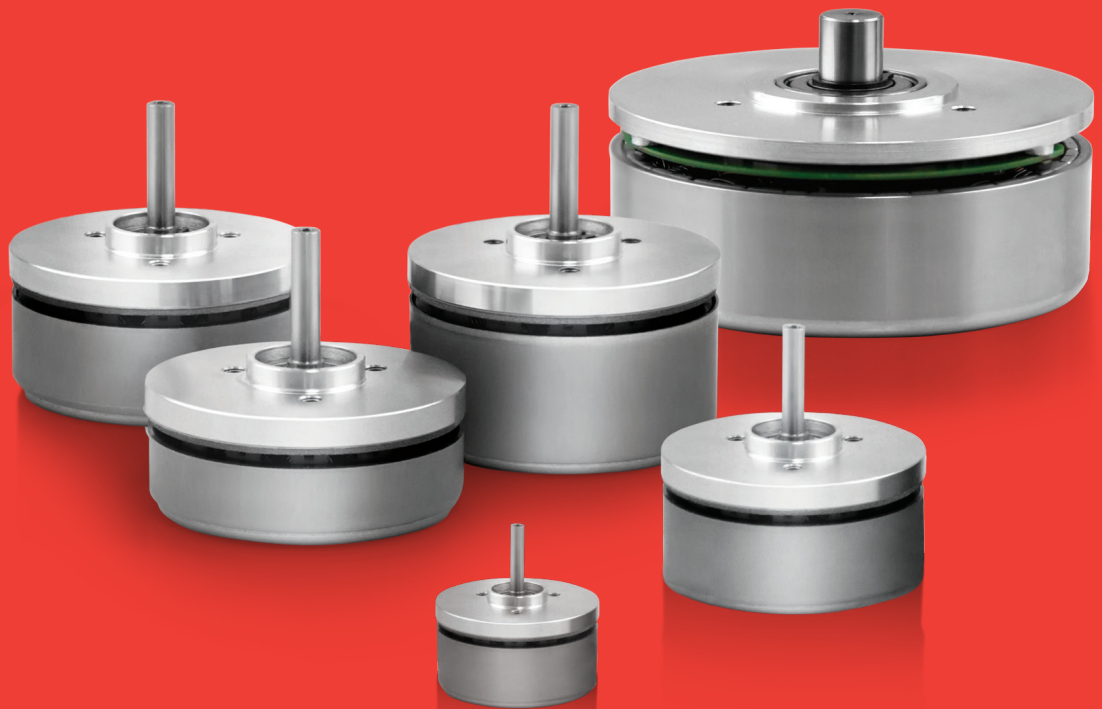
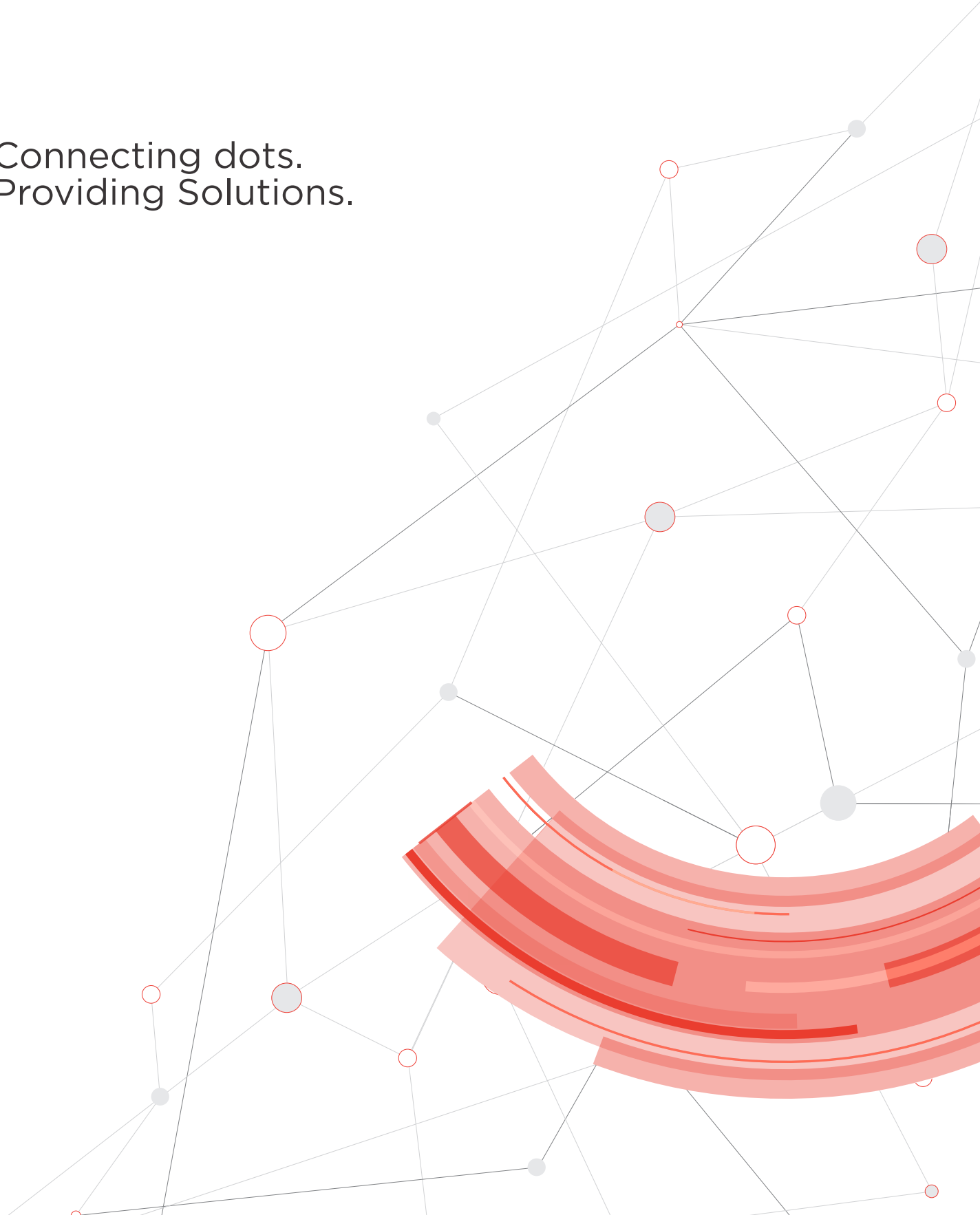


FLAT MOTORS



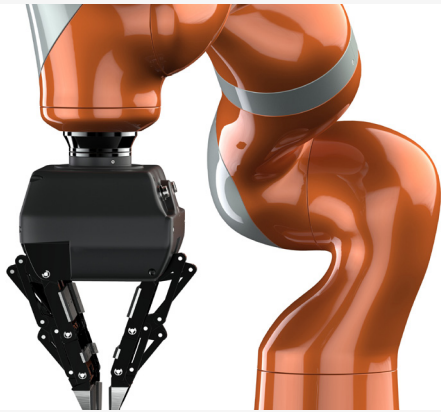
servotecnica

Connecting dots.
Providing Solutions.



Industries

Robotics



Smart grippers
Collaborative robots

Medical



Exoskeletons
Prosthesis
Breather helmet

Other applications



Drones
Conveyor belts

Contents

Model	Ø mm	mNm	W	Page
SVTM F 01	20	up to 7.8	up to 5	6
SVTM F 02	32	up to 26	up to 8	7
SVTM F 03	45	up to 50	up to 30	8
SVTM F 03	45	up to 84	up to 50	9
SVTM F 03	45	up to 130	up to 70	10
SVTM F 04	60	up to 870	up to 110	11
SVTM F 05	90	up to 964	up to 169	12

SVTM F

Flat Brushless DC Motors



HIGH TORQUE



COST-EFFECTIVE



CUSTOMIZABLE

The natural geometry of the outrunner Brushless Flat Motors, as well as the iron core winding, are the perfect fit for applications requiring high-torque in reduced dimensions.

Simplified design, high-end material selection, and automated manufacturing make the Flat Motors a high-performance solution at a competitive price.

Our vocation in listening to the client's requirements has led us to develop a customization-minded offer, focusing on specific application requirements such as integrated feedbacks, special cables and the geometry of shafts and flanges.

Benefits

High power density

High torque

High efficiency

Cost-effective

Compact

Customizable

Product code

SVTM F ○○ - ○.○.○.○.○ - ◇◇ - □ - △ ○ ☆

F Series

○ Diameter
ø20mm [01]; ø32mm [02]; ø45mm [03]; ø90mm [04];

○ Rated torque

◇ Nominal voltage

□ Shaft
Single [S]; Double [D]

△ Connection
Wires/Flexprint [W];
Fiber glass and connectors [C]

○ Sensor
Sensorless [0];
Hall Sensor [H]

☆ Customization

Features

Winding	3 phases
Operating temperature	-25° +80°
Insulation class	B, 130°C
Magnets	Neodymium
Design technology	Ironcore

Feedback

Hall Sensor (standard)

Customizations

Integrated feedback

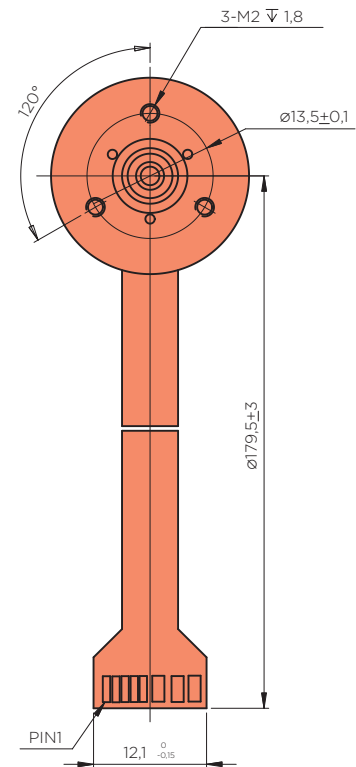
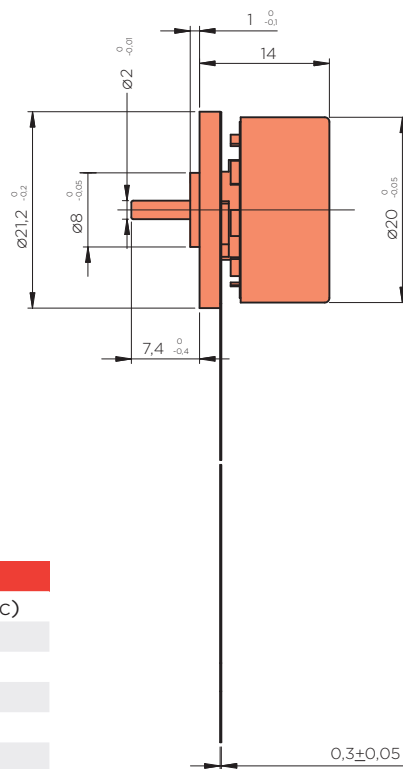
Flange shape

Shaft

Connectors

Wires

*Not available for frameless version



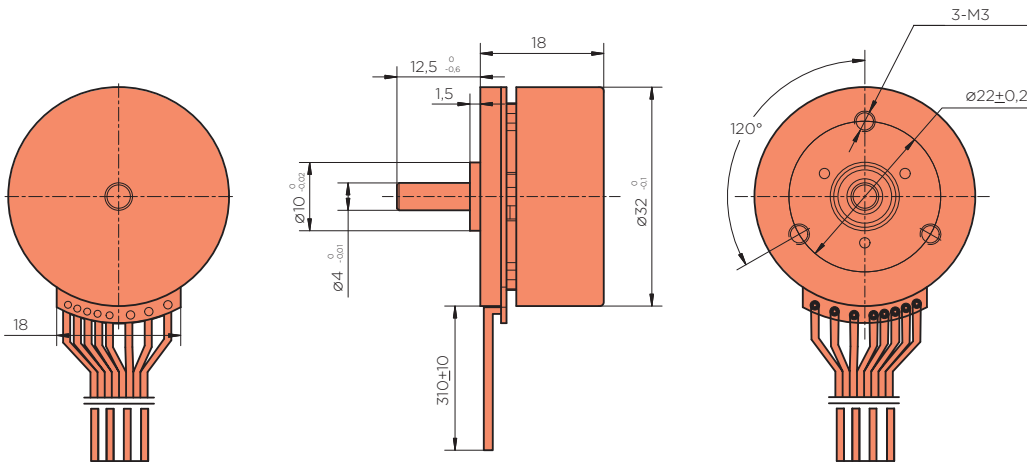
Flying leads

PIN1	red	V Hall (5-24 Vdc)
PIN2	green	Hall W
PIN3	blue	Hall U
PIN4	white	Hall V
PIN5	black	GND
PIN6	yellow	Phase W
PIN7	brown	Phase V
PIN8	gray	Phase U

Outrunner BLDC

Values	Units	Tolerance	SVTM F 01 ..12..	01 ..24..
Motor data				
1	Nominal voltage	VDC	12	24
2	No load speed	rpm	$\pm 10\%$ 9350	9290
3	No load current	mA	52	26
4	Rated speed	rpm	$\pm 10\%$ 5170	5220
5	Rated torque	mNm	7.59	7.74
6	Rated current	A	0.7	0.34
7	Peak torque	mNm	19	20
8	Peak current	A	$\pm 10\%$ 1.62	0.85
Characteristics				
9	Line to line resistance	ohms@25°C	$\pm 10\%$ 7.2	26.1
10	Line to line inductance	mH	$\pm 20\%$ 0.62	2.6
11	Torque constant	mNm/A	$\pm 10\%$ 12	24
12	Back EMF constant	Vrms/kRPM	$\pm 10\%$ 0.89	1.78
13	Rotor inertia	g cm ²		5.1
Mechanical data (preloaded ball bearings)				
14	Max axial-force	N		1.8
15	Max radial-force*	N		5.3
16	Shaft radial play	mm @4N		0.02
17	Shaft axial play	mm @4N		0.08
18	Length	mm		14
Other specifications				
19	Number of poles	#		8
20	Number of phases	#		3
21	Weight	g		23
22	Operation ambient	°C		-25 +80

*@ 5mm from the flange



Flying leads

PIN1	red	V Hall (5-24 Vdc)
PIN2	green	Hall W
PIN3	blue	Hall U
PIN4	white	Hall V
PIN5	black	GND
PIN6	yellow	Phase W
PIN7	brown	Phase V
PIN8	gray	Phase U

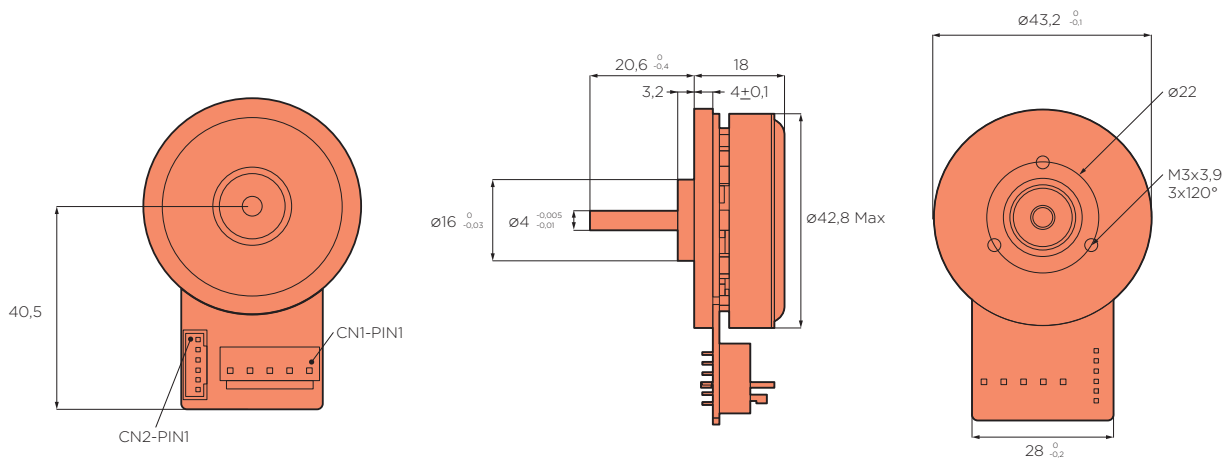
Outrunner BLDC

Values	Units	Tolerance	SVTM F			
			02..9..	02..12..	02..24..	02..48..
Motor data						
1	Nominal voltage	VDC	9	12	24	48
2	No load speed	rpm	3750	4650	4550	4800
3	No load current	mA	0.252	0.29	0.14	0.077
4	Rated speed	rpm	2100	2800	2760	2950
5	Rated torque	mNm	24.6	25.1	25.5	24.7
6	Rated current	A	1.06	1	0.5	0.257
7	Peak torque	mNm	73.8	75.3	76.5	74.1
8	Peak current	A	3.4	3.2	1.7	0.97
Characteristics						
9	Line to line resistance	ohms@25°C	2.87	3.43	13.7	53
10	Line to line inductance	mH	1.61	1.87	7.73	27.8
11	Torque constant	mNm/A	23	24.8	51	96.1
12	Back EMF constant	Vrms/kRPM	1.7	1.83	3.77	7.1
13	Rotor inertia	g cm ²			35	
Mechanical data (preloaded ball bearings)						
14	Max axial-force	N			4.8	
15	Max radial-force*	N			14	
16	Shaft radial play	mm @4N			0.02	
17	Shaft axial play	mm @4N			0.14	
18	Length	mm			18	
Other specifications						
19	Number of poles	#			8	
20	Number of phases	#			3	
21	Weight	g			50	
22	Operation ambient	°C			-25 +80	

*@ 5mm from the flange

SVTM F 03

30 Watt

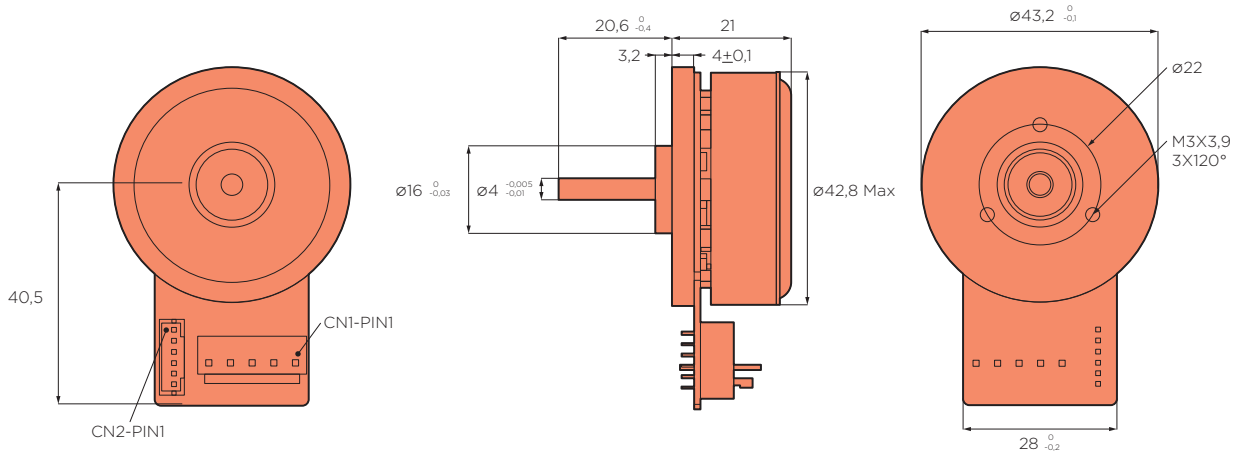


Connector 1		Connector 2	
JST B5P-VH		JST B6B-PH-K-S	
PIN1	GND	PIN1	GND
PIN2	Phase U	PIN2	V Hall (4.5-18VDC)
PIN3	Phase V	PIN3	Hall W
PIN4	Phase W	PIN4	Hall U
PIN5	GND	PIN5	Hall V
		PIN6	GND

Outrunner BLDC

Values	Units	Tolerance	SVTM F 03..24..
Motor data			
1	Nominal voltage	VDC	24
2	No load speed	rpm	±10% 6500
3	No load current	mA	0.27
4	Rated speed	rpm	±10% 5000
5	Rated torque	mNm	50
6	Rated current	A	1.42
7	Peak torque	mNm	150
8	Peak current	A	±10% 4.8
Characteristics			
9	Line to line resistance	ohms@25°C	±10% 1.42
10	Line to line inductance	mH	±20% 0.59
11	Torque constant	mNm/A	±10% 35.3
12	Back EMF constant	Vrms/kRPM	±10% 2.61
13	Rotor inertia	g cm ²	99
Mechanical data (preloaded ball bearings)			
14	Max axial-force	N	10
15	Max radial-force*	N	28
16	Shaft radial play	mm @4N	0.02
17	Shaft axial play	mm @4N	0.14
18	Length	mm	18
Other specifications			
19	Number of poles	#	16
20	Number of phases	#	3
21	Weight	g	80
22	Operation ambient	°C	-25 +80

*@ 5mm from the flange

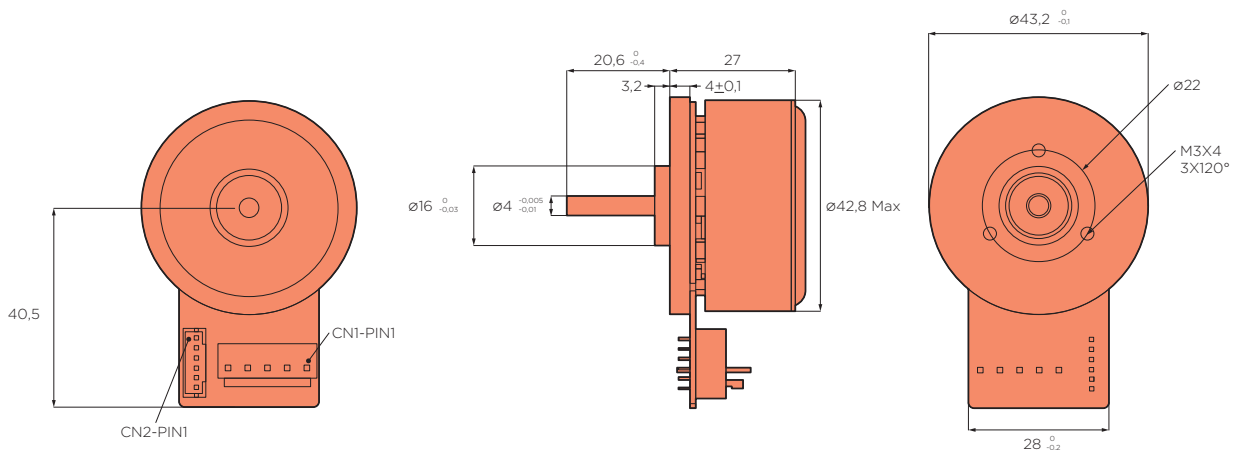


Connector 1		Connector 2	
JST B5P-VH		JST B6B-PH-K-S	
PIN1	GND	PIN1	GND
PIN2	Phase U	PIN2	V Hall (4.5-18VDC)
PIN3	Phase V	PIN3	Hall U
PIN4	Phase W	PIN4	Hall W
PIN5	GND	PIN5	Hall V
		PIN6	GND

Outrunner BLDC

Values	Units	Tolerance	SVTM F 03..24..
Motor data			
1	Nominal voltage	VDC	24
2	No load speed	rpm	±10% 6700
3	No load current	mA	0.33
4	Rated speed	rpm	±10% 5260
5	Rated torque	mNm	84
6	Rated current	A	2.46
7	Peak torque	mNm	250
8	Peak current	A	±10% 7.8
Characteristics			
9	Line to line resistance	ohms@25°C	±10% 0.7
10	Line to line inductance	mH	±20% 0.33
11	Torque constant	mNm/A	±10% 34.2
12	Back EMF constant	Vrms/kRPM	±10% 2.53
13	Rotor inertia	g cm ²	135
Mechanical data (preloaded ball bearings)			
14	Max axial-force	N	10
15	Max radial-force*	N	28
16	Shaft radial play	mm @4N	0.02
17	Shaft axial play	mm @4N	0.14
18	Length	mm	21
Other specifications			
19	Number of poles	#	16
20	Number of phases	#	3
21	Weight	g	120
22	Operation ambient	°C	-20 +80

*@ 5mm from the flange

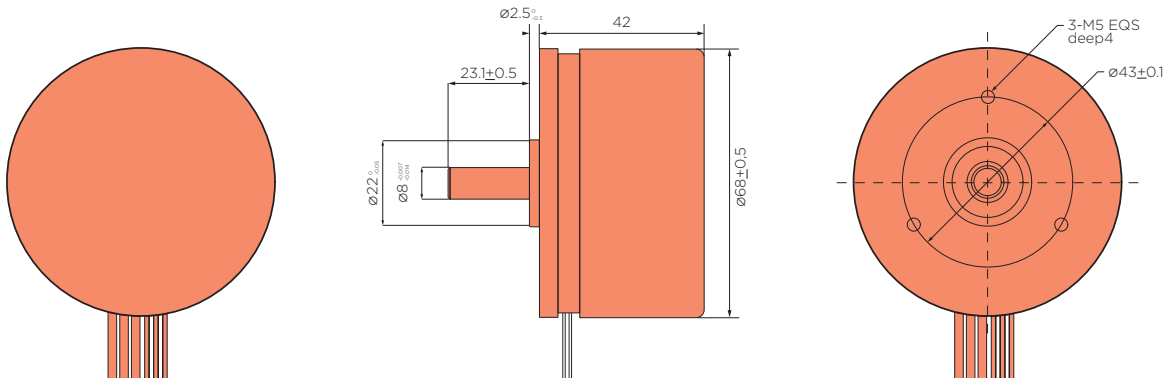


Connector 1		Connector 2	
JST B5P-VH		JST B6B-PH-K-S	
PIN1	GND	PIN1	GND
PIN2	Phase U	PIN2	V Hall (4.5-18VDC)
PIN3	Phase V	PIN3	Hall U
PIN4	Phase W	PIN4	Hall W
PIN5	GND	PIN5	Hall V
		PIN6	GND

Outrunner BLDC

Values	Units	Tolerance	SVTM F 03..24..
Motor data			
1	Nominal voltage	VDC	24
2	No load speed	rpm	±10% 6100
3	No load current	mA	0.38
4	Rated speed	rpm	±10% 4840
5	Rated torque	mNm	130
6	Rated current	A	3.49
7	Peak torque	mNm	390
8	Peak current	A	±10% 11
Characteristics			
9	Line to line resistance	ohms@25°C	±10% 0.56
10	Line to line inductance	mH	±20% 0.27
11	Torque constant	mNm/A	±10% 37.2
12	Back EMF constant	Vrms/kRPM	±10% 2.75
13	Rotor inertia	g cm ²	181
Mechanical data (preloaded ball bearings)			
14	Max axial-force	N	10
15	Max radial-force*	N	28
16	Shaft radial play	mm @4N	0.02
17	Shaft axial play	mm @4N	0.14
18	Length	mm	27
Other specifications			
19	Number of poles	#	16
20	Number of phases	#	3
21	Weight	g	150
22	Operation ambient	°C	-20 +80

*@ 5mm from the flange

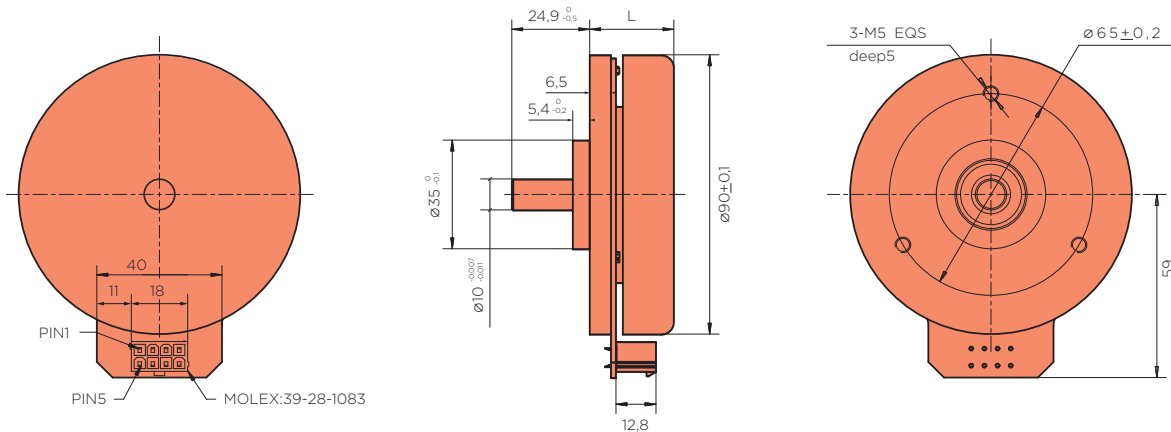


Flying leads		
AWG26	red	V Hall (5 VDC)
AWG26	green	Hall V
AWG26	blue	Hall U
AWG26	white	Hall W
AWG26	black	GND
AWG18	yellow	Phase U
AWG18	red	Phase V
AWG18	black	Phase W

Outrunner BLDC

Values	Units	Tolerance	SVTM F 04..24..
Motor data			
1	Nominal voltage	VDC	24
2	No load speed	rpm	±10% 4400
3	No load current	mA	0.65
4	Rated speed	rpm	±10% 3700
5	Rated torque	mNm	290
6	Rated current	A	5.6
7	Peak torque	mNm	870
8	Peak current	A	±10% 5.6
Characteristics			
9	Line to line resistance	ohms@25°C	±10% 0.25
10	Line to line inductance	mH	±20% 0.3
11	Torque constant	mNm/A	±10% 54
12	Back EMF constant	Vrms/kRPM	±10% 4.0
13	Rotor inertia	g cm ²	1000
Mechanical data (preloaded ball bearings)			
14	Max axial-force	N	10
15	Max radial-force*	N	28
16	Shaft radial play	mm @4N	0.02
17	Shaft axial play	mm @4N	0.08
18	Length	mm	42
Other specifications			
19	Number of poles	#	14
20	Number of phases	#	3
21	Weight	g	500
22	Operation ambient	°C	-20 +80

*@ 10mm from the flange



Connector

MOLEX 39-28-1083

PIN1	Hall U
PIN2	Hall V
PIN3	V Hall (5-24 VDC)
PIN4	Phase W
PIN5	Hall W
PIN6	GND
PIN7	Phase U
PIN8	Phase V

Outrunner BLDC

Values	Units	Tolerance	SVTM F	
			05..24..	05..48..
Motor data				
1	Nominal voltage	VDC	24	48
2	No load speed	rpm	±10% 3300	1900
3	No load current	mA	0.7	0.35
4	Rated speed	rpm	±10% 2700	1670
5	Rated torque	mNm	457	964
6	Rated current	A	6.8	3.9
7	Peak torque	mNm	1600	3000
8	Peak current	A	±10% 23	13
Characteristics				
9	Line to line resistance	ohms@25°C	±10% 0.21	0.65
10	Line to line inductance	mH	±20% 0.19	0.9
11	Torque constant	mNm/A	±10% 63	241
12	Back EMF constant	Vrms/kRPM	±10% 5.2	17.9
13	Rotor inertia	g cm ²	3000	5000
Mechanical data (preloaded ball bearings)				
14	Max axial-force	N	45	45
15	Max radial-force*	N	110	110
16	Shaft radial play	mm @4N	0.02	0.02
17	Shaft axial play	mm @4N	0.08	0.08
18	Length	mm	27	40
Other specifications				
19	Number of poles	#	22	22
20	Number of phases	#	3	3
21	Weight	g	600	1000
22	Operation ambient	°C	-20 +80	-20 +80

*@ 10mm from the flange

Contacts

HEADQUARTERS - ITALY



Servotecnica S.p.A.

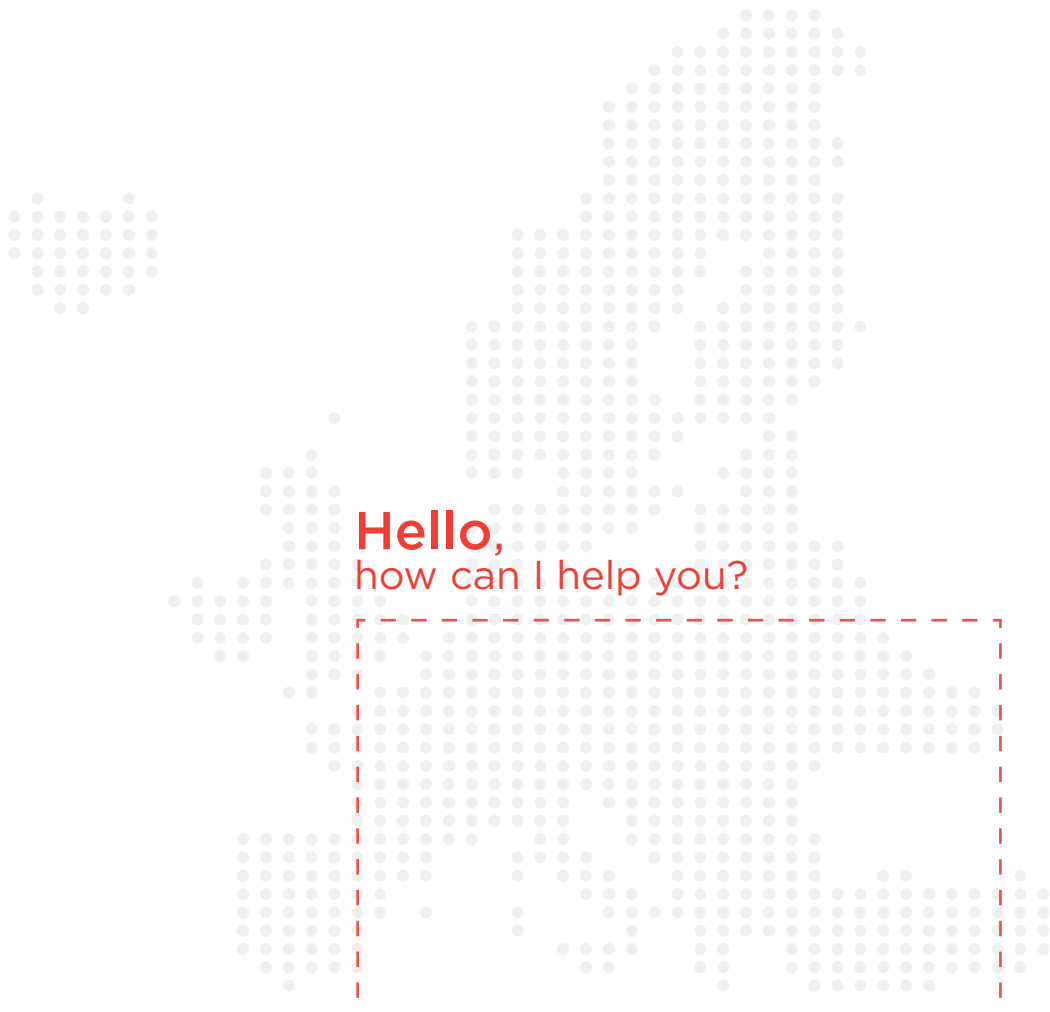
Via E. Majorana, 4
20834 Nova Milanese (MB) - Italy
+39 03624921
info@servotecnica.com | www.servotecnica.com

GERMANY



Servotecnica G.m.b.H.

Kelsterbacher Strasse, 20
65479 Raunheim - Deutschland
+49 6142-7936039
info@servotecnica.de | www.servotecnica.de



Hello,
how can I help you?

Your local contact