

SX Series Hybrid Two-Phase Stepper Motors



SX stepper motors are available in NEMA17, NEMA23, NEMA24, NEMA34 and NEMA42 frames. High tech SX Series offers high performance in a small package. Standard full step angle is 1,8° (200 steps/rev) - electronic microstepping is available.

The SX Series offers also types with double ended shaft.



NEMA17 frame

from the left SX17-1003LQEF, SX17-1005LQCEF, SX17-0905



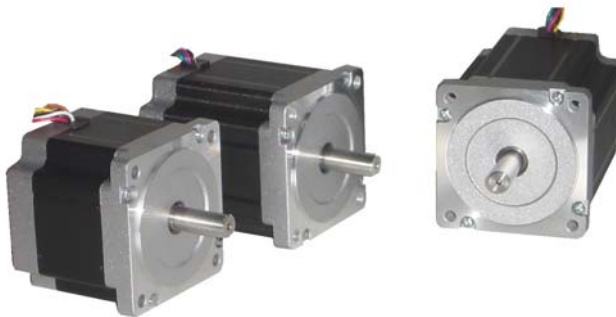
NEMA24 frame

SX24-3341



NEMA23 frame

from the left SX23-1414, SX23-2727D



NEMA34 frame

from the left SX34-2740N, SX34-2970, SX34-5010



NEMA42 frame

SX42-6525

SX stepper motor types described in these data sheets are supplied from the Microcon stock.



SX17 Series - Technical Parameters

SX Series - NEMA17 Frame

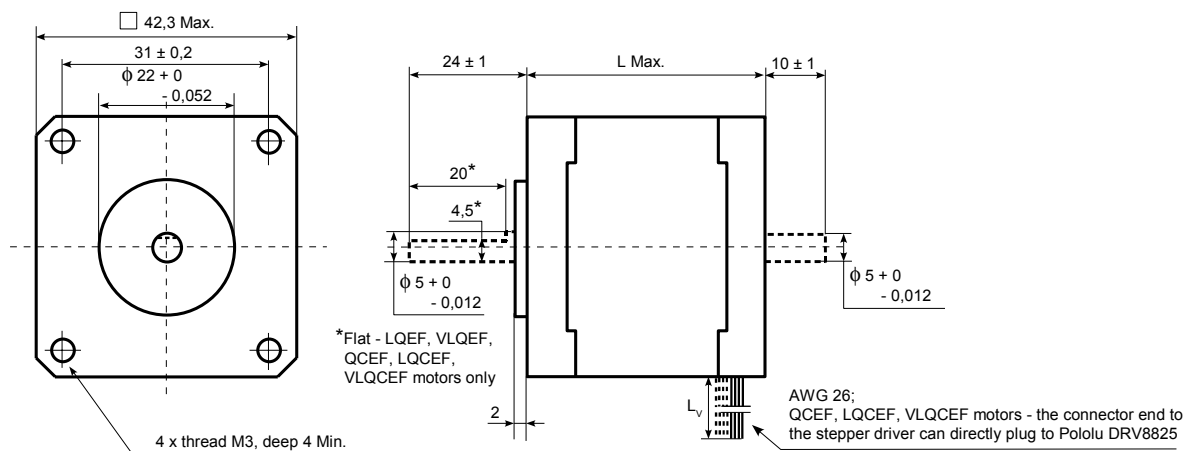
Model	Holding Torque (2 phases on) (Nm)	Rated Current/Phase (A) series / parallel	Phase Inductance (mH) series / parallel	Phase Resistance (Ω) series / parallel	Detent Torque (Nm)	Rotor Inertia (gcm ²)	Weight (kg)
SX17-0503 / SX17-0503D	0,3	0,5 / 1	24,4 / 6,1	16,4 / 4,1	0,016	34	0,24
SX17-0503LQEF	3D 0,3	0,5 / -	24,4 / -	16,4 / -	0,016	34	0,24
SX17-1003	3D 0,3	1 / -	6 / -	4,4 / -	0,016	34	0,23
SX17-1003LQEF	3D 0,3	1 / -	7,2 / -	4,2 / -	0,016	32	0,2
SX17-1005 / SX17-1005D	3D 0,5	1 / 2	10,8 / 2,7	5,4 / 1,35	0,022	54	0,3
SX17-1005VLQEF	3D 0,51	1 / -	14 / -	5,8 / -	0,022	54	0,3
SX17-1005QCEF	3D 0,52	1 / -	14 / -	5,9 / -	0,022	54	0,3
SX17-1005LQCEF	3D 0,52	1 / -	14 / -	5,9 / -	0,022	54	0,3
SX17-1005VLQCEF	3D 0,52	1 / -	14 / -	5,9 / -	0,022	54	0,3
SX17-0905 / SX17-0905D	3D 0,6	0,88 / 1,77	12,8 / 3,2	8 / 2	0,026	68	0,38

D - double ended shaft

Full Step Angle	.....	1,8°
Angular Accuracy	.....	± 0,1°
Insulation	.....	NEMA Class B (130°C)

Dimensions (mm)

Model	Main Shaft Flat	Length		Lead Wires Number
		L Max.	L _v	
SX17-0503 / SX17-0503D	-	34	500 (flexible)	8
SX17-0503LQEF	yes	34	800 (flexible)	4
SX17-1003	-	34	300	4
SX17-1003LQEF	yes	29,5	700 (flexible)	4
SX17-1005 / SX17-1005D	-	40	300	8
SX17-1005VLQEF	yes	40	1000 (flexible)	4
SX17-1005QCEF	yes	40	500 (flexible)	4; the connector end to the stepper driver can directly plug to Pololu DRV8825
SX17-1005LQCEF	yes	40	740 (flexible)	4; the connector end to the stepper driver can directly plug to Pololu DRV8825
SX17-1005VLQCEF	yes	40	1000 (flexible)	4; the connector end to the stepper driver can directly plug to Pololu DRV8825
SX17-0905 / SX17-0905D	-	48	300	8



3D Motor Driver Set

- 5 pcs of Pololu DRV8825 - drivers are suitable for use with stepper motor types marked with 3D in 3D printers

SX23, SX24 Series - Technical Parameters



SX Series - NEMA23 Frame

Model	Holding Torque (2 phases on) (Nm)	Rated Current/Phase (A) series / parallel	Phase Inductance (mH) series / parallel	Phase Resistance (Ω) series / parallel	Rotor Inertia (kgm ² x10 ⁻³)	Weight (kg)
SX23-1414 / SX23-1414D	1,4	1,45 / 2,9	11,2 / 2,8	3,4 / 0,85	0,03	0,69
SX23-2727 / SX23-2727D	2,7	2,7 / 5,4	6,4 / 1,6	1,5 / 0,375	0,053	1,18

SX Series - NEMA24 Frame (60 x 60 mm, NEMA size 23 mounting)

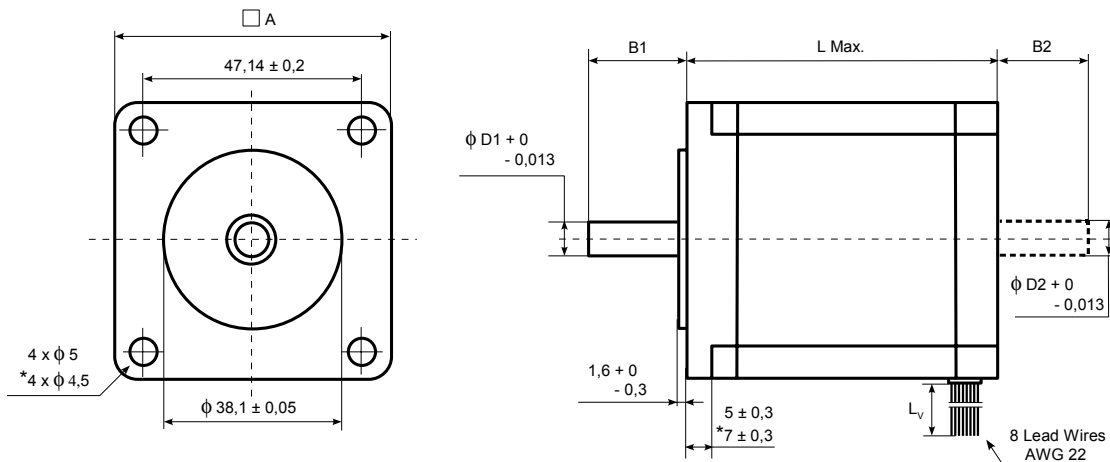
SX24-3341	4,1	3,3 / 6,6	5,8 / 1,45	1,28 / 0,32	0,12	1,63
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D - double ended shaft

Full Step Angle	1,8°
Angular Accuracy	± 0,1°
Insulation	NEMA Class B (130°C)

Dimensions (mm)

Model	Shafts					Length	Lead Wires
	D1	D2	B1	B2	□ A	L Max.	L _v
SX23-1414	6,35	-	21 ± 1	-	56,4	54	500
SX23-1414D	6,35	6,35	21 ± 1	14 ± 1	56,4	54	500
SX23-2727	8	-	21 ± 1	-	57	83	600
SX23-2727D	8	8	21 ± 1	21 ± 1	57	83	600
SX24-3341	8	-	24 ± 1	-	60	100	300



* SX24-3341



SX34 Series - Technical Parameters

SX Series - NEMA34 Frame

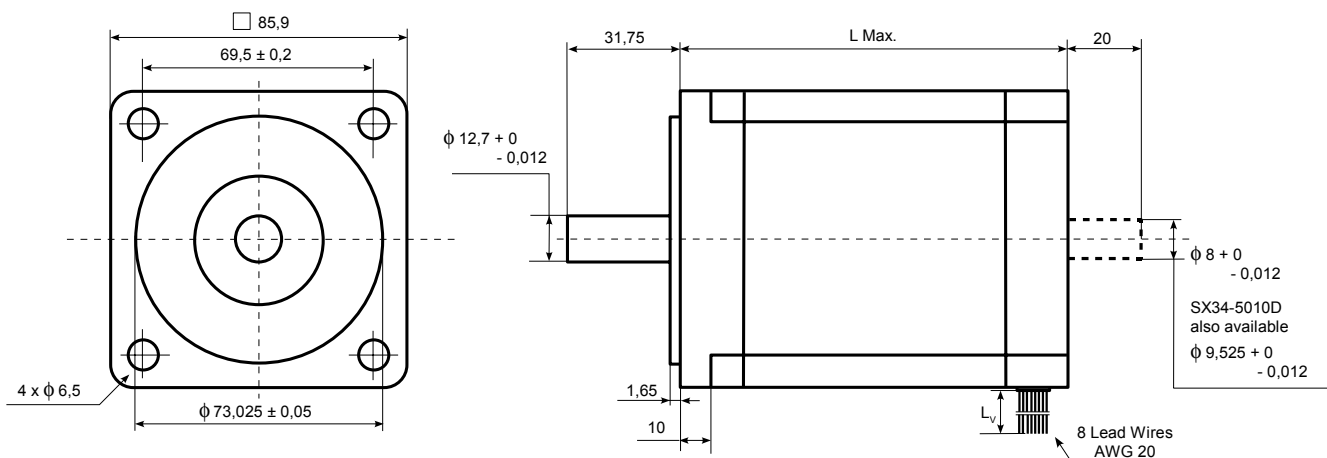
Model	Holding Torque (2 phases on) (Nm)	Rated Current/Phase (A) series / parallel	Phase Inductance (mH) series / parallel	Phase Resistance (Ω) series / parallel	Rotor Inertia (kgm ² x10 ⁻³)	Weight (kg)
SX34-2740N / SX34-2740ND	5,3	2,75 / 5,5	14 / 3,5	1,68 / 0,42	0,14	2,3
SX34-2970	7	2,9 / 5,8	16,4 / 4,1	1,5 / 0,375	0,18	3
SX34-5010 / SX34-5010D	10	5 / 10	6,8 / 1,7	0,7 / 0,175	0,27	3,7

D - double ended shaft

Full Step Angle	.....	1,8°
Angular Accuracy	.....	± 0,1°
Insulation	.....	NEMA Class B (130°C)

Dimensions (mm)

Model	Length	Lead Wires
	L Max.	L _v
SX34-2740N / SX34-2740ND	78	500
SX34-2970	98	300
SX34-5010 / SX34-5010D	115	400



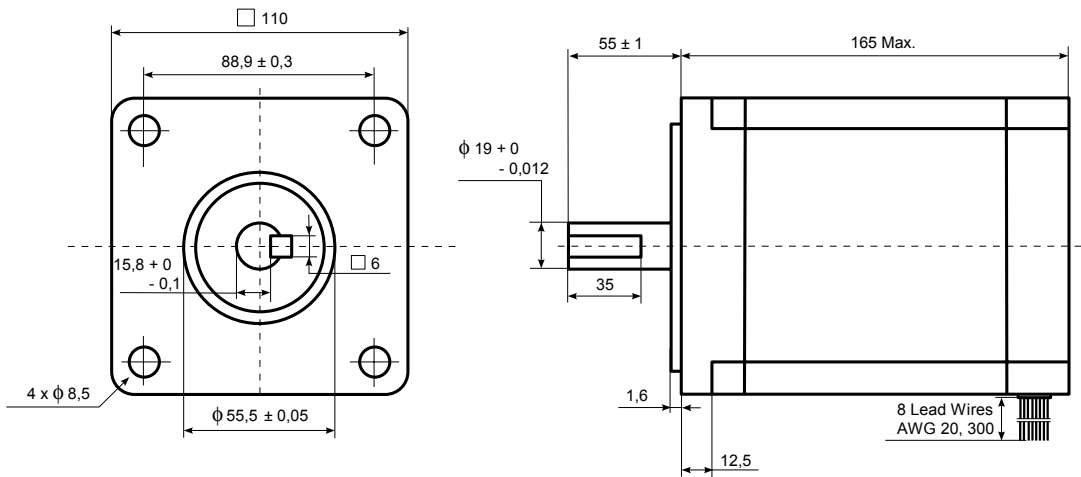
SX42 Series - Technical Parameters



SX Series - NEMA42 Frame						
Model	Holding Torque (2 phases on) (Nm)	Rated Current/Phase (A) series / parallel	Phase Inductance (mH) series / parallel	Phase Resistance (Ω) series / parallel	Rotor Inertia (kgm ² x10 ⁻³)	Weight (kg)
SX42-6525	25	6,5 / 13	14,4 / 3,6	0,9 / 0,225	1,3	9,1

Full Step Angle 1,8°
 Angular Accuracy ± 0,1°
 Insulation NEMA Class B (130°C)

Dimensions (mm)



SX Series

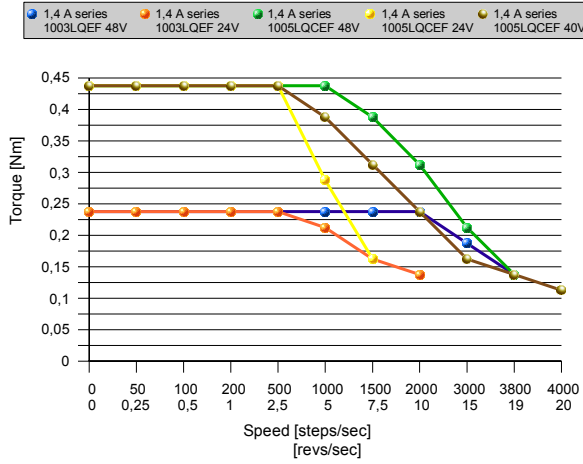


SX Series	Shaft Loading			
	Max. Axial Force (N)	Max. Radial Force (N)	Ambient Temperature (°C)	PWM Driver Supply Voltage (VDC Max.)
SX17	7	27 (20 mm from the flange)	-10 to +40	50
SX23	15	55 (20 mm from the flange)	-10 to +40	50
SX24	15	55 (20 mm from the flange)	-10 to +40	75
SX34	50	200 (20 mm from the flange)	-10 to +40	75
SX42	55	215 (20 mm from the flange)	-10 to +40	75

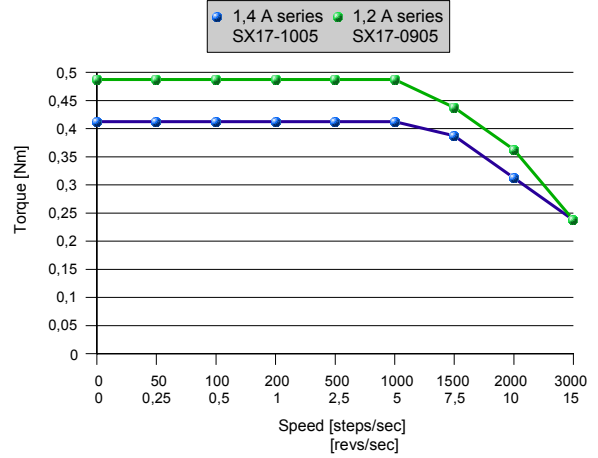


SX Series Torque/Speed Characteristics

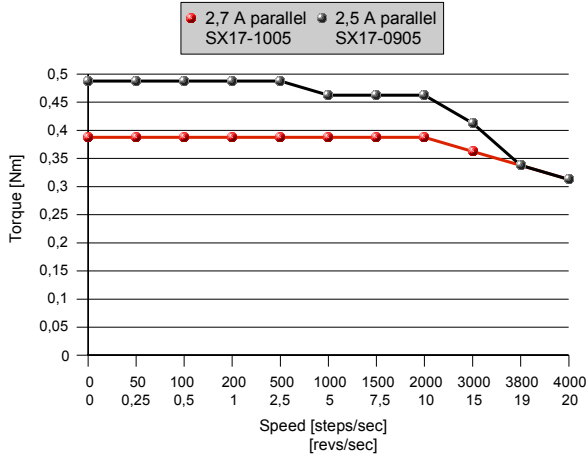
Torque/speed curves of SX17-1003LQEF, SX17-1005LQCEP stepper motors with 24 VDC, 40 VDC, 48 VDC driver voltage



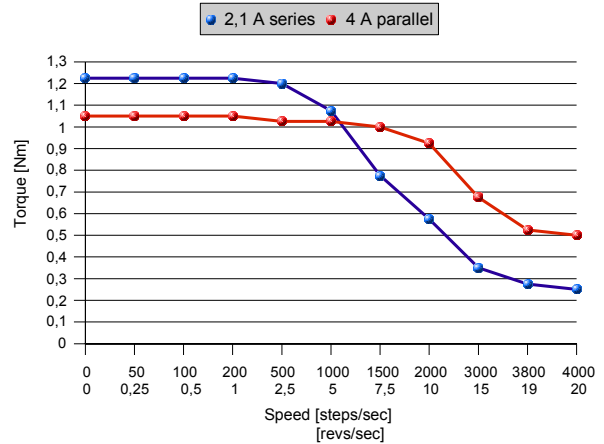
Torque/speed curves of SX17-1005, SX17-0905 stepper motors with 48 VDC driver voltage



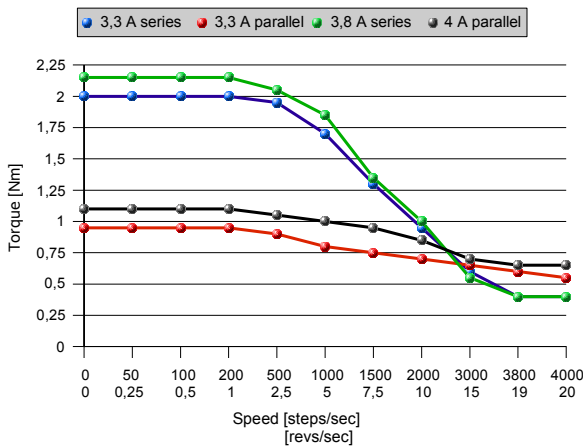
Torque/speed curves of SX17-1005, SX17-0905 stepper motors with 48 VDC driver voltage



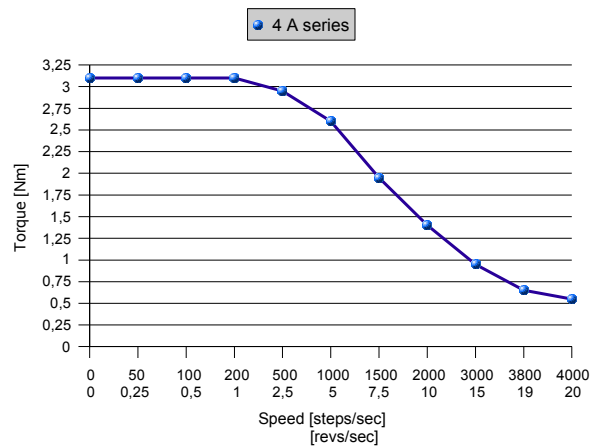
Torque/speed curves of SX23-1414 stepper motor with 48 VDC driver voltage



Torque/speed curves of SX23-2727 stepper motor with 48 VDC driver voltage



Torque/speed curve of SX24-3341 stepper motor with 48 VDC driver voltage

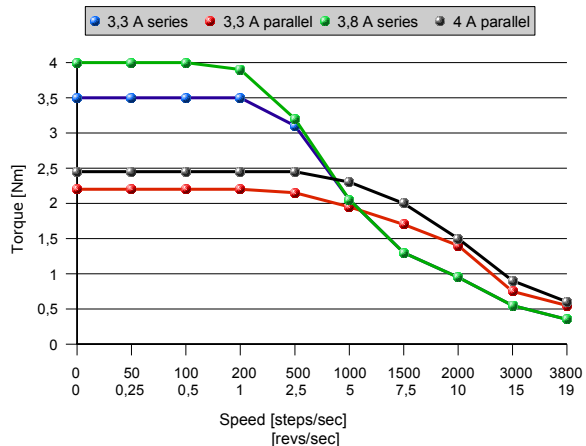


Motor current amplitude/phase is included in the legends.

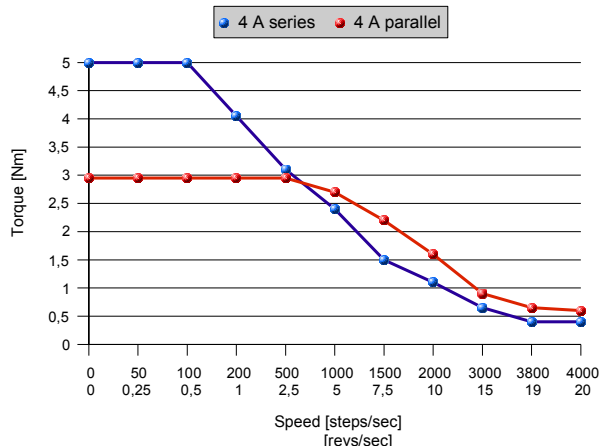
SX Series Torque/Speed Characteristics



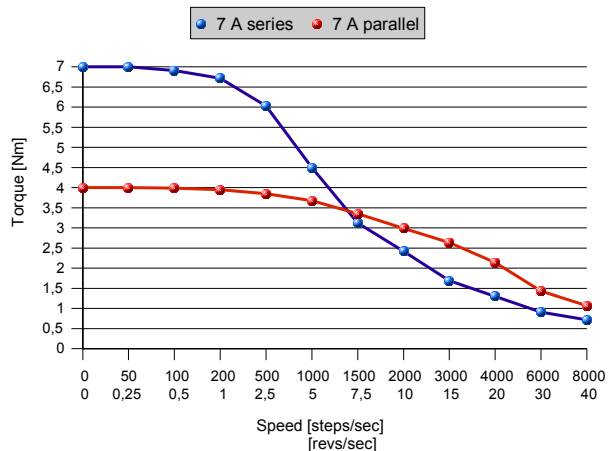
Torque/speed curves of SX34-2740N stepper motor with 48 VDC driver voltage



Torque/speed curves of SX34-2970 stepper motor with 48 VDC driver voltage



Torque/speed curves of SX34-5010 stepper motor with 65 VDC driver voltage

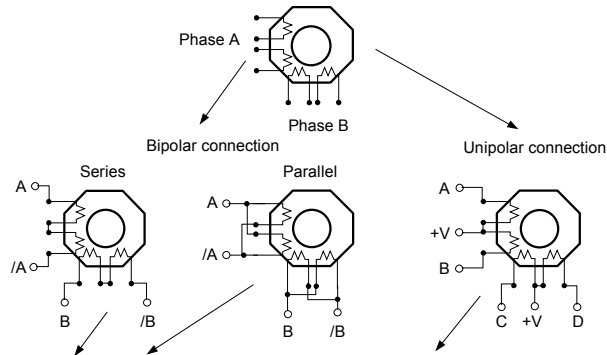


Motor current amplitude/phase is included in the legends.



Phase Sequencing / Power Connections

Phase Sequencing



		Bipolar Full Step Phase Sequencing				Unipolar Full Step Phase Sequencing				
CW	Step	A	/A	B	/B	A	B	C	D	
↓	1	+	-	-	+	GND	0	GND	0	↑
	2	-	+	-	+	0	GND	GND	0	
	3	-	+	+	-	0	GND	0	GND	
	4	+	-	+	-	GND	0	0	GND	
	1	+	-	-	+	GND	0	GND	0	
										CCW

0 = OFF or open
 + = positive current flow
 - = negative current flow

Power Connections

8 flying leads

Connection	Driver Connection	Lead Color
4-lead bipolar series	A	orange
	/A	black
	B	blue
	/B	white
4-lead bipolar parallel	none	red & brown
	none	yellow & green (grey)
	A	orange & brown
	/A	red & black
	B	blue & green (grey)
	/B	yellow & white

4 flying leads

Connection	Driver Connection	Lead Color
4-lead bipolar series	A	orange
	/A	black
	B	blue
	/B	white

Power connections are valid only for SX stepper motor types described in these data sheets.