

SureStep™ STEPPING SYSTEMS

Bipolar Step Motors:
STP-MTR-17040, 17048, 23055, 23079, 34066
STP-MTRH-23079, 34067, 34097, 34127

Motor Extension Cables:
STP-EXT-020, STP-EXTH-020



Note: SureStep™ motors are all connectorized four lead bipolar step motors.

WARNING

To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area. It is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call our technical support group at 770-844-4200.

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SureStep™ Series Specifications – Connectorized						Bipolar Stepping Motors				
Bipolar Stepping Motors	High Torque Motors					Higher Torque Motors				
	STP-MTR-17040	STP-MTR-17048	STP-MTR-23055	STP-MTR-23079	STP-MTR-34066	STP-MTRH-23079	STP-MTRH-34066	STP-MTRH-34097	STP-MTRH-34127	
NEMA Frame Size	17	17	23	23	34	23	34	34	34	
Maximum Holding Torque	(lb-in)	3.84	5.19	10.37	17.25	27.1	17.926	26.738	50.159	80.7356
	(oz-in)	61.4	83	166	276	434	286.81	427.81	802.54	1291.77
	(N-m)	0.44	0.59	1.17	1.95	3.06	2.0253	3.0210	5.6671	9.121
Rotor Inertia	(oz-in ²)	0.28	0.45	1.483	2.596	7.66	2.60	7.66	14.80	21.90
	(kg-cm ²)	0.051	0.082	0.271	0.475	1.40	0.476	1.40	2.71	4.006
Rated Current (A/phase)	1.7	2.0	2.8	2.8	2.8	5.6	6.3	6.3	6.3	
Resistance (Ω/phase)	1.6	1.40	0.75	1.10	1.11	0.40	0.25	0.30	0.49	
Inductance (mH/phase)	3.03	2.65	2.36	3.82	7.70	1.18	1.52	2.07	4.14	
Basic Step Angle	1.8°					1.8°				
Shaft Runout (in)	0.002 [0.051 mm]					0.002 [0.051 mm]				
Max Shaft Radial Play @ 1lb load (in)	0.001 [0.025 mm]					0.001 [0.025 mm]				
Perpendicularity	0.003 in [0.076 mm]					0.003 in [0.076 mm]				
Concentricity	0.002 in [0.051 mm]					0.002 in [0.051 mm]				
Maximum Radial Load (lb [kg])	6.0 [2.7]		15.0 [6.8]		39.0 [17.7]	15.0 [6.8]		39.0 [17.7]		
Maximum Thrust Load (lb [kg])	6.0 [2.7]		13.0 [5.9]		25.0 [11.3]	13.0 [5.9]		25.0 [11.3]		
Storage Temperature Range	-20°C to 100°C [-4°F to 212°F]					-20°C to 100°C [-4°F to 212°F]				
Operating Temperature Range	-20°C to 50°C [-4°F to 122°F] (motor case temp < 100°C)					-20°C to 50°C [-4°F to 122°F] (motor case temp < 100°C)				
Operating Humidity Range	55% to 85% non-condensing					55% to 85% non-condensing				
Weight (lb [kg])	0.7 [0.3]	1.5 [0.68]	2.2 [1.0]	3.9 [1.8]		2.3 [1.0]	3.8 [1.7]	6.1 [2.8]	8.8 [4.0]	
Insulation Class	130°C [266°F] Class B					130°C [266°F] Class B				
Agency Approvals	CE (complies with EN55014-1 (1993) and EN60034-1.5.11)					CE (complies w EN55014-1(1993) & EN60034-1.5.11)				
Accessory Extension Cable	STP-EXT-020					STP-EXTH-020				

SureStep™ System Recommended Component Compatibility

Drives (1)	Power Supplies (1)	Motors & Extension Cables (2,3)
STP-DRV-4035	-	-
STP-DRV-4850	-	STP-MTR-xxxxx & STP-EXT-020
STP-DRV-80100	STP-PWR-7005 STP-PWR-4805 STP-PWR-4810	STP-PWR-3204 STP-MTRH-xxxxx & STP-EXTH-020

- 1) **Caution: Do not use a power supply that exceeds the drive input voltage range. Using a lower voltage power supply with a higher voltage drive is acceptable, but will not provide full system performance.**
- 2) **MTR motors have connectors compatible with the EXT extension cables.**
- 3) **MTRH motors have connectors compatible with the EXTH extension cables.**

Design and Installation Tips

Allow sufficient time to accelerate the load and size the step motor with a 100% torque safety factor. DO NOT disassemble step motors because motor performance will be reduced and the warranty will be voided. DO NOT connect or disconnect the step motor during operation. Mount the motor to a surface with good thermal conductivity, such as steel or aluminum, to allow heat dissipation. Use a flexible coupling with "clamp-on" connections to both the motor shaft and the load shaft to prevent radial and thrust loading on bearings from minor misalignment.

Connecting the Motor

WARNING: When connecting a step motor to a drive or indexer, be sure that the motor power supply is switched off. Never disconnect the motor while the drive is powered up. Never connect the motor leads to ground or directly to the power supply. (See the Typical Wiring Diagram for the step motor lead color code of AUTOMATIONDIRECT supplied motors.)

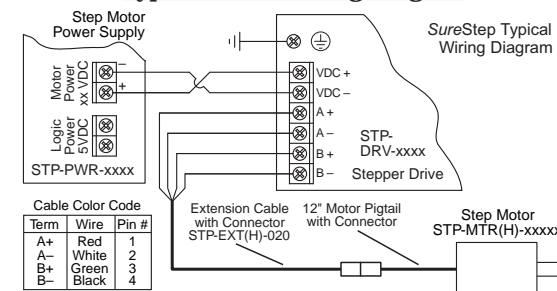
Mounting the Motor

We recommend mounting the motor to a metallic surface to help dissipate heat generated by the motor.

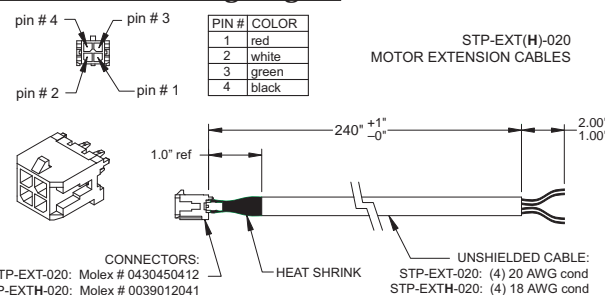
Torque vs Speed Curves

The torque vs speed curves are published in the SureStep User Manual, which is available for free download from our website. (www.automationdirect.com)

Typical Motor Wiring Diagram



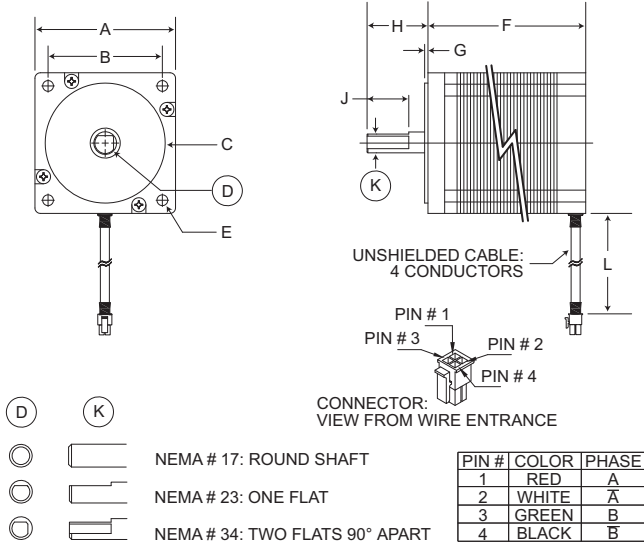
Extension Cable Wiring Diagram



CONNECTORS:
 STP-EXT-020: Molex # 0430450412
 STP-EXTH-020: Molex # 0039012041

Dimensions & Cabling – Connectorized Step Motors

STP-MTR-xxxx Typical Dimension Diagram



PIN #	COLOR	PHASE
1	RED	A
2	WHITE	A̅
3	GREEN	B
4	BLACK	B̅

SureStep™ Series Dimensions & Cabling – Connectorized						Bipolar Stepping Motors			
Dimen- sions* (in [mm]*)	High Torque Motors					Higher Torque Motors			
	STP-MTR -17040	STP-MTR -17048	STP-MTR -23055	STP-MTR -23079	STP-MTR -34066	STP-MTRH -23079	STP-MTRH -34066	STP-MTRH -34097	STP-MTRH -34127
A	1.67 [42.42]	1.66 [42.16]	2.25 [57.15]	2.25 [57.15]	3.37 [85.60]	2.25 [57.15]	3.39 [86.11]		
B	1.22 [30.99]	1.22 [30.99]	1.86 [47.24]	1.86 [47.24]	2.74 [69.60]	1.86 [47.24]	2.74 [69.60]		
C	∅ 0.866 [22.00] +0.000/-0.002	∅ 0.866 [22.00] +0.000/-0.002	∅ 1.500 [38.10] ±0.001	∅ 1.500 [38.10] ±0.001	∅ 2.875 [73.03] ±0.001	∅ 1.500 [38.10] ±0.001	∅ 2.875 [73.03] ±0.001		
D	∅ 0.1968 [5.00] +0.0000/-0.0005	∅ 0.1968 [5.00] +0.0000/-0.0005	∅ 0.2500 [6.35] +0.0000/-0.0005	∅ 0.2500 [6.35] +0.0000/-0.0005	∅ 0.5000 [12.70] +0.0000/-0.0005	∅ 0.2500 [6.35] +0.0000/-0.0005	∅ 0.5000 [12.70] +0.0000/-0.0005		
E	M3 x 0.5 thread 0.15 [3.81] min depth	M3 x 0.5 thread 0.15 [3.81] min depth	∅ 0.20 [5.08] through	∅ 0.20 [5.08] through	∅ 0.26 [6.60] through	∅ 0.20 [5.08] through	∅ 0.26 [6.60] through		
F	1.58 [40.13]	1.89 [48.00]	2.17 [55.12]	3.10 [78.74]	2.60 [66.04]	3.10 [78.74]	2.64 [67.06]	3.82 [97.03]	5.0 [127.0]
G	0.08 [2.03]	0.08 [2.03]	0.06 [1.52]	0.06 [1.52]	0.08 [2.03]	0.06 [1.52]	0.08 [2.03]		
H	0.94 [23.88] ±0.02	0.94 [23.88] ±0.02	0.81 [20.57] ±0.02	0.81 [20.57] ±0.02	1.46 [37.08] ±0.04	0.81 [20.57] ±0.02	1.46 [37.08] ±0.04		
J	n/a	n/a	0.59 [14.99]	0.59 [14.99]	1.00 [25.40]	0.59 [14.99]	0.984 [24.99] ±0.010		
K	n/a	n/a	0.230 [5.84]	0.230 [5.84]	0.450 [11.43] ±0.006	0.230 [5.84]	0.453 [11.51] ±0.006		
L	12 [305] +0.5/-0.0	12.0 [305]	12.0 [305]	12.0 [305]	12.0 [305]	12 [305] +0.5/-0.0			
Conductor	(4) #20 AWG					(4) #18 AWG			
Connector	Molex # 43025-0400					Molex # 39-01-3042			
Pin	Molex # 43030-0007					Molex # 39-00-0039			

* mm dimensions are for reference purposes only.