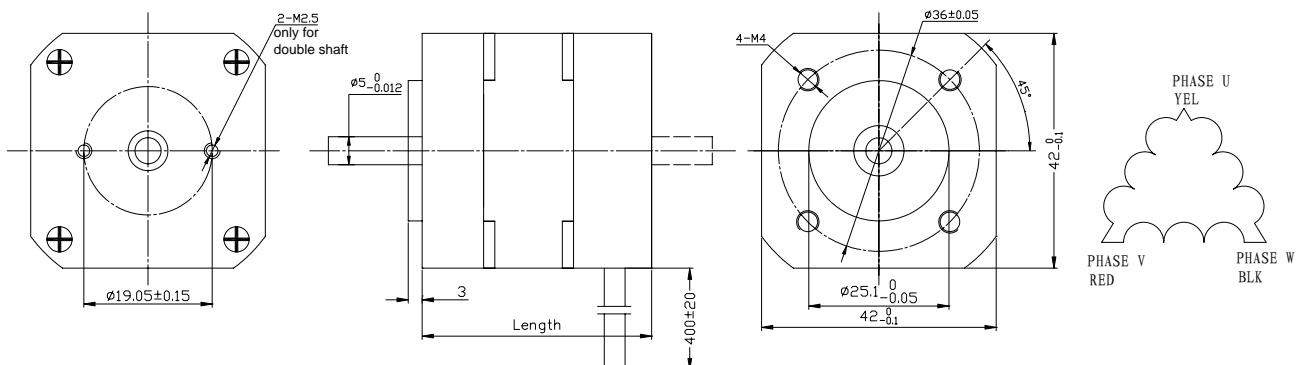
ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1007 26AWG	Vcc	SUPPLY VOLTAGE FOR HALL SENEORS
2	Blue		HALL A	
3	Green		HALL B	
4	White		HALL C	
5	Black	UL1007 20AWG	GND	GROUND FOR HALL SENEORS
6	Yellow		PHASE A	
7	Red		PHASE B	
8	Black		PHASE C	

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	5.4	10.6	15.5	20
Line to line resistance	ohms	1.8	0.8	0.55	0.28
Line to line inductance	mH	2.6	1.2	0.8	0.54
Torque constant	Nm/A	0.035	0.0355	0.036	0.0376
Back E.M.F	V/KRPM	3.66	3.72	3.76	3.94
Rotor inertia	g.cm ²	24	48	72	96
Body length	mm	41	61	81	100
Mass	Kg	0.3	0.45	0.65	0.8

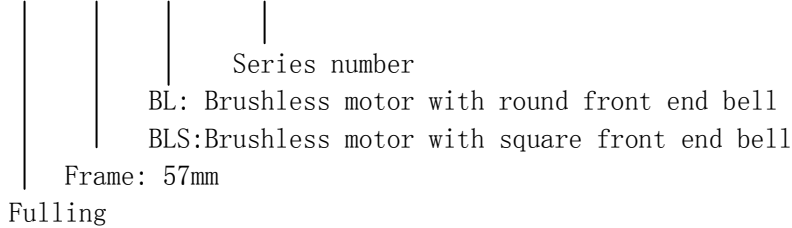
◆ DIMENSIONS:



FL57BL(S) SERIES

◆ INDICATIONS OF THE MODELS

FL 57 BL(S) 01

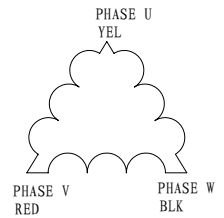


◆ GENERAL SPECIFICATIONS

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	500VDC for one minute
Insulation resistance	100MΩ Min., 500VDC

ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1007 26AWG	VCC	SUPPLY VOLTAGE FOR HALL SENEORS
2	Blue		HALL A	
3	Green		HALL B	
4	White		HALL C	
5	Black		GND	GROUND FOR HALL SENEORS
6	Yellow	UL1007 20AWG	PHASE A	
7	Red		PHASE B	
8	Black		PHASE C	

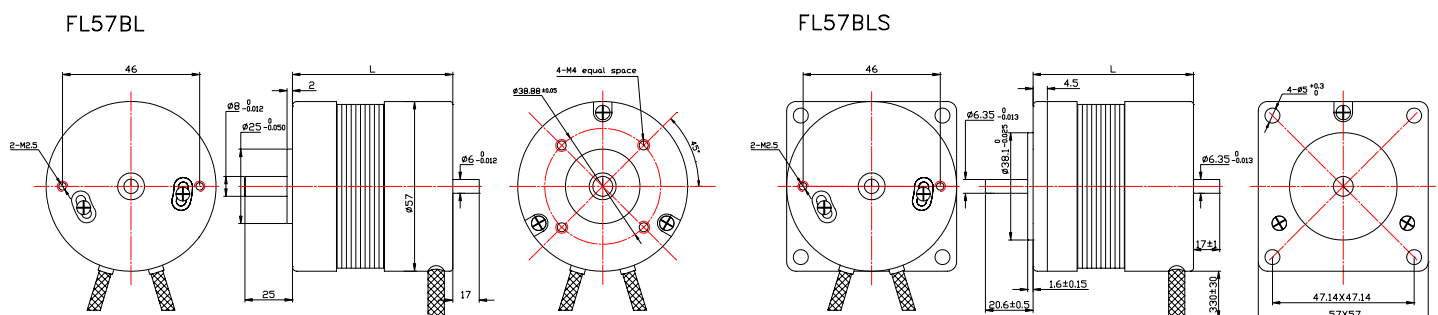


ELECTRICAL SPECIFICATIONS

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	0.32	0.43
Rated power	W	23	46	92	133	180
Peak torque	N.m	0.16	0.39	0.7	1	1.27
Peak current	A	3.5	6.8	11.5	16.5	20.5
Line to line resistance	ohms	4.1	1.5	0.7	0.45	0.35
Line to line inductance	mH	10	4.2	2.16	1.4	1
Torque constant	Nm/A	0.053	0.063	0.063	0.063	0.063
Back E.M.F	V/KRPM	5.55	6.6	6.6	6.6	6.6
Rotor inertia	g.cm ²	30	75	119	173	230
Body length(L)	mm	45	55	75	95	115
Mass	Kg	0.25	0.5	0.75	1	1.25

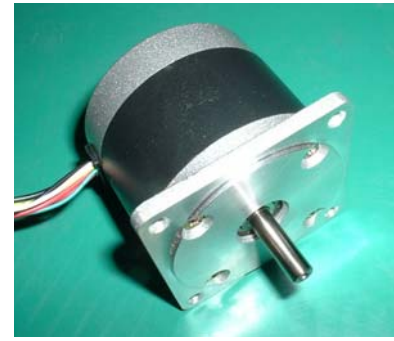
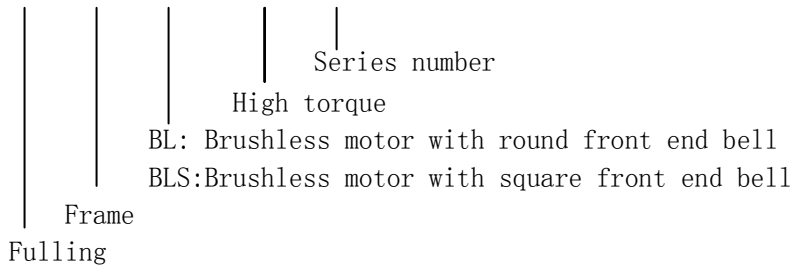
◆ DIMENSIONS:



FL57BL(S)H SERIES

◆ INDICATIONS OF THE MODELS

FL 57 BL(S) H 01



◆ 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	500VDC for one minute
Insulation resistance	100M Ω Min., 500VDC

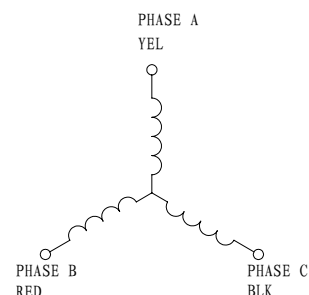
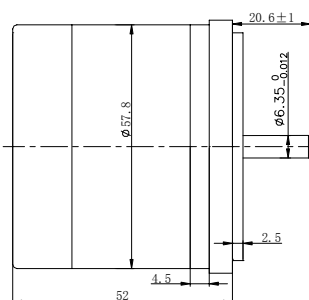
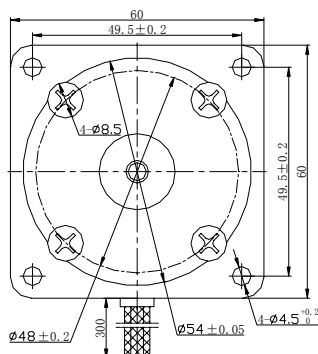
ELECTRIC CONNECTION

Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1007 26AWG	Vcc	SUPPLY VOLTAGE FOR HALL SENEORS
2	Blue		HALL A	
3	Green		HALL B	
4	White		HALL C	
5	Black		GND	GROUND FOR HALL SENEORS
6	Yellow	UL1007 20AWG	PHASE A	
7	Red		PHASE B	
8	Black		PHASE C	

◆ ELECTRICAL SPECIFICATIONS

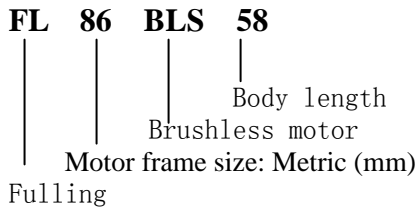
Model	FL57BLSH01	
Number of poles	4	
Number of phase	3	
Rated voltage	VDC	24
Rated speed	RPM	2300
Rated torque	N.m	0.24
Rated power	W	58
Peak torque	N.m	0.55
Peak current	A	11.5
Line to line resistance	ohms	1.5
Line to line inductance	mH	1.8
Torque constant	Nm/A	0.05
Back E.M.F	V/KRPM	5.2
Rotor inertia	g.cm ²	200
Body length(L)	mm	52
Mass	Kg	0.65

◆ DIMENSIONS:



FL86BLS 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	220N @ 20mm from the flange
Max. axial force	60N
Insulation class	Class B
Dielectric strength	500VDC for one minute
Insulation resistance	100M Ω Min., 500VDC

ELECTRIC CONNECTION

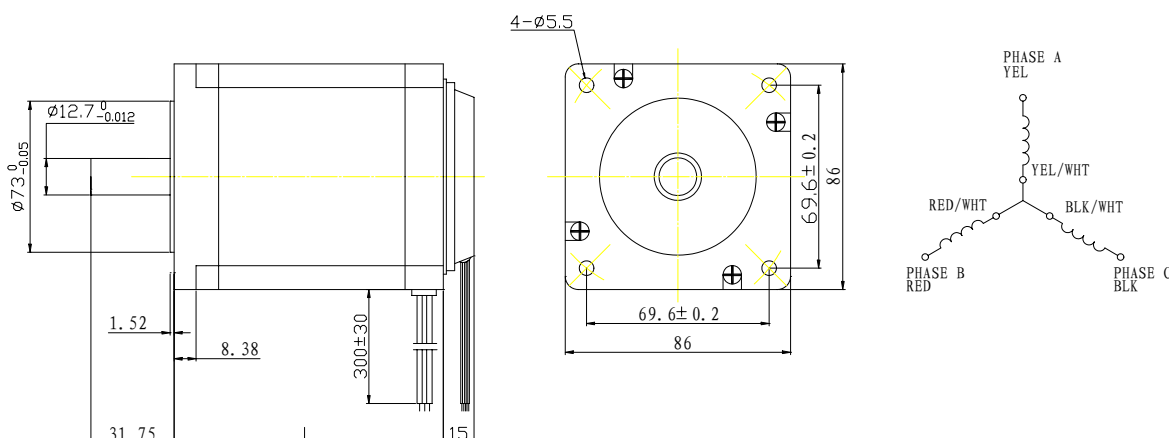
Lead No.	Lead Color	Lead Gauge	FUNCTION	DESCRIPTION
1	Red	UL1007 26AWG	VCC	SUPPLY VOLTAGE FOR HALL SENEORS
2	Blue		HALL A	
3	Green		HALL B	
4	White		HALL C	
5	Black	UL3266 AWG20#	GND	GROUND FOR HALL SENEORS
6	Yel & Yel/Wht		PHASE A	
7	Red & Red/Wht		PHASE B	
8	Blk & Blk/Wht		PHASE C	

ELECTRICAL SPECIFICATIONS

◆ Model FL86BLS58 FL86BLS71 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	1.4	2.1
Rated power	W	110	220	440	660
Peak torque	N.m	1.05	2.1	4.2	6.3
Peak current	A	11	19	33	55
Line to line resistance	ohms	1.05	0.36	0.2	0.16
Line to line inductance	mH	2.2mH	1.05mH	0.48	0.3mH
Torque constant	Nm/A	0.10	0.11	0.13	0.11
Back E.M.F	V/KRPM	10.5	11.5	13.5	11.5
Rotor inertia	g.cm ²	400	800	1600	2400
Body length (L)	mm	58	71	98	125
Mass	Kg	1.5	1.85	2.6	4

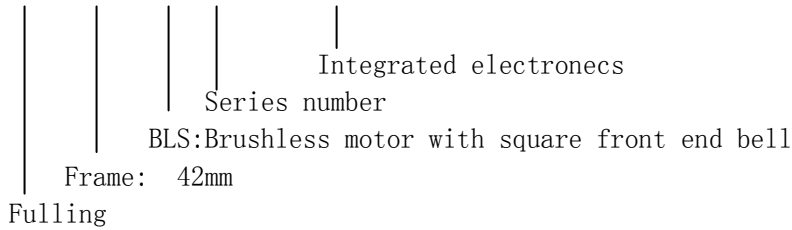
◆ DIMENSIONS:



FL42BLS-IE SERIES

◆ INDICATIONS OF THE MODELS

FL 42 BLS 01 - IE



◆ GENERAL SPECIFICATIONS

+5V	F/R	SV	PG	GND	GND	+Vp
○	○	○	○	○	○	○
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), 12 PULSE/REV
- 3 SV---SPEED VOLTAGE 0—5VDC
- 2 F/R---ROTATING DIRECTION
- 1 +5V---+5V VOLTAGE OUTPUT

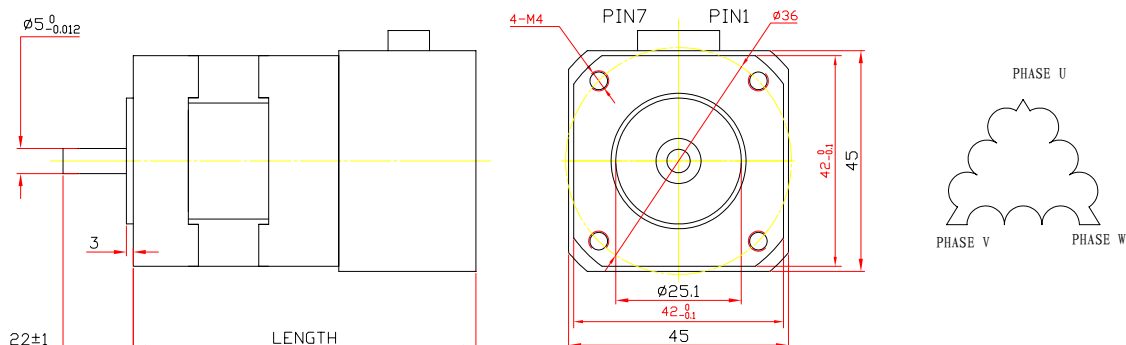
CONNECTING INDICATING

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	500VDC for one minute
Insulation resistance	100MΩ Min., 500VDC

ELECTRICAL SPECIFICATIONS

Model	FL42BLS01-IE	FL42BLS02-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
Rated power	W 26	52.5
Peak torque	N.m 0.19	0.38
Peak current	A 5.4	10.6
Line to line resistance	ohms 1.8	0.8
Line to line inductance	mH 2.6	1.2
Torque constant	Nm/A 0.035	0.0355
Back E.M.F	V/KRPM 3.66	3.72
Rotor inertia	g.cm ² 24	48
Body length(L)	mm 76	96

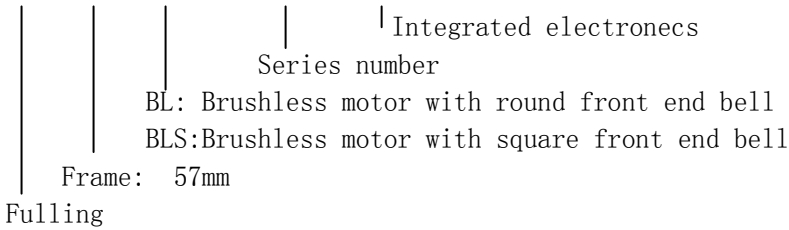
◆ DIMENSIONS:



FL57BL(S)-IE SERIES

◆ INDICATIONS OF THE MODELS

FL 57 BL(S) 01 - IE



◆ GENERAL SPECIFICATIONS

+5V	F/R	SV	PG	GND	GND	+Vp
○	○	○	○	○	○	○
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), 12 PULSE/REV
- 3 SV---SPEED VOLTAGE 0—5VDC
- 2 F/R---ROTATING DIRECTION
- 1 +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
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
Rated power	W 23	46	92
Peak torque	N.m 0.16	0.39	0.55
Peak current	A 3.5	6.8	9
Line to line resistance	ohms 4.1	1.5	0.7
Line to line inductance	mH 10	4.2	2.16
Torque constant	Nm/A 0.053	0.063	0.063
Back E.M.F	V/KRPM 5.55	6.6	6.6
Rotor inertia	g.cm ² 30	75	119
Body length(L)	mm 68	78	98

◆ DIMENSIONS:

