

# Stepping System Motors

## SureStep® Stepping Motors

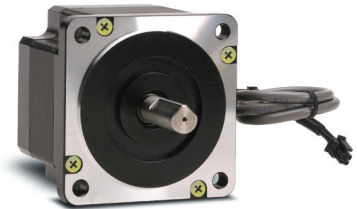
| SureStep Series Part Numbers – Bipolar Stepping Motors* |          |            |              |                  |                     |
|---------------------------------------------------------|----------|------------|--------------|------------------|---------------------|
| Bipolar Stepping Motors                                 | Price    | Shaft Type | Torque Level | Encoder Mounting | Drawing             |
| <a href="#">STP-MTRL-14026</a>                          | \$25.00  | single     | low          | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRL-14026D</a>                         | \$29.50  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTRL-14026E**</a>                       | \$107.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTRL-14034</a>                          | \$31.00  | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRL-14034D</a>                         | \$36.50  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTRL-14034E**</a>                       | \$111.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17040</a>                           | \$22.50  | single     | high         | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17040D</a>                          | \$26.50  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17040E**</a>                        | \$103.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17040W***</a>                       | \$146.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17048</a>                           | \$26.50  | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17048D</a>                          | \$31.00  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17048E**</a>                        | \$108.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17048W***</a>                       | \$150.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17060</a>                           | \$43.00  | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17060D</a>                          | \$48.50  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17060E**</a>                        | \$125.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-17060W***</a>                       | \$193.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23055</a>                           | \$42.50  | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23055D</a>                          | \$48.50  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23055E**</a>                        | \$126.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23055W***</a>                       | \$181.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23079</a>                           | \$55.00  | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23079D</a>                          | \$60.00  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23079E**</a>                        | \$137.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-23079W***</a>                       | \$196.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-34066</a>                           | \$129.00 | single     | higher       | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTR-34066D</a>                          | \$146.00 | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTR-34066W***</a>                       | \$234.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-23079</a>                          | \$61.00  | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-23079D</a>                         | \$66.00  | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-23079E**</a>                       | \$144.00 | dual       |              | pre-installed    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-23079W***</a>                      | \$291.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34066</a>                          | \$144.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34066D</a>                         | \$160.00 | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34066W***</a>                      | \$331.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34097</a>                          | \$163.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34097D</a>                         | \$180.00 | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34097W***</a>                      | \$371.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34127</a>                          | \$192.00 | single     |              | not available    | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34127D</a>                         | \$212.00 | dual       |              | optional         | <a href="#">PDF</a> |
| <a href="#">STP-MTRH-34127W***</a>                      | \$406.00 | single     |              | not available    | <a href="#">PDF</a> |

\* For integrated motor/drives part numbers and pricing, see the integrated motor/drives section.

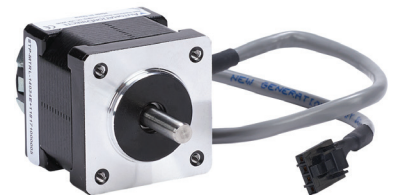
\*\* E model motors come with an AMT112Q-V encoder pre-installed. Requires STP-CBL-EBxx for encoder wiring. To change from the default 400ppr, use AMT-PGRM-17C. See the SureStep Stepping System Encoders section for more details.

\*\*\* W models are IP65 washdown rated. All others are IP40.

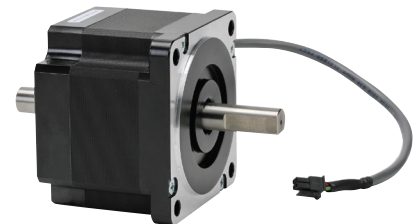
STP-MTR-xxxxx  
(single-shaft)



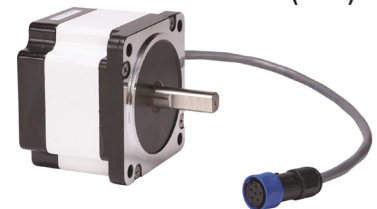
STP-MTR-xxxxxE  
(encoder mount)



STP-MTR-xxxxxD  
(dual-shaft)



STP-MTR-xxxxxW  
(IP65)



# Stepping System Motors

## SureStep® Stepping Motors

### SureStep Series Part Numbers – Bipolar Stepping Motors, continued

| Bipolar Stepping Motors                            | Price    | Shaft Type | Torque Level                  | Encoder Mounting | Drawing                    |
|----------------------------------------------------|----------|------------|-------------------------------|------------------|----------------------------|
| <i>Motors listing continued from previous page</i> |          |            |                               |                  |                            |
| <a href="#"><u>STP-MTRAC-23044</u></a>             | \$63.00  | single     | High voltage<br>High torque   | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-23044D</u></a>            | \$64.00  | dual       |                               | optional         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-23055</u></a>             | \$71.00  | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-23055D</u></a>            | \$72.00  | dual       |                               | optional         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-23078</u></a>             | \$99.00  | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-23078D</u></a>            | \$100.00 | dual       |                               | optional         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-34075</u></a>             | \$265.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-34075D</u></a>            | \$265.00 | dual       |                               | optional         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-34115</u></a>             | \$274.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-34115D</u></a>            | \$275.00 | dual       |                               | optional         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-34156</u></a>             | \$295.00 | single*    | High voltage<br>Higher torque | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-34156D</u></a>            | \$295.00 | dual*      |                               | optional         | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-42100</u></a>             | \$244.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-42100D</u></a>            | \$265.00 | dual       |                               | optional**       | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-42151</u></a>             | \$409.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-42151D</u></a>            | \$430.00 | dual       |                               | optional**       | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-42202</u></a>             | \$501.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRAC-42202D</u></a>            | \$519.00 | dual       |                               | optional**       | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRACH-42100</u></a>            | \$244.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRACH-42100D</u></a>           | \$265.00 | dual       |                               | optional**       | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRACH-42151</u></a>            | \$409.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRACH-42151D</u></a>           | \$430.00 | dual       |                               | optional**       | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRACH-42202</u></a>            | \$501.00 | single     |                               | not available    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>STP-MTRACH-42202D</u></a>           | \$519.00 | dual       |                               | optional**       | <a href="#"><u>PDF</u></a> |

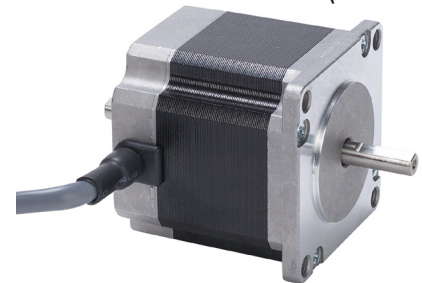
\* NOTE: STP-MTRAC-34156(x) motors have a 5/8" front shaft.

\*\* NOTE: NEMA 42 "D" motors require an [STP-MTRA-42ENC](#) adapter plate for AMT13/AMT33 encoder mounting.

**STP-MTRAC-xxxxx**  
(single-shaft)



**STP-MTRAC-xxxxxD**  
(dual-shaft)



**STP-MTRACH-42xxxD**  
(dual-shaft)



## SureStep® Stepping Motors Mounting Accessories

### Mounting Accessories – for NEMA 17 and NEMA 42 SureStep Stepping Motors

| Part Number                           | Price  | Description                                                                                                                                                                                                                                               | Drawing Links              | Use With                |
|---------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------|
| <a href="#"><u>STP-MTRA-RB-85</u></a> | \$9.25 | Reducer bushing, 8mm OD to 5mm ID, 16mm length, aluminum alloy. Connects NEMA size 17 stepper motors to Koyo TRD-NH and TRD-SH hollow shaft encoders.                                                                                                     | n/a                        | SureStep NEMA 17 motors |
| <a href="#"><u>STP-MTRA-42ENC</u></a> | \$9.25 | SureStep encoder mounting plate, metal body. For use with SureStep NEMA 42 stepper motors with dual shafts. Encoder mounting screws and mounting plate screws included. Mounting holes for CUI Devices AMT132/AMT332 encoders and US Digital E6 encoders. | <a href="#"><u>PDF</u></a> | SureStep NEMA 42 motors |

**STP-MTRA-42ENC**





# Stepping System Motors

## SureStep® Stepping Motors

| SureStep Series Specifications – Connectorized Bipolar Stepping Motors |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
|------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------|------------------------------------------------|-------------------|-------------------|-------------------|
| Bipolar Stepping Motors                                                |                       | Low Voltage<br>Low Torque                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            | Low Voltage<br>High Torque                    |                          |                          |                          |                          |                  | Low Voltage<br>Higher Torque                   |                   |                   |                   |
|                                                                        |                       | STP-MTRL-14026(x)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | STP-MTRL-14034(x)          | STP-MTR-17040(x)                              | STP-MTR-17048(x)         | STP-MTR-17060(x)         | STP-MTR-23055(x)         | STP-MTR-23079(x)         | STP-MTR-34066(x) | STP-MTRH-23079(x)                              | STP-MTRH-34066(x) | STP-MTRH-34097(x) | STP-MTRH-34127(x) |
| NEMA Frame Size                                                        |                       | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 14                         | 17                                            | 17                       | 17                       | 23                       | 23                       | 34               | 23                                             | 34                | 34                | 34                |
| Maximum Holding Torque*                                                | (lb·in)               | 0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1.25                       | 3.81                                          | 5.19                     | 7.19                     | 10.37                    | 17.25                    | 27.12            | 17.87                                          | 27.12             | 50.00             | 80.50             |
|                                                                        | (oz·in)               | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 20                         | 61                                            | 83                       | 115                      | 166                      | 276                      | 434              | 286                                            | 434               | 800               | 1288              |
|                                                                        | (N·m)                 | 0.06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.14                       | 0.43                                          | 0.59                     | 0.81                     | 1.17                     | 1.95                     | 3.06             | 2.02                                           | 3.06              | 5.65              | 9.10              |
| Rotor Inertia                                                          | (oz·in <sup>2</sup> ) | 0.06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.08                       | 0.28                                          | 0.37                     | 0.56                     | 1.46                     | 2.60                     | 7.66             | 2.60                                           | 7.66              | 14.80             | 21.90             |
|                                                                        | (kg·cm <sup>2</sup> ) | 0.0003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.00035                    | 0.05                                          | 0.07                     | 0.10                     | 0.27                     | 0.48                     | 1.40             | 0.48                                           | 1.40              | 2.71              | 4.01              |
| Rated Current (A/phase)                                                |                       | 0.35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.8                        | 1.7                                           | 2.0                      | 2.0                      | 2.8                      | 2.8                      | 2.8              | 5.6                                            | 6.3               | 6.3               | 6.3               |
| Resistance (Ω/phase)                                                   |                       | 8.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7.66                       | 1.6                                           | 1.4                      | 2.0                      | 0.75                     | 1.1                      | 1.11             | 0.4                                            | 0.25              | 0.3               | 0.49              |
| Inductance (mH/phase)                                                  |                       | 5.77                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.92                       | 3.0                                           | 2.7                      | 3.3                      | 2.4                      | 3.8                      | 6.6              | 1.2                                            | 1.5               | 2.1               | 4.1               |
| Insulation Class                                                       |                       | 130°C [266°F] Class B; 300V rms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Basic Step Angle                                                       |                       | 1.8°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Shaft Runout (in)                                                      |                       | 0.002 in [0.051 mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Max Shaft Radial Play @ 1lb load                                       |                       | 0.001 in [0.025 mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Perpendicularity                                                       |                       | 0.003 in [0.076 mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Concentricity                                                          |                       | 0.003 in [0.076 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]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Operating Temperature Range                                            |                       | -20°C to 50°C [-4°F to 122°F] (motor case temperature should be kept below 80°C [176°F])                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Operating Humidity Range                                               |                       | 55% to 85% non-condensing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Product Material                                                       |                       | steel motor case; stainless steel shaft(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Environmental Rating                                                   |                       | IP40 (IP65 for “W” motors)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Weight (lb [kg])<br>(E models)                                         |                       | 0.25 [0.11]<br>(0.3 [0.1])                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.35 [0.15]<br>(0.4 [0.2]) | 0.6 [0.3]<br>(0.7 [0.3])                      | 0.7 [0.3]<br>(0.8 [0.4]) | 0.9 [0.4]<br>(0.9 [0.4]) | 1.5 [0.7]<br>(1.5 [0.7]) | 2.2 [1.0]<br>(2.4 [1.1]) | 3.9 [1.7]        | 2.4 [1.1]<br>(2.4 [1.1])                       | 3.9 [1.7]         | 5.9 [2.7]         | 8.4 [3.8]         |
| Agency Approvals                                                       |                       | CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Design Tips                                                            |                       | Allow sufficient time to accelerate the load and size the step motor with a 100% torque safety factor.<br>DO NOT disassemble step motors because motor performance will be reduced and the warranty will be voided.<br>DO NOT connect or disconnect the step motor during operation.<br>Mount the motor to a surface with good thermal conductivity, such as steel or aluminum, to allow heat dissipation.<br>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. |                            |                                               |                          |                          |                          |                          |                  |                                                |                   |                   |                   |
| Accessory Extension Cable                                              |                       | STP-EXTL-0xx                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            | STP-EXT-0xx<br>STP-EXTW-0xx ( for “W” motors) |                          |                          |                          |                          |                  | STP-EXTH-0xx<br>STP-EXTHW-0xx (for “W” motors) |                   |                   |                   |

\* For dual-shaft motors (STP-MTR-xxxxxD):

The sum of the front and rear Torque Loads, Radial Loads, and Thrust Loads must not exceed the applicable Torque, Radial, and Thrust load ratings of the motor.



# Stepping System Motors

## SureStep® Stepping Motors

| SureStep Series Specifications – High Voltage Bipolar Stepping Motors |          |                                            |                    |                    |                     |                    |                      |
|-----------------------------------------------------------------------|----------|--------------------------------------------|--------------------|--------------------|---------------------|--------------------|----------------------|
| Bipolar Stepping Motors                                               |          | High Voltage<br>High Torque                |                    |                    |                     |                    |                      |
|                                                                       |          | STP-MTRAC-23044(x)                         | STP-MTRAC-23055(x) | STP-MTRAC-23078(x) | STP-MTRAC-34075(x)  | STP-MTRAC-34115(x) | STP-MTRAC-34156(x)** |
| NEMA Frame Size                                                       |          | 23                                         | 23                 | 23                 | 34                  | 34                 | 34**                 |
| Maximum Holding Torque*                                               | (lb·in)  | 4.69                                       | 9.31               | 14.19              | 51.31               | 69.48              | 115.06               |
|                                                                       | (oz·in)  | 75                                         | 149                | 227                | 821                 | 1110               | 1841                 |
|                                                                       | (N·m)    | 0.53                                       | 1.05               | 1.6                | 5.8                 | 7.84               | 13                   |
| Rotor Inertia                                                         | (oz·in2) | 0.66                                       | 1.64               | 2.62               | 7.38                | 14.74              | 24.06                |
|                                                                       | (g·cm2)  | 120                                        | 300                | 480                | 1350                | 2700               | 4400                 |
| Rated Current (A/phase)                                               | Series   | 0.71                                       | 0.71               | 0.71               | 2.15                | 2.05               | 2.55                 |
|                                                                       | Parallel | 1.41                                       | 1.41               | 1.41               | 4.3                 | 4.1                | 5.1                  |
| Resistance (Ω/ phase)                                                 | Series   | 12.4                                       | 14.4               | 18                 | 4                   | 4.8                | 4.8                  |
|                                                                       | Parallel | 3.1                                        | 3.6                | 4.5                | 1.0                 | 1.2                | 1.375                |
| Inductance (mH/phase)                                                 | Series   | 30.4                                       | 51.2               | 60.8               | 32                  | 43.2               | 44.8                 |
|                                                                       | Parallel | 7.6                                        | 12.8               | 15.2               | 8.0                 | 10.8               | 11.2                 |
| Insulation Class                                                      |          | B                                          |                    |                    |                     |                    |                      |
| Steps per Revolution                                                  |          | 200                                        |                    |                    |                     |                    |                      |
| Basic Step Angle                                                      |          | 1.8°                                       |                    |                    |                     |                    |                      |
| Shaft Runout (in)                                                     |          | 0.002 in 0.05 mm]                          |                    |                    |                     |                    |                      |
| Max Shaft Radial Play @ 1lb load                                      |          | 0.02 in [0.51 mm]                          |                    |                    | 0.025 in [0.635 mm] |                    | 0.02 in [0.51 mm]    |
| Max End Play @ 2.2-lb Axial load                                      |          | 0.08 in [2.03 mm]                          |                    |                    | 0.075 in [1.91 mm]  |                    | 0.08 in [2.03 mm]    |
| Connectors                                                            |          | 8 leads, 24AWG                             |                    |                    | 8 leads, 22AWG      |                    |                      |
| Temperature Rise                                                      |          | 80°C [176°F] max                           |                    |                    |                     |                    |                      |
| Storage Temperature Range                                             |          | -40°C to 70°C [-40°F to 158°F]             |                    |                    |                     |                    |                      |
| Operating Temperature Range                                           |          | -20°C to 50°C [-4°F to 122°F]              |                    |                    |                     |                    |                      |
| Operating Humidity Range                                              |          | 5% to 95% non-condensing                   |                    |                    |                     |                    |                      |
| Product Material                                                      |          | Steel motor case; stainless steel shaft(s) |                    |                    |                     |                    |                      |
| Environmental Rating                                                  |          | IP40                                       |                    |                    |                     |                    |                      |
| Weight (lb [kg])                                                      |          | 1.03 [0.47]                                | 1.54 [0.7]         | 2.2 [1.0]          | 4.2 [1.9]           | 8.4 [3.8]          | 11.46 [5.2]          |
| Agency Approvals                                                      |          | None                                       |                    |                    | cURUS               |                    |                      |

\* For dual-shaft motors (STP-MTRAC-xxxxxD):

The sum of the front and rear Torque Loads, Radial Loads, and Thrust Loads must not exceed the applicable Torque, Radial, and Thrust load ratings of the motor.

\*\* STP-MTRAC-34156(x) motors have a 5/8" front shaft



# Stepping System Motors

## SureStep® Stepping Motors

| SureStep Series Specifications – Connectorized Stepping Motors |                  |                                            |                    |                    |                     |                     |
|----------------------------------------------------------------|------------------|--------------------------------------------|--------------------|--------------------|---------------------|---------------------|
| Stepping Motors                                                |                  | Higher voltage<br>High torque              |                    |                    |                     |                     |
|                                                                |                  | STP-MTRAC-42100(x)                         | STP-MTRAC-42151(x) | STP-MTRAC-42202(x) | STP-MTRACH-42100(x) | STP-MTRACH-42202(x) |
| NEMA Frame Size                                                |                  | 42                                         | 42                 | 42                 | 42                  | 42                  |
| Optional Encoder <sup>1</sup>                                  |                  | Y                                          | Y                  | Y                  | Y                   | Y                   |
| Max Holding Torque (N·m)                                       | Unipolar Series  | 9.7                                        | 19.0               | 26.0               | 9.7                 | 26.0                |
|                                                                | Bipolar Series   | 12.2                                       | 22.0               | 31.0               | 12.3                | 32.0                |
|                                                                | Bipolar Parallel | 12.2                                       | 22.0               | 31.0               | 12.3                | 32.0                |
| Rotor Inertia (g·cm <sup>2</sup> )                             |                  | 5500                                       | 10900              | 16200              | 5500                | 16200               |
| Rated RMS Current (A/phase)                                    | Unipolar Series  | 6                                          | 9.4                | 9                  | 8.5                 | 11.5                |
|                                                                | Bipolar Series   | 4.2                                        | 6                  | 6                  | 6                   | 8                   |
|                                                                | Bipolar Parallel | 8.4                                        | 12                 | 12                 | 12                  | 16                  |
| Resistance (Ω/phase)                                           | Unipolar Series  | 0.6                                        | 0.34               | 0.46               | 0.32                | 0.215               |
|                                                                | Bipolar Series   | 1.19                                       | 0.68               | 0.91               | 0.64                | 0.58                |
|                                                                | Bipolar Parallel | 0.3                                        | 0.17               | 0.23               | 0.159               | 0.144               |
| Inductance (mH/phase)                                          | Unipolar Series  | 5                                          | 3.6                | 5.5                | 2.5                 | 1.9                 |
|                                                                | Bipolar Series   | 19.8                                       | 14.5               | 22                 | 10.1                | 7.6                 |
|                                                                | Bipolar Parallel | 5                                          | 3.6                | 5.5                | 2.5                 | 1.9                 |
| Insulation Class                                               |                  | B                                          |                    |                    |                     |                     |
| Steps per Revolution                                           |                  | 200                                        |                    |                    |                     |                     |
| Basic Step Angle                                               |                  | 1.8°                                       |                    |                    |                     |                     |
| Shaft Runout                                                   |                  | 0.05 mm                                    |                    |                    |                     |                     |
| Max Shaft Radial Play @ 1lb load                               |                  | 1.1 in                                     |                    |                    |                     |                     |
| Connectors                                                     |                  | 8 leads, 18AWG                             |                    |                    |                     |                     |
| Temperature Rise                                               |                  | 80°C max                                   |                    |                    |                     |                     |
| Storage Temp.                                                  |                  | -30°C to 70°C [-22°F to 158°F]             |                    |                    |                     |                     |
| Operating Temperature                                          |                  | -20°C to 40°C [-4°F to 104°F]              |                    |                    |                     |                     |
| Operating Humidity                                             |                  | 5% to 95% non-condensing                   |                    |                    |                     |                     |
| Product Material                                               |                  | Steel motor case, stainless steel shaft(s) |                    |                    |                     |                     |
| Environmental Rating                                           |                  | IP40                                       |                    |                    |                     |                     |
| Weight (lb [kg])                                               |                  | 10.6 [4.8]                                 | 17.6 [8]           | 25.6 [11.6]        | 10.6 [4.8]          | 25.6 [11.6]         |
| Agency Approval                                                |                  | cURus                                      |                    |                    |                     |                     |

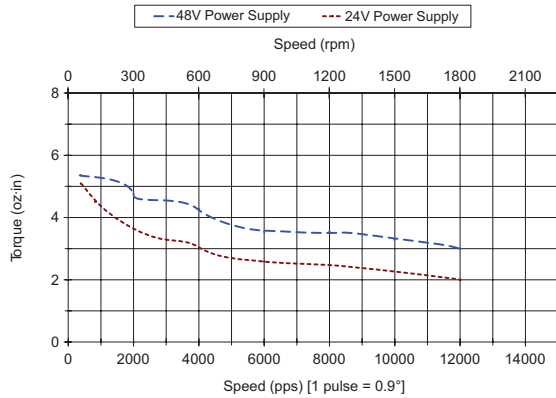
1 - Dual-shaft versions only. For US Digital E6 or CUI Devices AMT13/AMT33 encoder mounting, the [STP-MTRA-42ENC](#) encoder adapter plate is required.

# Stepping System Motors

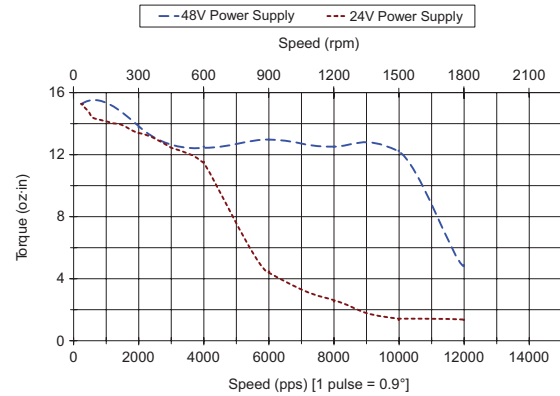
## SureStep® Motor Running Torque vs. Speed Charts

### STP-MTRL-14xxx(x) NEMA 14 Step Motors

STP-MTRL-14026(x) Torque vs Speed (1.8° step motor; 1/2 stepping, RMS phase current)



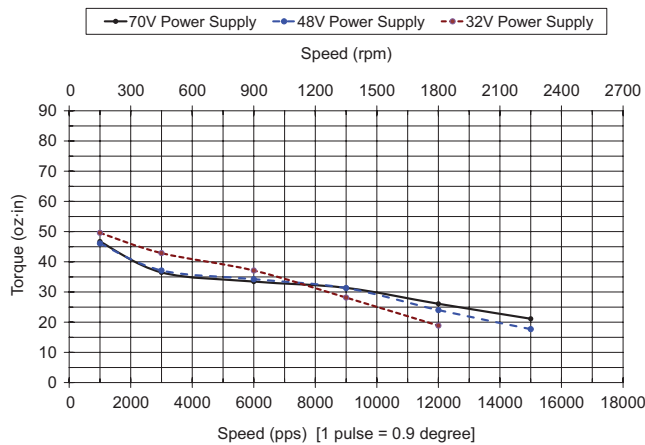
STP-MTRL-14034(x) Torque vs Speed (1.8° step motor; 1/2 stepping, RMS phase current)



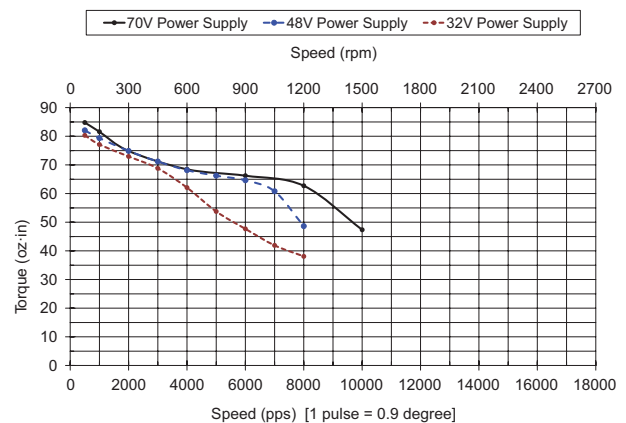
### STP-MTR-17xxx(x) NEMA 17 Step Motors

Note: "W" series motors have 5% less running torque than other models

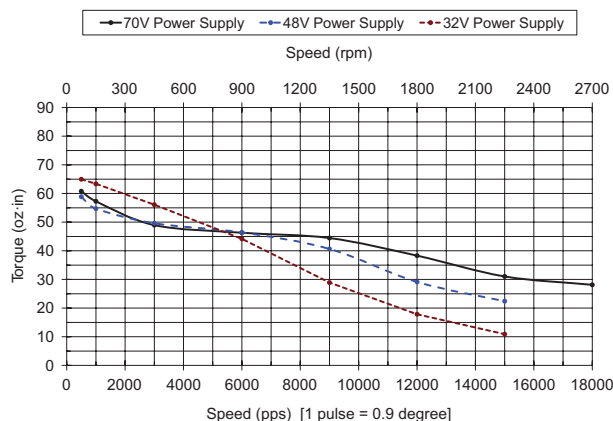
STP-MTR-17040(x) Torque vs Speed (1.8° step motor; 1/2 stepping)



STP-MTR-17060(x) Torque vs Speed (1.8° step motor; 1/2 stepping)



STP-MTR-17048(x) Torque vs Speed (1.8° step motor; 1/2 stepping)



Note: Motor torque vs speed charts for STP-MTRD series integrated motor/drives can be found in the integrated motor/drives section of the full catalog



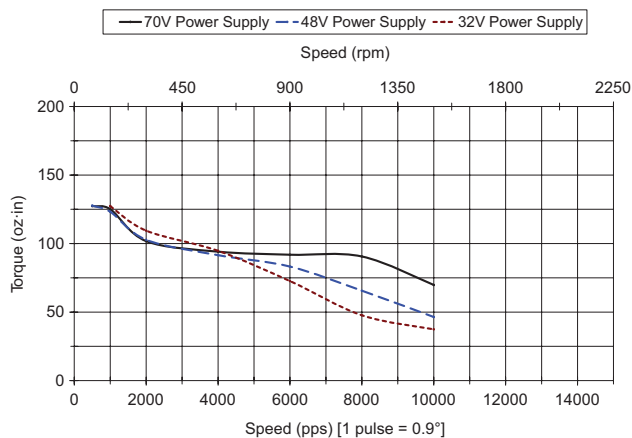
# Stepping System Motors

## SureStep® Motor Torque vs. Speed Charts (continued)

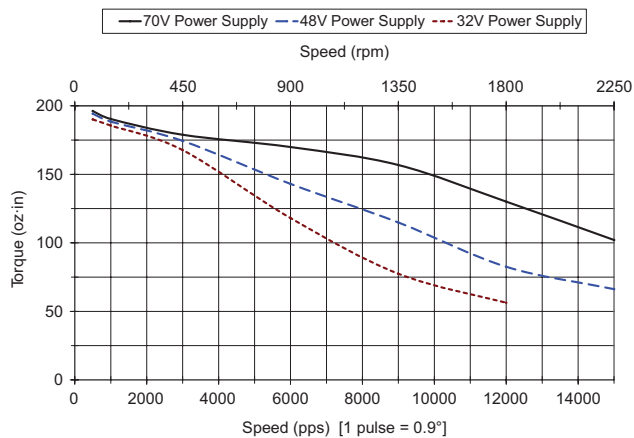
### STP-MTR(H)-23xxx(x) NEMA 23 Step Motors

Note: "W" series motors have 5% less running torque than other models

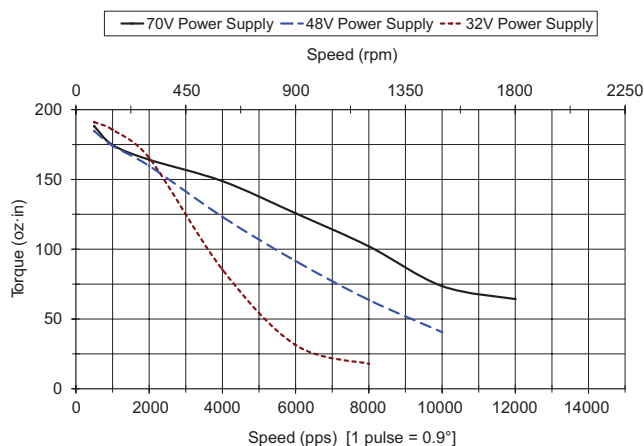
STP-MTR-23055(x) Torque vs Speed (1.8° step motor; 1/2 stepping)



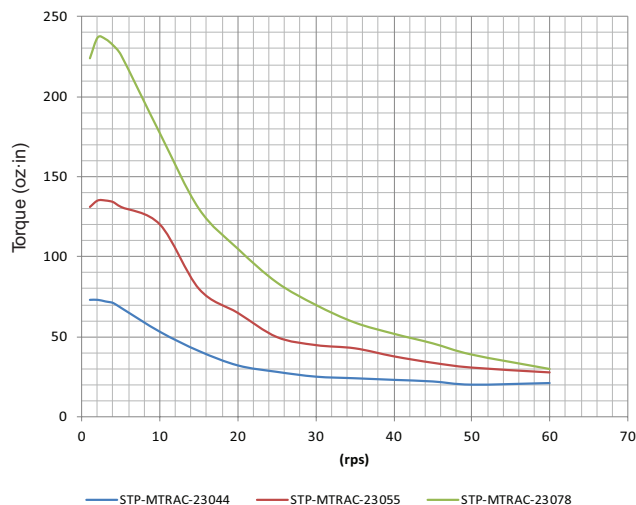
STP-MTRH-23079(x) Torque vs Speed (1.8° step motor; 1/2 stepping)



STP-MTR-23079(x) Torque vs Speed (1.8° step motor; 1/2 stepping)



STP-MTRAC-23xxxx Torque vs Speed @ 340VDC bus (1.8° step motor; 1/2 stepping)





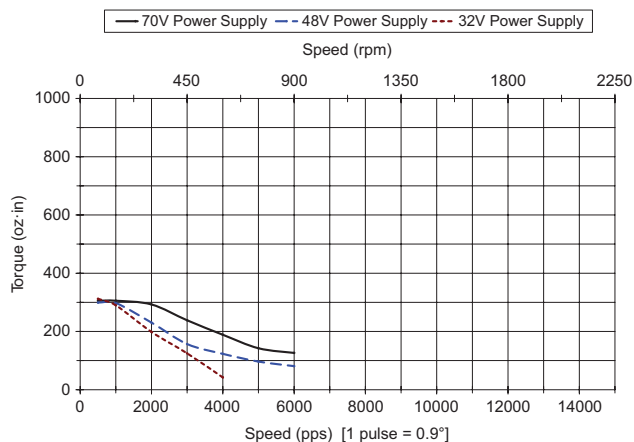
# Stepping System Motors

## SureStep® Motor Torque vs. Speed Charts (continued)

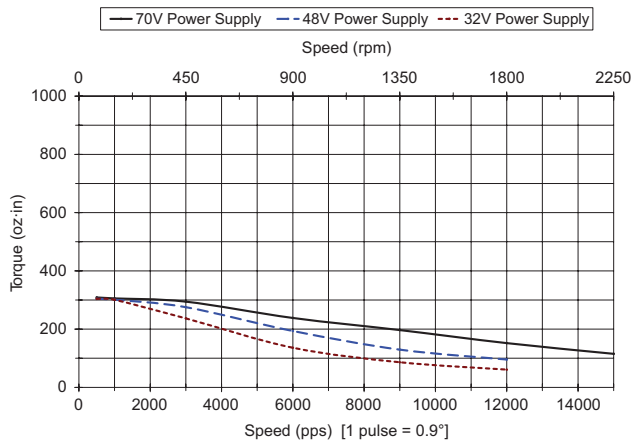
### STP-MTR(H)-34xxx(x) NEMA 34 Step Motors

Note: "W" series motors have 5% less running torque than other models

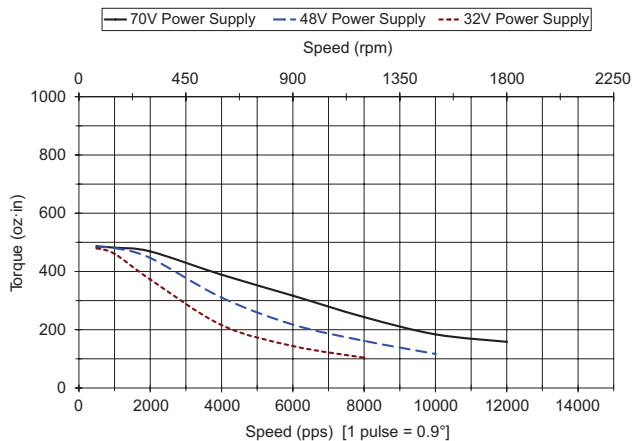
**STP-MTR-34066(x)** Torque vs Speed (1.8° step motor; 1/2 stepping)



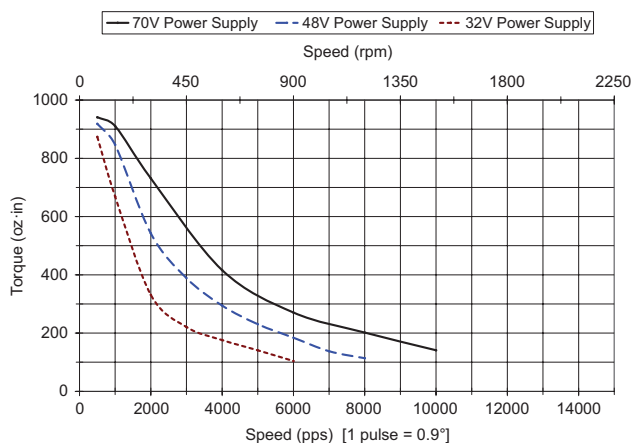
**STP-MTRH-34066(x)** Torque vs Speed (1.8° motor; 1/2 stepping)



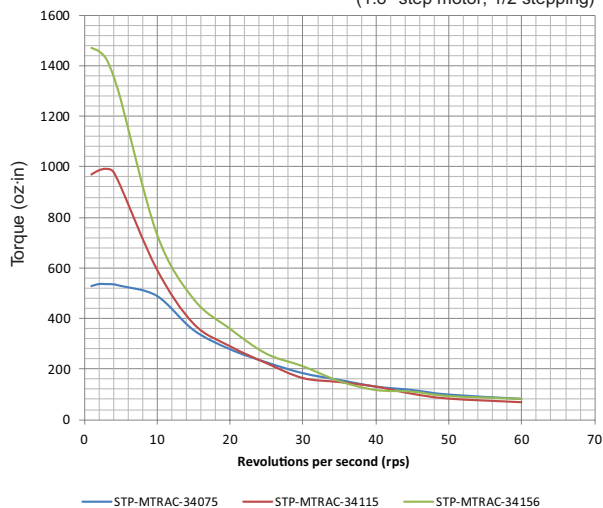
**STP-MTRH-34097(x)** Torque vs Speed (1.8° step motor; 1/2 stepping)



**STP-MTRH-34127(x)** Torque vs Speed (1.8° step motor; 1/2 stepping)



**STP-MTRAC-34xxxx** Torque vs Speed @ 340VDC bus  
(1.8° step motor; 1/2 stepping)

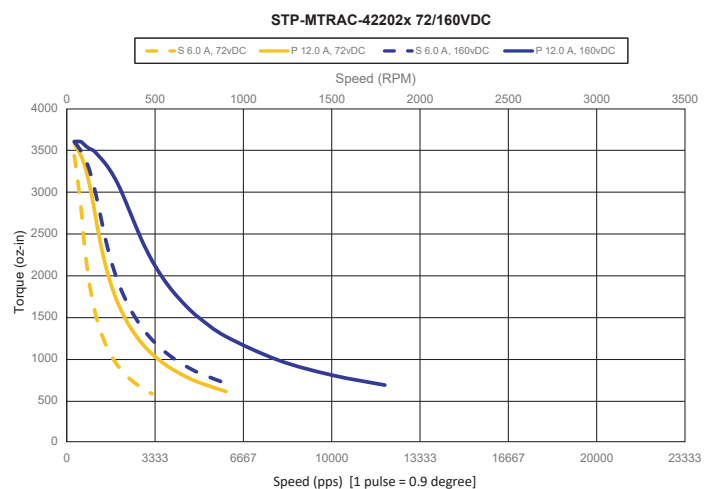
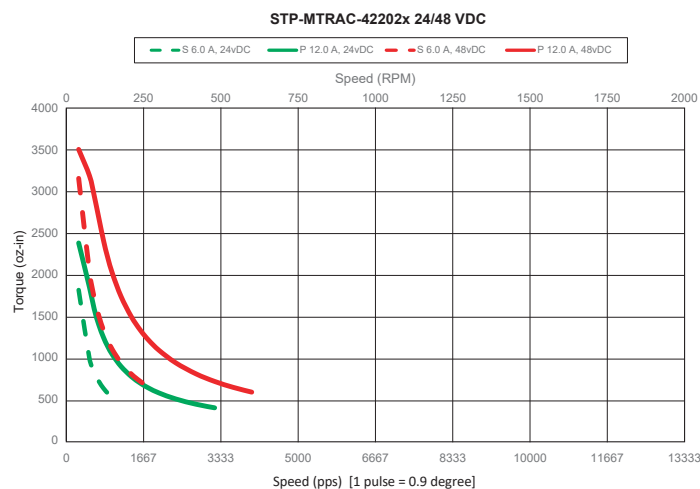
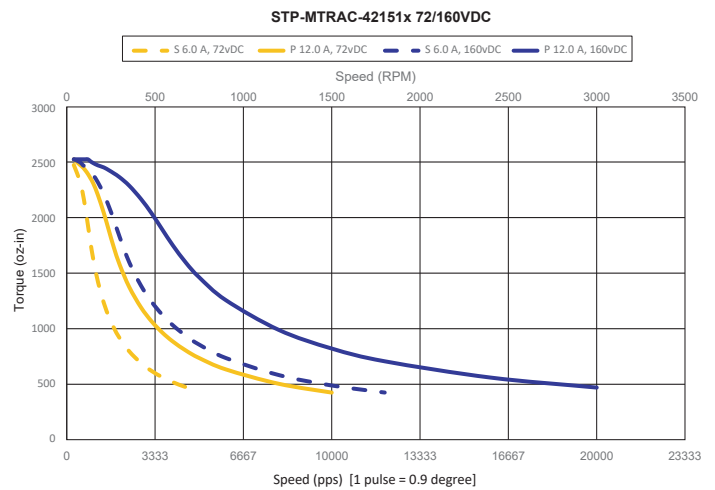
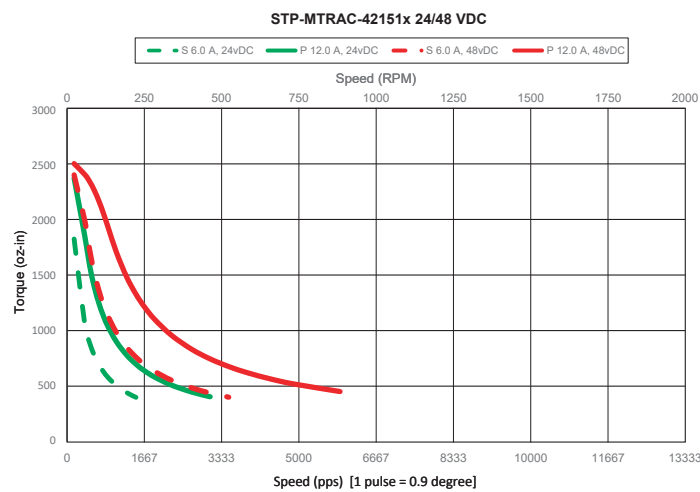
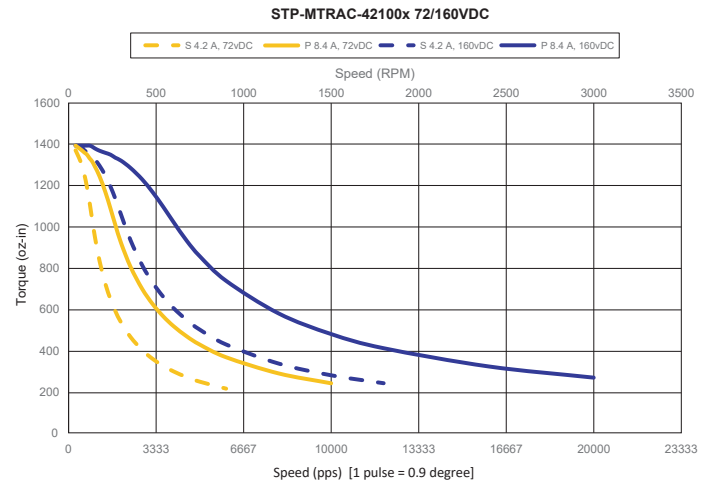
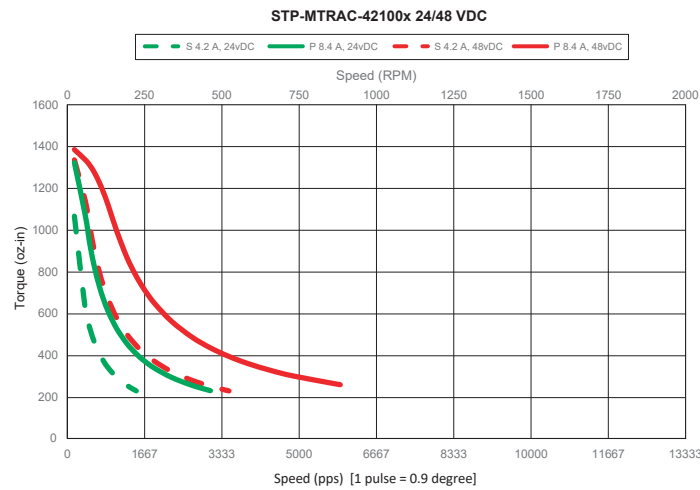


# Stepping System Motors

## SureStep® Motor Torque vs. Speed Charts (continued)

STP-MTRAC(H)-42xxx(x) NEMA 42 Step Motors

For all NEMA 42 charts: "S" = Series Bipolar Wiring  
"P" = Parallel Bipolar Wiring

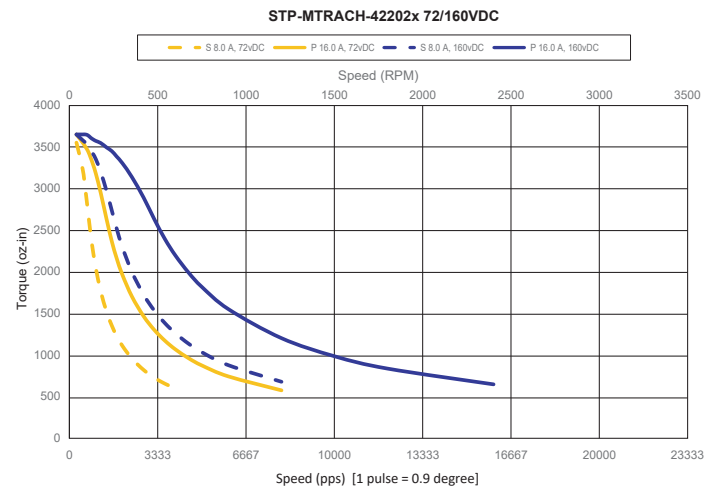
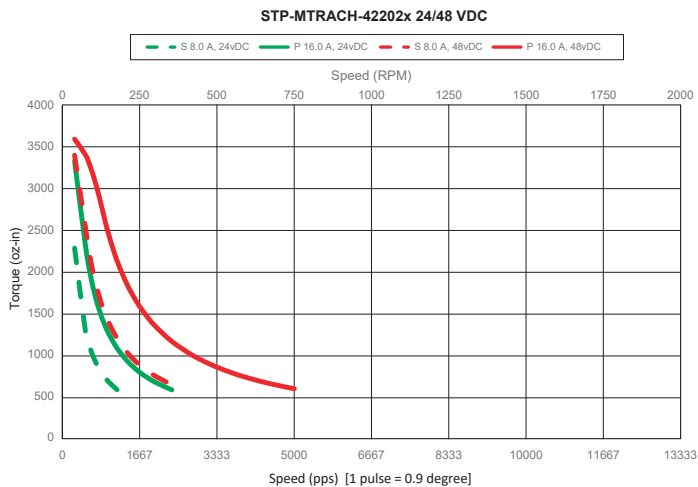
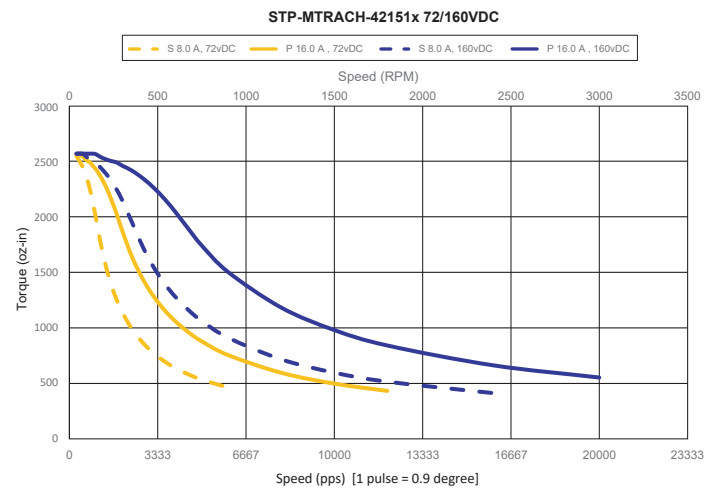
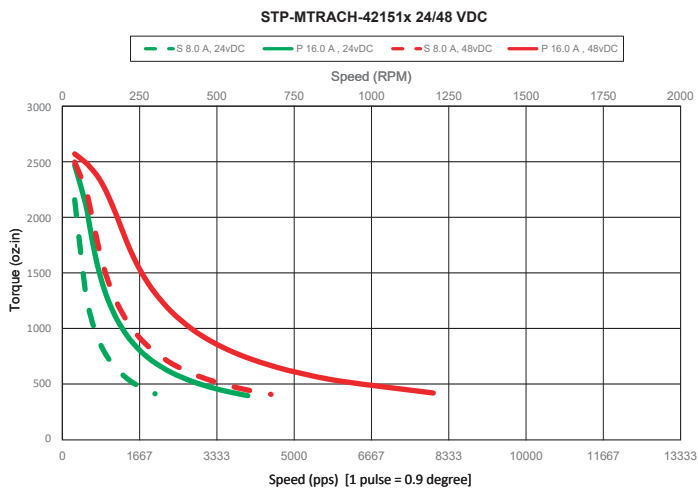
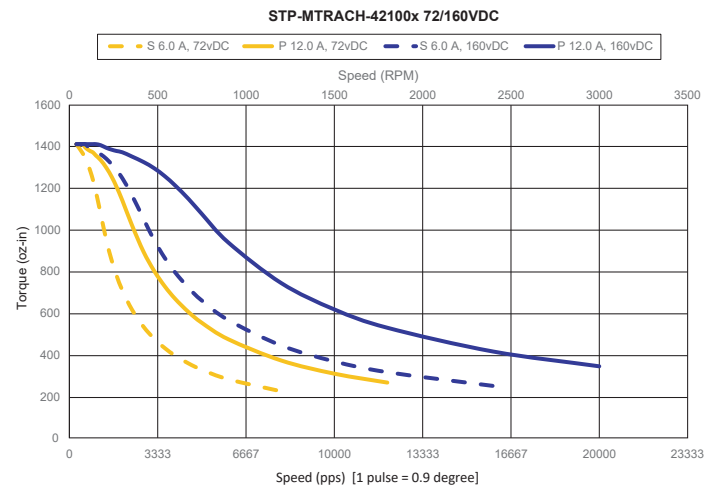
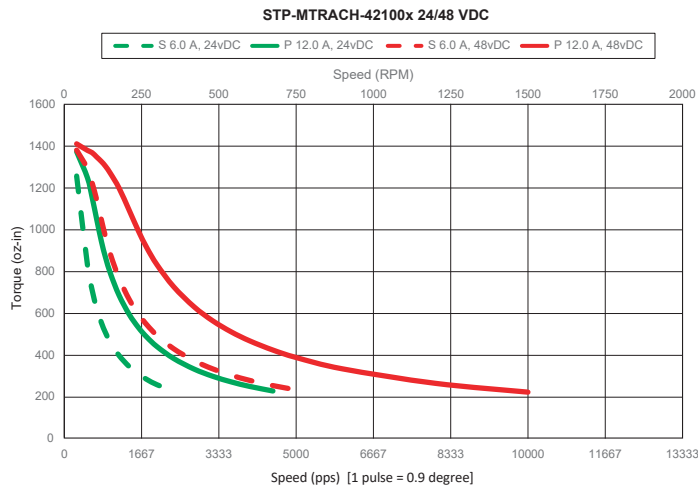


# Stepping System Motors

## SureStep® Motor Torque vs. Speed Charts (continued)

STP-MTRACH(H)-42xxx(x) NEMA 42 Step Motors

For all NEMA 42 charts: "S" = Series Bipolar Wiring  
"P" = Parallel Bipolar Wiring

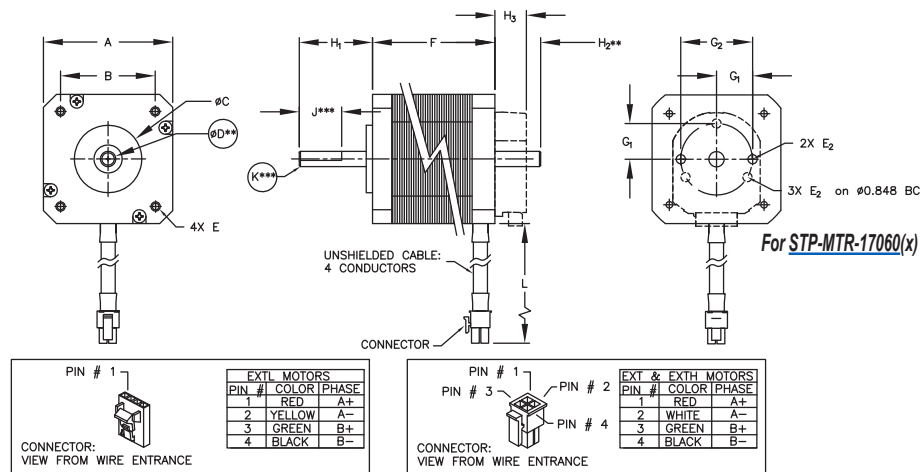




# Stepping System Motors

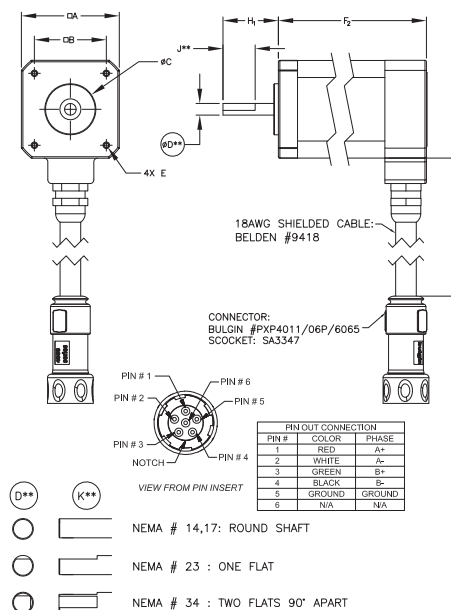
## SureStep® Motor Dimensions and Cabling

### STP-MTR(x)-14,17,23xxx(X) Motors



\*\* Dimension H2 applies only to dual-shaft (D) and encoder (E) motors.  
Dimension D is the same for both front and rear shafts of dual-shaft and encoder motors.  
Dimensions J & K do NOT apply to rear shafts of dual-shaft and encoder motors (all rear shafts are round style).

### STP-MTR-xxxxxW Motors



\*\* Dimension H2 applies only to dual-shaft (D) and encoder (E) motors.  
Dimension D is the same for both front and rear shafts of dual-shaft and encoder motors.  
Dimensions J & K do NOT apply to rear shafts of dual-shaft and encoder motors (all rear shafts are round style).

## SureStep Series Dimensions & Cabling – NEMA 14, 17, and 23 Connectorized Bipolar Stepping Motors

| Dimensions*<br>(in [mm]*) | Low Torque Motors                |                    | High Torque Motors                                  |                  |                  |                      |                  | Higher Torque Motors                                |
|---------------------------|----------------------------------|--------------------|-----------------------------------------------------|------------------|------------------|----------------------|------------------|-----------------------------------------------------|
|                           | STP-MTRL-14026(x)                | STP-MTRL-14034(x)  | STP-MTR-17040(x)                                    | STP-MTR-17048(x) | STP-MTR-17060(x) | STP-MTR-23055(x)     | STP-MTR-23079(x) | STP-MTRH-23079(x)                                   |
| A                         | 1.39 [35.3]                      | 1.39 [35.3]        | 1.67 [42.3]                                         |                  |                  | 2.25 [57.2]          |                  | 2.25 [57.2]                                         |
| B                         | 1.02 [25.9]                      | 1.02 [25.9]        | 1.22 [31.0]                                         |                  |                  | 1.86 [47.2]          |                  | 1.86 [47.2]                                         |
| C                         | Ø 0.87 [22.1]                    |                    |                                                     |                  |                  | Ø 1.50 [38.1]        |                  | Ø 1.50 [38.1]                                       |
| D**                       | Ø 0.20 [5.0]                     |                    |                                                     |                  |                  | Ø 0.25 [6.4]         |                  | Ø 0.25 [6.4]                                        |
| E                         | 4-40 thread 0.15 [3.8] min depth |                    | M3 x 0.5 thread 0.15 [3.8] min depth                |                  |                  | Ø 0.20 [5.1] through |                  | Ø 0.20 [5.1] through                                |
| E2                        | M2.5 x 0.45 thread               | M2.5 x 0.45 thread | M2.5 x 0.45 thread                                  |                  | M2 x 0.4 thread  | 4-40                 |                  | 4-40                                                |
| F**                       | 1.02 [25.9]                      | 1.34 [34.0]        | 1.58 [40.1]                                         | 1.89 [48.0]      | 2.34 [59.5]      | 2.22 [56.4]          | 3.10 [78.7]      | 3.10 [78.7]                                         |
| F2**                      | n/a                              |                    | 1.90 [48.3]                                         | 2.24 [56.9]      | 2.67 [67.8]      | 2.33 [59.1]          | 3.19 [81.0]      | 3.19 [81.0]                                         |
| G1                        | 0.375                            | 0.375              | 0.375                                               | 0.375            | 0.411            | 0.906                | 0.906            | 0.906                                               |
| G2                        | 0.75                             | 0.75               | 0.75                                                | 0.75             | n/a              | 1.812                | 1.812            | 1.812                                               |
| H1                        | 0.60 [15.2]                      | 0.60 [15.2]        | 0.94 [24.0]                                         |                  |                  | 0.81 [20.6]          |                  | 0.81 [20.6]                                         |
| H2**                      | 0.51 [13.0]                      |                    |                                                     |                  |                  |                      |                  |                                                     |
| H3***                     | 0.40                             |                    |                                                     |                  |                  |                      |                  |                                                     |
| J**                       | n/a                              |                    |                                                     |                  |                  | 0.59 [15.0]          |                  |                                                     |
| K**                       | n/a                              |                    |                                                     |                  |                  | 0.23 [5.8]           |                  |                                                     |
| L                         | 12 [305]                         |                    |                                                     |                  |                  |                      |                  |                                                     |
| Conductor                 | (4) #26 AWG                      |                    | (4) #20 AWG, (5) #18 AWG (for W motors)             |                  |                  |                      |                  | (4) #18 AWG, (5) #18 AWG (for W motors)             |
| Connector                 | TE # 103653-3                    |                    | Molex # 43025-0400, PXP4010/06S/6065 (for W motors) |                  |                  |                      |                  | Molex # 39-01-3042, PXP4010/06S/6065 (for W motors) |
| Pin                       | TE # 1-104505-3 (LOOSE)          |                    | Molex # 43030-0007, Socket: SA3347 (for W motors)   |                  |                  |                      |                  | Molex # 39-00-0039, Socket: SA3347 (for W motors)   |

\* mm dimensions are for reference purposes only.

\*\* Dimension H2 applies only to dual-shaft (D) and encoder (E) motors.

Dimension D (shaft diameter) is the same for both front and rear shafts of dual-shaft (D) and encoder (E) motors.

Dimensions J & K do NOT apply to rear shafts of dual-shaft (D) and encoder (E) motors (all rear shafts are round style).

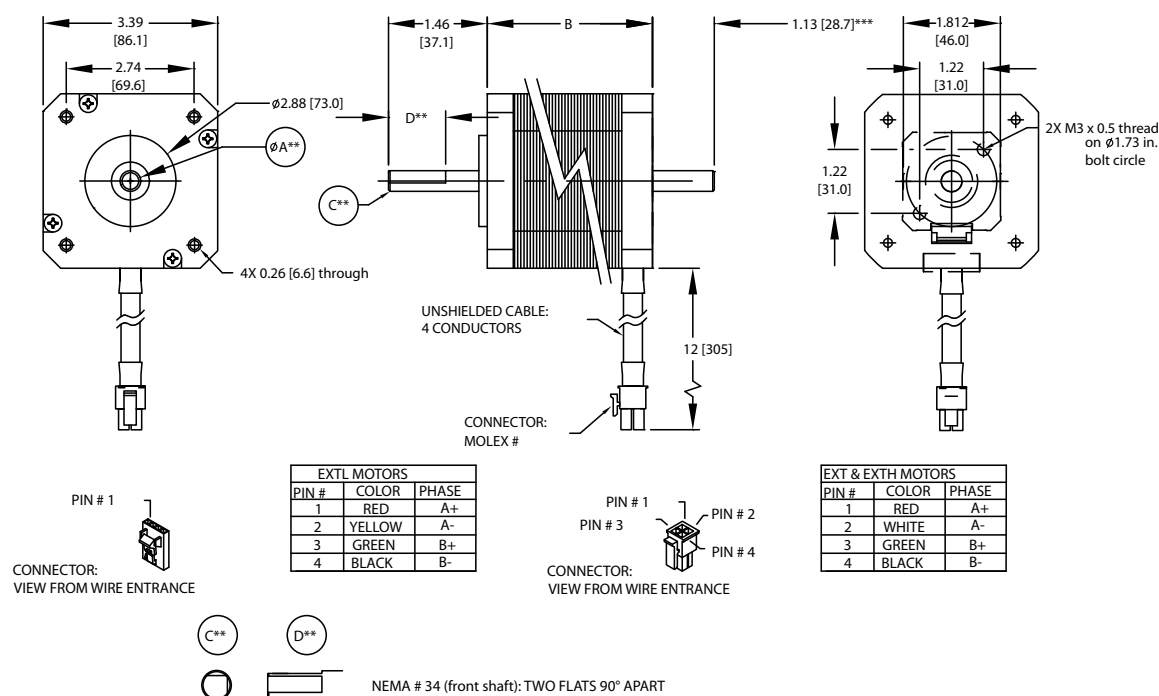
Dimension F2 applies to IP65 (W) motors only.

\*\*\* Dimension H3 applies only to "E" models with the encoder pre-mounted.

# Stepping System Motors

## SureStep<sup>®</sup> Motor Dimensions and Cabling

## STP-MTR(x)-34xxx(X) Motors



\*\* Dimension A is the same for both front and rear shafts of dual-shaft motors.

\*\* Dimensions C & D do NOT apply to rear shafts of dual-shaft motors (all rear shafts are round style).

\*\*\* Dimension applies only to dual-shaft (D) motors.

| SureStep Series Dimensions & Cabling – NEMA 34 Connectorized Bipolar Stepping Motors |                                                     |                                                     |                   |                   |
|--------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-------------------|-------------------|
| Dimensions<br>(in [mm]*)                                                             | High Torque Motors                                  | Higher Torque Motors                                |                   |                   |
|                                                                                      | STP-MTR-34066(x)                                    | STP-MTRH-34066(x)                                   | STP-MTRH-34097(x) | STP-MTRH-34127(x) |
| A**                                                                                  | Ø 0.50 [12.7]                                       |                                                     |                   |                   |
| B                                                                                    | 2.64 [67.1]                                         | 2.64 [67.1]                                         | 3.82 [97.0]       | 5.00 [127.0]      |
| C**                                                                                  | 0.98 [25.0]                                         |                                                     |                   |                   |
| D**                                                                                  | 0.45 [11.4]                                         |                                                     |                   |                   |
| Conductor                                                                            | (4) #20 AWG, (5) #18 AWG (for W motors)             | (4) #18 AWG, (5) #18 AWG (for W motors)             |                   |                   |
| Connector                                                                            | Molex # 43025-0400, PXP4010/06S/6065 (for W motors) | Molex # 39-01-3042, PXP4010/06S/6065 (for W motors) |                   |                   |
| Pin                                                                                  | Molex # 43030-0007, Socket: SA3347 (for W motors)   | Molex # 39-00-0039, Socket: SA3347 (for W motors)   |                   |                   |

\* mm dimensions are for reference purposes only.

\*\* Dimension A (shaft diameter) is the same for both front and rear shafts of dual-shaft (D series) motors. Dimensions C & D do NOT apply to rear shafts of dual-shaft (D series) motors (all rear shafts are round style).

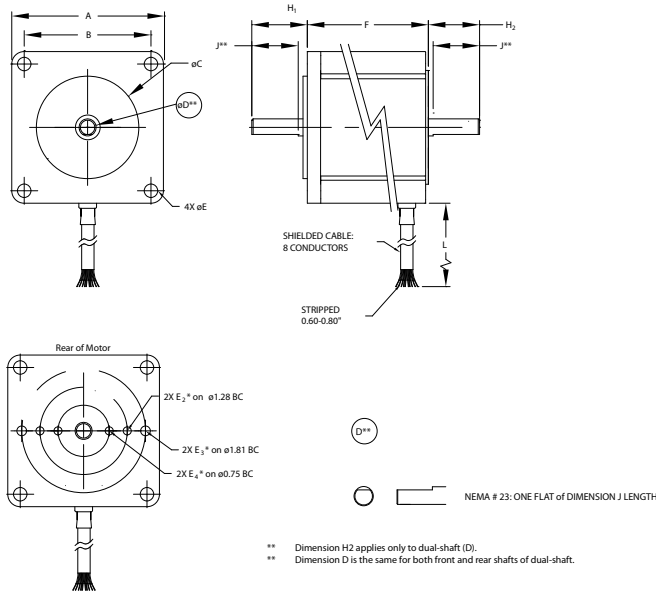
\*\*\* This dimension only applies to dual-shaft (D series) motors.



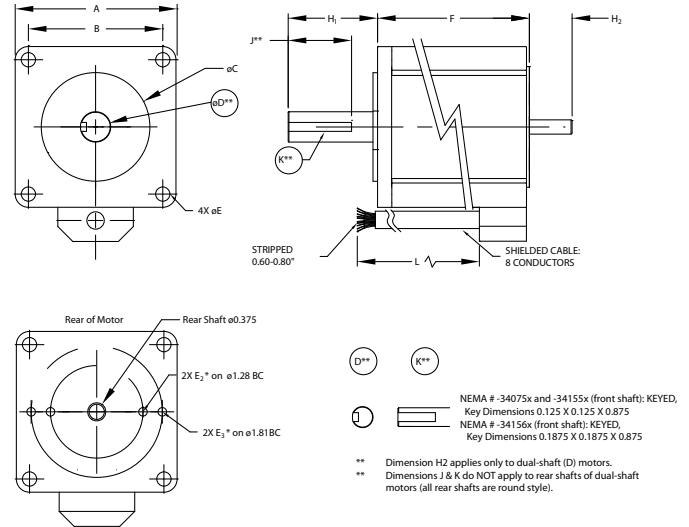
# Stepping System Motors

## SureStep® Motor Dimensions and Cabling

### STP-MTRAC-23xxx Motors



### STP-MTRAC-34xxx Motors



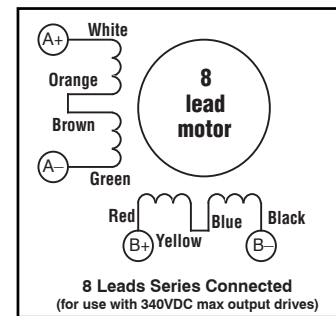
## SureStep Series Dimensions & Cabling – High Voltage Bipolar Stepping Motors

| Dimensions*<br>(in [mm]*) | High Voltage<br>High Torque |                          |                          |                          |                          |                          |
|---------------------------|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                           | STP-MTRAC-<br>23044(x)      | STP-MTRAC-<br>23055(x)   | STP-MTRAC-<br>23078(x)   | STP-MTRAC-<br>34075(x)   | STP-MTRAC-<br>34115(x)   | STP-MTRAC-<br>34156(x)   |
| A                         | 2.25 [57.15]                | 2.25 [57.15]             | 2.25 [57.15]             | 3.39 [86.1]              | 3.39 [86.1]              | 3.39 [86.1]              |
| B                         | 1.86 [47.24]                | 1.86 [47.24]             | 1.86 [47.24]             | 2.74 [69.6]              | 2.74 [69.6]              | 2.74 [69.6]              |
| C                         | 1.50 [38.1]                 | 1.50 [38.1]              | 1.50 [38.1]              | 2.87 [72.9]              | 2.87 [72.9]              | 2.87 [72.9]              |
| D**                       | 0.25 [6.35]                 | 0.25 [6.35]              | 0.25 [6.35]              | 0.5 [12.7]               | 0.5 [12.7]               | 0.625 [15.9]             |
| E                         | 0.2 [5.08]                  | 0.2 [5.08]               | 0.2 [5.08]               | 0.22 [5.59]              | 0.26 [6.6]               | 0.22 [5.59]              |
| E2***                     | 2-56 thru                   | 2-56 thru                | 2-56 thru                | 2-56 UNC Tap<br>0.2 Deep | 2-56 UNC Tap<br>0.2 Deep | 2-56 UNC Tap<br>0.2 Deep |
| E3***                     | 4-40 UNC x 0.2<br>Deep      | 4-40 UNC x 0.2<br>Deep   | 4-40 UNC x 0.2<br>Deep   | 4-40 UNC Tap<br>0.2 Deep | 4-40 UNC Tap<br>0.2 Deep | 4-40 UNC Tap<br>0.2 Deep |
| E4***                     | 2-56 UNC Tap<br>0.2 Deep    | 2-56 UNC Tap<br>0.2 Deep | 2-56 UNC Tap<br>0.2 Deep | –                        | –                        | –                        |
| F                         | 1.71 [43.43]                | 2.16 [54.86]             | 3.05 [77.47]             | 2.95 [74.93]             | 4.52 [114.81]            | 6.14 [155.96]            |
| H1                        | 0.81 [20.57]                | 0.81 [20.57]             | 0.81 [20.57]             | 1.25 [31.75]             | 1.25 [31.75]             | 1.25 [31.75]             |
| H2***                     | 0.63 [16.0]                 | 0.63 [16.0]              | 0.63 [16.0]              | 1.12 [28.45]             | 1.12 [28.45]             | 1.12 [28.45]             |
| J                         | 0.60 [15.24]                | 0.60 [15.24]             | 0.60 [15.24]             | 0.87 [22.1]              | 0.87 [22.1]              | 0.87 [22.1]              |
| L                         | 120 [3048]                  | 120 [3048]               | 120 [3048]               | 120 [3048]               | 120 [3048]               | 120 [3048]               |

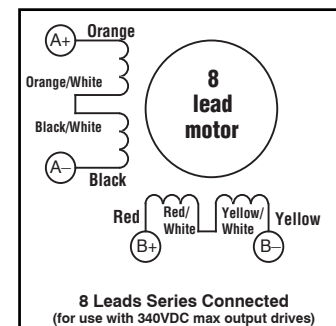
\* mm dimensions are for reference purposes only.

\*\* Dimension D (shaft diameter) is the same for both front and rear shafts of NEMA 23 dual-shaft motors. See diagrams for NEMA 34.

\*\*\* Dimension applies only to dual-shaft (D) motors.



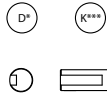
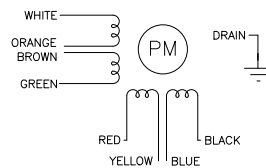
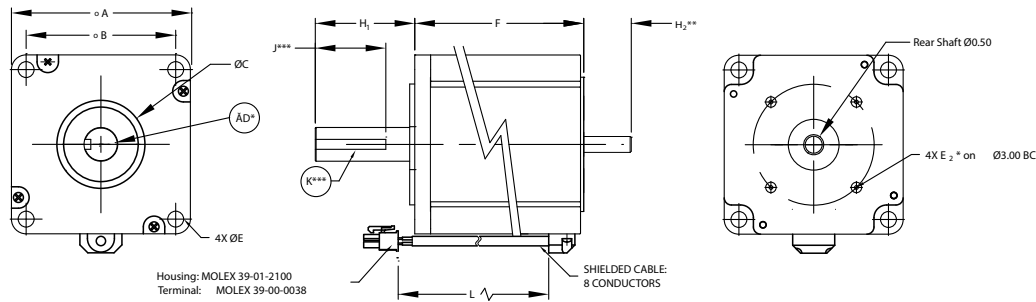
**STP-MTRAC-230xx(x),  
34156(x) Motor Wiring**



**STP-MTRAC-34075(x),  
34115(x) Motor Wiring**

# Stepping System Motors

## STP-MTRAC-42xxx Motors

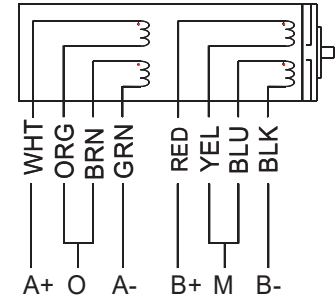


NEMA # 42 (front shaft): KEYED, Key Dimensions 0.188 X 0.188 X 1.377

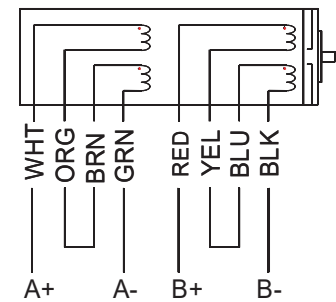
- \* Dimension D applies only to the front shaft.
- \*\* Dimension H2 applies only to dual-shaft (D) motors.
- \*\*\* Dimensions J & Key do NOT apply to rear shafts of dual-shaft motors

(all rear shafts are round style).

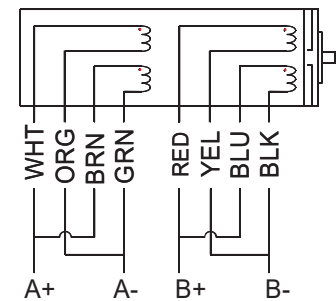
### Uni-polar



### Bi-polar series



### Bi-polar parallel



## SureStep Series Dimensions & Cabling – Higher Voltage Bipolar Stepping Motors

| Dimensions*<br>(in [mm]*) | Higher Voltage<br>High Torque |                         |                        |                         |                        |                         |                         |                          |                         |                          |
|---------------------------|-------------------------------|-------------------------|------------------------|-------------------------|------------------------|-------------------------|-------------------------|--------------------------|-------------------------|--------------------------|
|                           | <u>STP-MTRAC-42100</u>        | <u>STP-MTRACH-42100</u> | <u>STP-MTRAC-42151</u> | <u>STP-MTRACH-42151</u> | <u>STP-MTRAC-42202</u> | <u>STP-MTRACH-42202</u> | <u>STP-MTRAC-42100D</u> | <u>STP-MTRACH-42100D</u> | <u>STP-MTRAC-42151D</u> | <u>STP-MTRACH-42151D</u> |
| <b>A</b>                  | 4.33 [110]                    | 4.33 [110]              | 4.33 [110]             | 4.33 [110]              | 4.33 [110]             | 4.33 [110]              | 4.33 [110]              | 4.33 [110]               | 4.33 [110]              | 4.33 [110]               |
| <b>B</b>                  | 3.50 [88.9]                   | 3.50 [88.9]             | 3.50 [88.9]            | 3.50 [88.9]             | 3.50 [88.9]            | 3.50 [88.9]             | 3.50 [88.9]             | 3.50 [88.9]              | 3.50 [88.9]             | 3.50 [88.9]              |
| <b>C</b>                  | 2.19 [55.6]                   | 2.19 [55.6]             | 2.19 [55.6]            | 2.19 [55.6]             | 2.19 [55.6]            | 2.19 [55.6]             | 2.19 [55.6]             | 2.19 [55.6]              | 2.19 [55.6]             | 2.19 [55.6]              |
| <b>D**</b>                | 0.75 [19.05]                  | 0.75 [19.05]            | 0.75 [19.05]           | 0.75 [19.05]            | 0.75 [19.05]           | 0.75 [19.05]            | 0.75 [19.05]            | 0.75 [19.05]             | 0.75 [19.05]            | 0.75 [19.05]             |
| <b>E</b>                  | 0.327 [8.31]                  | 0.327 [8.31]            | 0.327 [8.31]           | 0.327 [8.31]            | 0.327 [8.31]           | 0.327 [8.31]            | 0.327 [8.31]            | 0.327 [8.31]             | 0.327 [8.31]            | 0.327 [8.31]             |
| <b>E2</b>                 | n/a                           | n/a                     | n/a                    | n/a                     | n/a                    | n/a                     | 4-40 UNC Tap 0.2 Deep   | 4-40 UNC Tap 0.2 Deep    | 4-40 UNC Tap 0.2 Deep   | 4-40 UNC Tap 0.2 Deep    |
| <b>F</b>                  | 3.88                          | 5.94                    | 7.91                   | 3.88***                 | 5.94***                | 7.91***                 |                         |                          |                         |                          |
| <b>H1</b>                 | 2.19 [55.6]                   | 2.19 [55.6]             | 2.19 [55.6]            | 2.19 [55.6]             | 2.19 [55.6]            | 2.19 [55.6]             | 2.19 [55.6]             | 2.19 [55.6]              | 2.19 [55.6]             | 2.19 [55.6]              |
| <b>H2</b>                 | n/a                           | n/a                     | n/a                    | n/a                     | n/a                    | n/a                     | 1.12 [28.4]             | 1.12 [28.4]              | 1.12 [28.4]             | 1.12 [28.4]              |
| <b>J**</b>                | 1.37 [34.8]                   | 1.37 [34.8]             | 1.37 [34.8]            | 1.37 [34.8]             | 1.37 [34.8]            | 1.37 [34.8]             | 1.37 [34.8]             | 1.37 [34.8]              | 1.37 [34.8]             | 1.37 [34.8]              |
| <b>L</b>                  | 12 [305]                      |                         |                        |                         |                        |                         |                         |                          |                         |                          |

\* mm dimensions are for reference purposes only.

\*\* Dimension D (shaft diameter), J, and Key do not apply to rear shafts of dual-shaft motors.

\*\*\* For encoder mounting the required STP-MTRA-42ENC bracket will add 0.13 inches [3.2 mm] to the length of the motor.



# Stepping System Accessories

## SureStep® Microstepping Drives Accessories

### Braking Accessories

As a load rapidly decelerates from a high speed, much of the kinetic energy of that load is transferred back to the motor. This energy is then pushed back to the drive and power supply, resulting in increased system voltage. If there is enough overhauling load on the motor, the DC voltage will go above the drive and/or power supply limits. In general, the more torque the motor is capable of producing then the more energy it can push back into the drive.

When using a regulated/switching power supply, this can trip the overvoltage protection of the power supply or drive, and cause it to shut down.

To solve this problem, AutomationDirect offers a regeneration clamp as an optional accessory. The regen clamp has a built-in 50W braking resistor. The STP-DRVA-RC-050A does not have the ability to use an external resistor.



**Regeneration Clamp [STP-DRVA-RC-050A](#)**

### Regeneration Clamp Features

#### [STP-DRVA-RC-050A](#)

- Built-in 50W power resistor for more continuous current handling
- Mounted on a heat sink
- Voltage range: 24–80 VDC; no user adjustments required
- Power: 50W continuous; 800W peak
- Indicators (LED):  
Green = power supply voltage is present  
Red = clamp is operating (usually when stepper is decelerating)
- Protection: The external power supply is internally connected to an "Input Diode" in the regen clamp that protects the power supply from high regeneration voltages. This diode protects the system from connecting the power supply in reverse. If the clamp circuit fails, the diode will continue to protect the power supply from over-voltage.
- Three drive connections, 7A max per channel, 15A total output current
- Removable terminal blocks (replacement kit STP-CON-4)
- Uses 18-20 AWG wire for connections

### SureStep Damper

A step motor inertia damper can smooth out steps in a typical step motor resulting in a quieter and smoother motion when rotating between steps. Reducing the resonance and possible micro oscillations when moving from step to step is the main purpose of a "hockey puck" style damper, but it can also be used as a hand wheel to directly rotate the position of the rotor when power is removed from the motor. The damper is a properly sized machined piece of aluminum encased in plastic. It is sized and weighted for general damping of the respective frame size motor.



**Damper**

| Sure Step Series Specifications – Microstepping Drives Optional Accessories |         |                                                                                                                     |                     |
|-----------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------|---------------------|
| Part Number                                                                 | Price   | Description                                                                                                         | Drawing             |
| <a href="#">STP-DRVA-RC-050A*</a>                                           | \$61.00 | Regen Clamp: 50W, for DC input stepper and servo drives, enclosed                                                   | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-17DMP</a>                                              | \$15.00 | SureStep damper, metal body. For use with NEMA 17 stepper motors with 5mm shafts. Mounting set screw included.      | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-23DMP</a>                                              | \$34.50 | SureStep damper, metal body. For use with NEMA 23 stepper motors with 1/4 inch shafts. Mounting set screw included. | <a href="#">PDF</a> |

\* Do not use the regeneration clamp in an atmosphere containing corrosive gases.

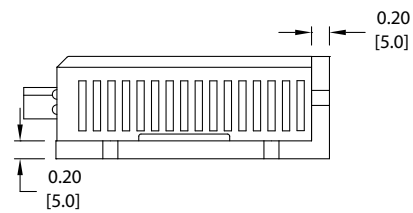
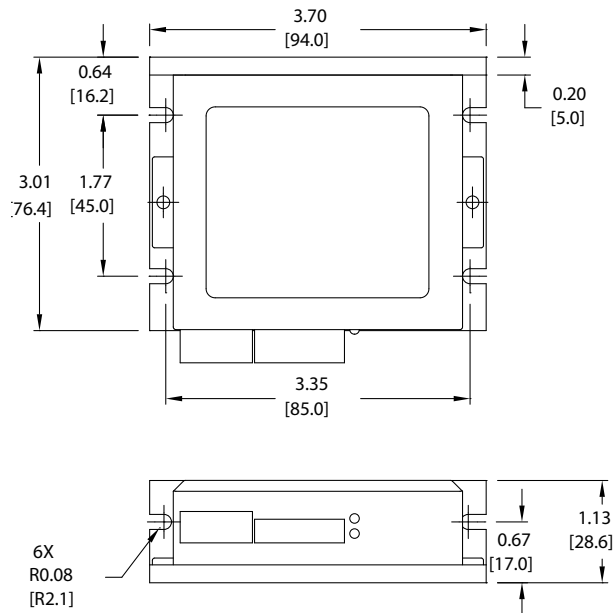


# Stepping System Accessories

## SureStep® Microstepping Drives Accessories

**Dimensions = in [mm]**

### STP-DRVA-RC-050A





# Stepping System Accessories

## SureStep® Microstepping Drives Accessories

### USB to RS-485 Adapter

The STP-USB485-4W is a USB to RS-232/RS-485 converter that can be used in 2-wire or 4-wire serial networks. Serial communication can be wired up via the 9-pin D-sub connector or through the 6-screw terminals.

The STP-USB485-4W can be set for several different configurations. These modes are set up by the 4 DIP switches on the outside of the case (RS-232/RS-485, full/half duplex) and by the 7 jumpers located inside the case (termination/bias resistors).

SureStep Advanced Drives communicate via RS-232 (for control and for configuration via SureMotion Pro).

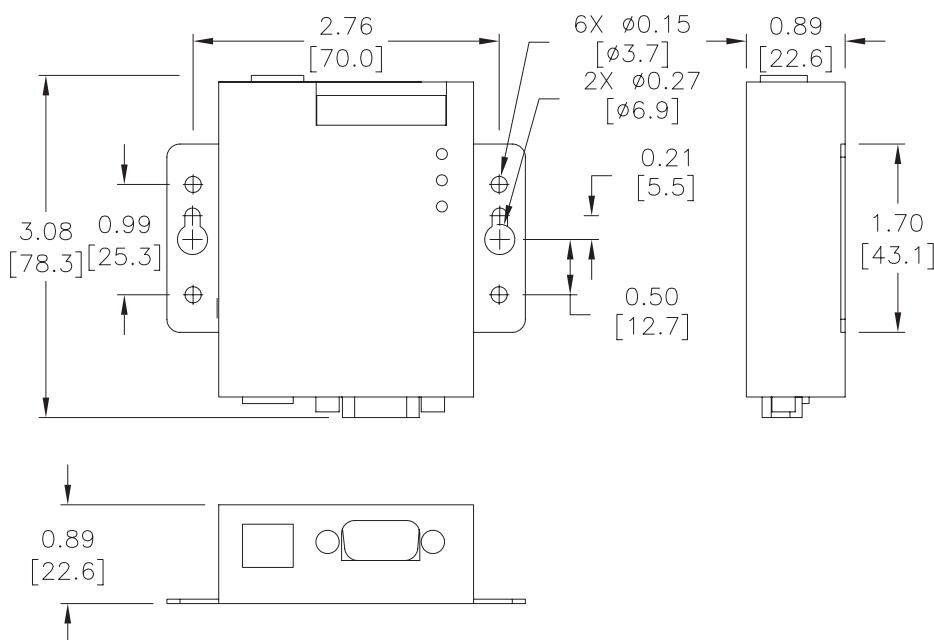
The Advanced Integrated motor/drives use RS-485. While the Advanced Integrated motor/drives can be wired for either 2- or 4-wire networks, 4-wire is require for use with SureMotion Pro due to the Firmware Download utility and the Status Monitor Screen.

Depending on the host controller's RS-485 implementation, either 2- or 4-wire RS-485 can be used for control. All RS-485 PLCs that have 2-wire capability (Productivity, BRX, Click, DirectLogic, etc.) can control the Advanced Integrated steppers.



| SureStep PC Adapter - STP-USB485-4W |                                            |
|-------------------------------------|--------------------------------------------|
| Price                               | \$130.00                                   |
| Drawing                             | PDF                                        |
| Communications                      | 2-wire RS-232<br>2- or 4-wire RS-485       |
| Configure With                      | Internal jumpers and external DIP switches |
| Compatible Cables                   | STP-232RJ11-CBL<br>STP-485DB9-CBL-2<br>USB |

### Dimensions = in [mm]





# Stepping System Accessories

## SureStep® Stepping System Encoders

### Replacement Encoders

The [STP-MTRA-ENC1](#) is a replacement for the encoder that comes standard with the STP-MTRD-17038E, STP-MTRD-23042E, and STP-MTRD-23065E integrated motor/drives. Note that the encoder included with (E) model advanced integrated motor/drives is internal and cannot be replaced.

The [AMT112Q-V](#) is a replacement for the encoder that comes standard with the STP-MTR(x)-xxxxE stand alone step motors.

Installation tool and mounting hardware is included with all replacement encoders. For more information and details on how to wire the replacement encoders, please see the SureStep User Manual.

### Optional Encoders

Optional encoders can be purchased separately for standard integrated motor/drives and standalone dual-shaft motors in all NEMA 14, 17, and 23 sizes, and also for STP-MTRAC-34xxxD motors (currently not available for STP-MTRx-34xxxD motors). All (D) model (dual-shaft) step motors come with pre-drilled holes in the rear end cap for easy encoder mounting. Pre-installed encoders on standalone dual-shaft motors and standard integrated motor/drives can be retrofitted with an appropriate optional encoder if desired. Please see the chart on the following page for encoder compatibility.

#### Features:

- Fixed resolutions include 400ppr or 1000ppr
- Configurable models have up to 4096ppr (default = 400ppr)
- Choose line driver or push-pull (totem) output signals



**STP-MTRA-ENC2**



**AMT112Q-V**



**STP-MTRA-ENC11**

| Sure Step Series Specifications – Encoders |         |                                                                                                                                                                                                                                 |                     |
|--------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Part Number                                | Price   | Description                                                                                                                                                                                                                     | Drawing             |
| <a href="#">STP-MTRA-ENC1</a>              | \$91.00 | SureStep incremental (quadrature) modular encoder, 5VDC, line driver (differential) output, 1000 ppr. For use with SureStep stepper motors with 5mm rear shaft. Installation tool and mounting hardware included.               | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC2</a>              | \$79.00 | SureStep incremental (quadrature) modular encoder, 5VDC, Push-pull (totem) output, 1000 ppr. For use with SureStep stepper motors with 5mm rear shaft. Installation tool and mounting hardware included.                        | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC3</a>              | \$89.00 | SureStep incremental (quadrature) modular encoder, 5VDC, line driver (differential) output, 400 ppr. For use with SureStep stepper motors with 5mm rear shaft. Installation tool and mounting hardware included.                | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC4</a>              | \$76.00 | SureStep incremental (quadrature) modular encoder, 5VDC, Push-pull (totem) output, 400 ppr. For use with SureStep stepper motors with 5mm rear shaft. Installation tool and mounting hardware included.                         | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC5</a>              | \$91.00 | SureStep incremental (quadrature) modular encoder, 5VDC, line driver (differential) output, 1000 ppr. For use with SureStep stepper motors with 1/4 inch rear shaft. Installation tool and mounting hardware included.          | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC6</a>              | \$79.00 | SureStep incremental (quadrature) modular encoder, 5VDC, Push-pull (totem) output, 1000 ppr. For use with SureStep stepper motors with 1/4 inch rear shaft. Installation tool and mounting hardware included.                   | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC7</a>              | \$89.00 | SureStep incremental (quadrature) modular encoder, 5VDC, line driver (differential) output, 400 ppr. For use with SureStep stepper motors with 1/4 inch rear shaft. Installation tool and mounting hardware included.           | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC8</a>              | \$76.00 | SureStep incremental (quadrature) modular encoder, 5VDC, Push-pull (totem) output, 400 ppr. For use with SureStep stepper motors with 1/4 inch rear shaft. Installation tool and mounting hardware included.                    | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC11</a>             | \$72.00 | SureStep incremental (quadrature) modular encoder, 5 VDC, line driver (differential) output, 1000 ppr. For use with SureStep stepper motors with 3/8in rear shaft. Installation hardware included. Requires STP-CBL-EAxx cable. | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC12</a>             | \$60.00 | SureStep incremental (quadrature) modular encoder, 5 VDC, push-pull (totem) output, 1000 ppr. For use with SureStep stepper motors with 3/8in rear shaft. Installation hardware included. Requires STP-CBL-EDxx cable.          | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC13</a>             | \$61.00 | SureStep incremental (quadrature) modular encoder, 5 VDC, line driver (differential) output, 400 ppr. For use with SureStep stepper motors with 3/8in rear shaft. Installation hardware included. Requires STP-CBL-EAxx cable.  | <a href="#">PDF</a> |
| <a href="#">STP-MTRA-ENC14</a>             | \$52.00 | SureStep incremental (quadrature) modular encoder, 5 VDC, push-pull (totem) output, 400 ppr. For use with SureStep stepper motors with 3/8in rear shaft. Installation hardware included. Requires STP-CBL-EDxx cable.           | <a href="#">PDF</a> |



# Stepping System Accessories

## SureStep® Stepping System Encoders

| Sure Step Series Encoder Compatibility |      |               |                   |               |                                         |                                                                                                      |
|----------------------------------------|------|---------------|-------------------|---------------|-----------------------------------------|------------------------------------------------------------------------------------------------------|
| Part Number                            | PPR  | Bore Diameter | Output Type       | Encoder Cable | PLC Compatibility                       | Motor Compatibility                                                                                  |
| <a href="#"><u>STP-MTRA-ENC1</u></a>   | 1000 | 5mm           | Line Driver       | STP-CBL-EAxx  | P2-HSI, P3-HSI, BRX*, CLICK C0-1xDxE-D* | STP-MTRx-14xxxD<br>STP-MTRx-14xxxE<br>STP-MTRx-17xxxD<br>STP-MTRx-17xxxE<br>Standard STP-MTRD-xxxxxE |
| <a href="#"><u>STP-MTRA-ENC2</u></a>   |      |               | Push-pull (totem) | STP-CBL-EDxx  | BRX*, CLICK C0-1xDxE-D*                 |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC3</u></a>   | 400  |               | Line Driver       | STP-CBL-EAxx  | P2-HSI, P3-HSI, BRX*, CLICK C0-1xDxE-D* |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC4</u></a>   |      |               | Push-pull (totem) | STP-CBL-EDxx  | BRX*, CLICK C0-1xDxE-D*                 |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC5</u></a>   | 1000 | 0.25 inch     | Line Driver       | STP-CBL-EAxx  | P2-HSI, P3-HSI, BRX*, CLICK C0-1xDxE-D* | STP-MTRx-23xxxD<br>STP-MTRx-23xxxE<br>STP-MTRAC-23xxxD                                               |
| <a href="#"><u>STP-MTRA-ENC6</u></a>   |      |               | Push-pull (totem) | STP-CBL-EDxx  | BRX*, CLICK C0-1xDxE-D*                 |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC7</u></a>   | 400  |               | Line Driver       | STP-CBL-EAxx  | P2-HSI, P3-HSI, BRX*, CLICK C0-1xDxE-D* |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC8</u></a>   |      |               | Push-pull (totem) | STP-CBL-EDxx  | BRX*, CLICK C0-1xDxE-D*                 |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC11</u></a>  | 1000 | 0.375 inch    | Line Driver       | STP-CBL-EAxx  | P2-HSI, P3-HSI, BRX*, CLICK C0-1xDxE-D* | STP-MTRAC-34xxxD                                                                                     |
| <a href="#"><u>STP-MTRA-ENC12</u></a>  |      |               | Push-pull (totem) | STP-CBL-EDxx  | BRX*, CLICK C0-1xDxE-D*                 |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC13</u></a>  | 400  |               | Line Driver       | STP-CBL-EAxx  | P2-HSI, P3-HSI, BRX*, CLICK C0-1xDxE-D* |                                                                                                      |
| <a href="#"><u>STP-MTRA-ENC14</u></a>  |      |               | Push-pull (totem) | STP-CBL-EDxx  | BRX*, CLICK C0-1xDxE-D*                 |                                                                                                      |

\* Requires [FC-ISO-C](#)

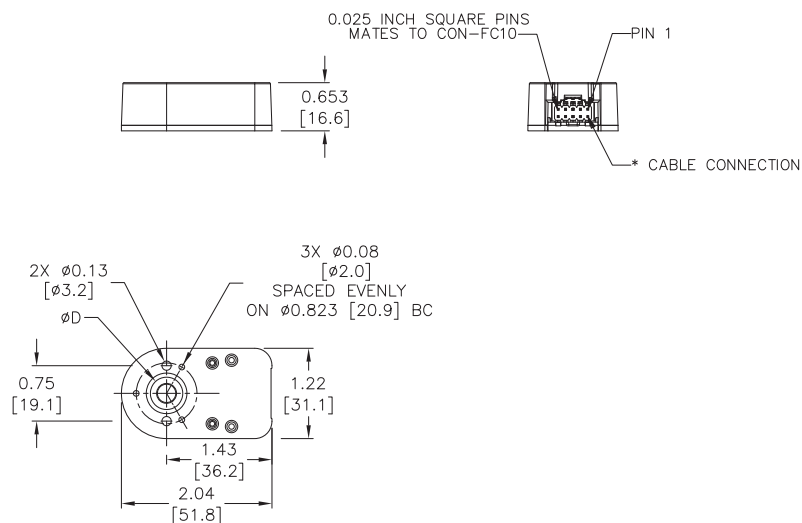


# Stepping System Accessories

## SureStep® Stepping System Encoders

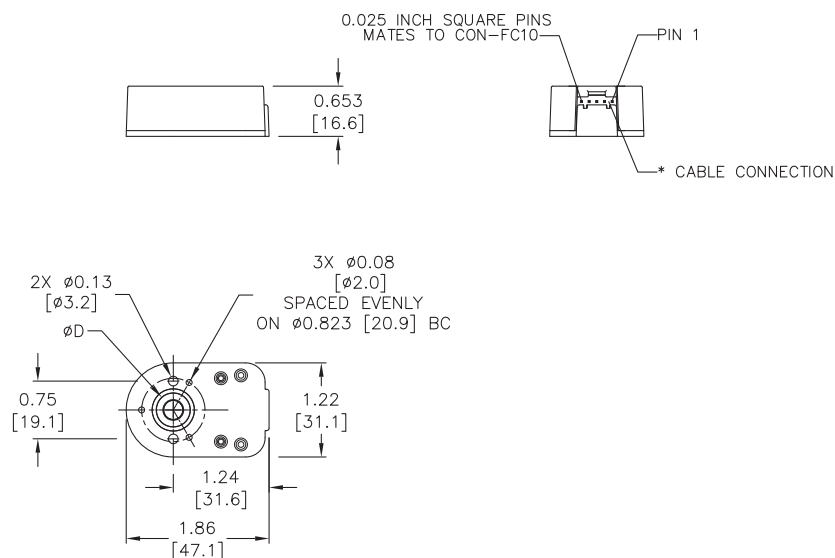
Dimensions = in [mm]

### STP-MTRA-ENC1, 3, 5, 7



| Bolt Hole Circles for Mounting                          |                                                      |
|---------------------------------------------------------|------------------------------------------------------|
| Encoder                                                 | Holes                                                |
| ENC1, ENC2,<br>ENC3, ENC4,<br>ENC5, ENC6,<br>ENC7, ENC8 | 2 holes @ 19.05mm (.75")<br>3 holes @ 20.9mm (.823") |

### STP-MTRA-ENC2, 4, 6, 8



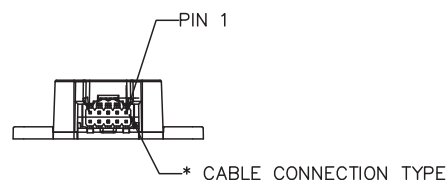
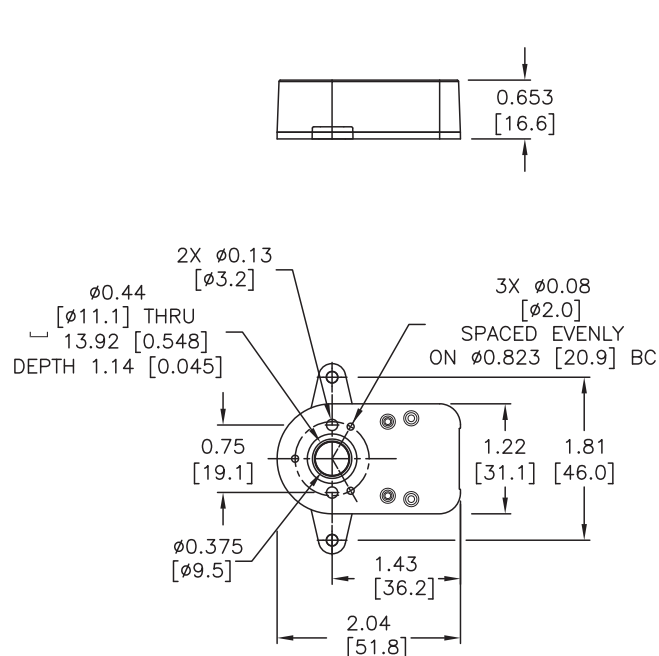


# Stepping System Accessories

## SureStep® Stepping System Encoders

**Dimensions = in [mm]**

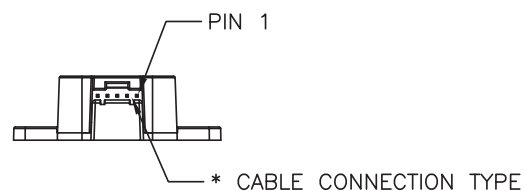
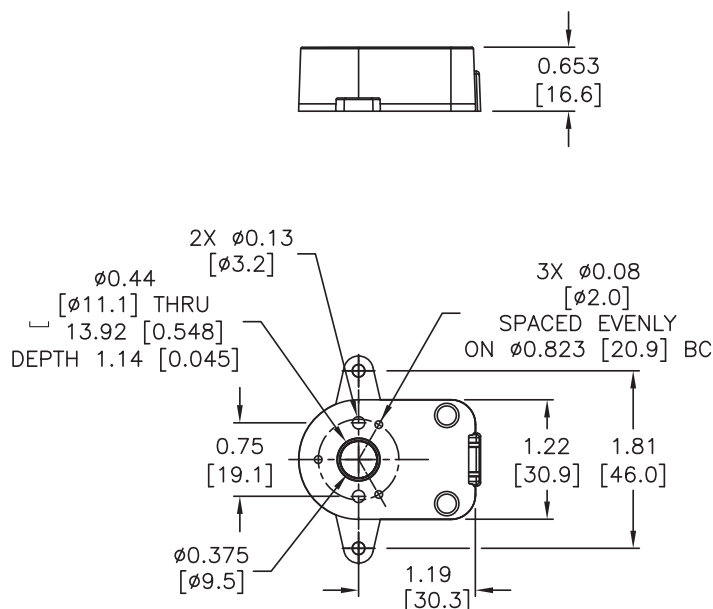
### STP-MTRA-ENC11, 13



### Bolt Hole Circles for Mounting

| Encoder                    | Holes                                                                              |
|----------------------------|------------------------------------------------------------------------------------|
| ENC11, ENC12, ENC13, ENC14 | 2 holes @ 19.05mm (.75")<br>3 holes @ 20.9mm (.823")<br>2 holes @ 46.02mm (1.812") |

### STP-MTRA-ENC12, 14





# Stepping System Cables

## SureStep® Cables

| SureStep Series – Stepping System Cables |          |                               |                          |                                                                                                                                                 |                                        |                     |                     |
|------------------------------------------|----------|-------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------|---------------------|
| Cable                                    | Price    | Purpose                       | Length                   | Use With                                                                                                                                        | Cable End Connectors                   | Drawing             |                     |
| <a href="#">STP-EXT-006</a>              | \$13.00  | motor to drive extension      | 6 ft                     | STP-MTR-xxxxx(x)                                                                                                                                | pigtail / Molex 43020-0401 connector   | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXT-010</a>              | \$14.50  |                               | 10 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXT-020</a>              | \$18.50  |                               | 20 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTH-006</a>             | \$26.50  |                               | 6 ft                     | STP-MTRH-xxxxx(x)                                                                                                                               | pigtail / Molex 39-01-2041 connector   | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTH-010</a>             | \$31.50  |                               | 10 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTH-020</a>             | \$38.00  |                               | 20 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTHW-006</a>            | \$52.00  |                               | 6 ft                     | STP-MTRHW-xxxxx(x)                                                                                                                              | Bulgin # PXP4011/06P/6065              | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTHW-010</a>            | \$63.00  |                               | 10 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTHW-020</a>            | \$95.00  |                               | 20 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTL-006</a>             | \$11.50  |                               | 6 ft                     | STP-MTRL-xxxxx(x)                                                                                                                               | pigtail / Molex 105308-22004 connector | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTL-010</a>             | \$14.50  |                               | 10 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTL-020</a>             | \$18.00  |                               | 20 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTW-006</a>             | \$51.00  |                               | 6 ft                     | STP-MTRW-xxxxx(x)                                                                                                                               | Bulgin # PXP4011/06P/6065              | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTW-010</a>             | \$62.00  |                               | 10 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXTW-020</a>             | \$90.00  |                               | 20 ft                    |                                                                                                                                                 |                                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-EXT42-006</a>            | \$26.00  |                               | motor to drive extension | 6 ft                                                                                                                                            | STP-MTRAC-42xxxx                       | 10-pin / pigtail    | <a href="#">PDF</a> |
| <a href="#">STP-EXT42-010</a>            | \$31.00  |                               |                          | 10 ft                                                                                                                                           |                                        |                     | <a href="#">PDF</a> |
| <a href="#">STP-EXT42-020</a>            | \$44.50  |                               |                          | 20 ft                                                                                                                                           |                                        |                     | <a href="#">PDF</a> |
| <a href="#">STP-EXT42H-006</a>           | \$26.00  | 6 ft                          |                          | STP-MTRACH-42xxxxx                                                                                                                              | <a href="#">PDF</a>                    |                     |                     |
| <a href="#">STP-EXT42H-010</a>           | \$31.00  | 10 ft                         |                          |                                                                                                                                                 | <a href="#">PDF</a>                    |                     |                     |
| <a href="#">STP-EXT42H-020</a>           | \$44.50  | 20 ft                         |                          |                                                                                                                                                 | <a href="#">PDF</a>                    |                     |                     |
| <a href="#">STP-232RJ11-CBL*</a>         | \$11.00  | programming/<br>communication | 10 ft                    | STP-DRV-4850, STP-DRV-80100                                                                                                                     | DB9 female / RJ11(6P4C)                | <a href="#">PDF</a> |                     |
| <a href="#">STP-232HD15-CBL-2**</a>      | \$17.00  | communication                 | 6.6 ft                   | STP-DRV-4850, STP-DRV-80100<br>DL06, D2-250-1, D2-260                                                                                           | HD 15-pin male / RJ12 6-pin<br>plug    | n/a                 |                     |
| <a href="#">STP-232RJ12-CBL-2**</a>      | \$10.50  | communication                 | 6.6 ft                   | STP-DRV-4850, STP-DRV-80100<br>DL05, CLICK                                                                                                      | RJ11 (6P4C) plug / RJ12<br>6-pin plug  | n/a                 |                     |
| <a href="#">STP-CBL-CA6</a>              | \$19.00  | control cable                 | 6 ft                     | STP-MTRD-17038<br>STP-MTRD-17038E                                                                                                               | 11-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-CA10</a>             | \$23.00  | control cable                 | 10 ft                    |                                                                                                                                                 | 11-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-CA20</a>             | \$33.50  | control cable                 | 20 ft                    |                                                                                                                                                 | 11-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EA6</a>              | \$19.00  | encoder cable                 | 6 ft                     | STP-MTRD-xxxxxE<br>STP-MTRA-ENC1, STP-MTRA-ENC3<br>STP-MTRA-ENC5, STP-MTRA-ENC7<br>STP-MTRA-ENC11, STP-MTRA-ENC13<br>(for line driver encoders) | 10-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EA10</a>             | \$23.00  | encoder cable                 | 10 ft                    |                                                                                                                                                 | 10-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EA20</a>             | \$33.50  | encoder cable                 | 20 ft                    |                                                                                                                                                 | 10-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EB3</a>              | \$60.00  | encoder cable                 | 3 ft                     | AMT112Q-V<br>AMT112S-V<br>(for both line driver and push-pull (totem)<br>encoders)                                                              | 17-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EB6</a>              | \$83.00  | encoder cable                 | 6 ft                     |                                                                                                                                                 | 17-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EB10</a>             | \$113.00 | encoder cable                 | 10 ft                    |                                                                                                                                                 | 17-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-EB20</a>             | \$187.00 | encoder cable                 | 20 ft                    |                                                                                                                                                 | 17-pin / pigtail                       | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-ED6</a>              | \$34.00  | encoder cable                 | 6 ft                     | STP-MTRA-ENC2, STP-MTRA-ENC4<br>STP-MTRA-ENC6, STP-MTRA-ENC8<br>STP-MTRA-ENC12, STP-MTRA-ENC14<br>(for push-pull (totem) encoders)              | 5-pin / pigtail                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-ED10</a>             | \$46.00  | encoder cable                 | 10 ft                    |                                                                                                                                                 | 5-pin / pigtail                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-CBL-ED20</a>             | \$55.00  | encoder cable                 | 20 ft                    |                                                                                                                                                 | 5-pin / pigtail                        | <a href="#">PDF</a> |                     |
| <a href="#">STP-CON-1</a>                | \$18.00  | replacement connector kit     | n/a                      | STP-DRV-4845 & -6575                                                                                                                            | -                                      | n/a                 |                     |
| <a href="#">STP-CON-2</a>                | \$18.00  | replacement connector kit     | n/a                      | STP-DRV-4850 & 80100                                                                                                                            | -                                      | n/a                 |                     |

\* Programming/communication cable STP-232RJ11-CBL is available for spare or replacement purposes.  
(One cable is included with each software programmable drive.)

\*\* Refer to the ZIPLinks Wiring Solutions section for complete information regarding cables STP-232HD15-CBL-2 and STP-232RJ12-CBL-2.

## SureStep® Cables, *continued*

| SureStep Series – Stepping System Cables |         |                           |        |                  |                                |                     |
|------------------------------------------|---------|---------------------------|--------|------------------|--------------------------------|---------------------|
| Cable                                    | Price   | Purpose                   | Length | Use With         | Cable End Connectors           | Drawing             |
| <b><u>STP-CON-3</u></b>                  | \$36.50 | replacement connector kit | n/a    | STP-MTRD-xxxxR   | -                              | n/a                 |
| <b><u>STP-CON-4</u></b>                  | \$18.00 | replacement connector kit | n/a    | STP-DRVA-RC-050A | -                              | n/a                 |
| <b><u>STP-CON-5</u></b>                  | \$18.00 | replacement connector kit | n/a    | STP-DRV-4830     | -                              | <a href="#">PDF</a> |
| <b><u>STP-CON-6</u></b>                  | \$23.50 | replacement connector kit | n/a    | STP-DRVAC-24025  | -                              | n/a                 |
| <b><u>STP-485DB9-CBL-2</u></b>           | \$42.00 | 4-wire programming cable  | 6.5 ft | STP-MTRD-xxxxR   | DB9 / Phoenix 5-conductor plug | <a href="#">PDF</a> |

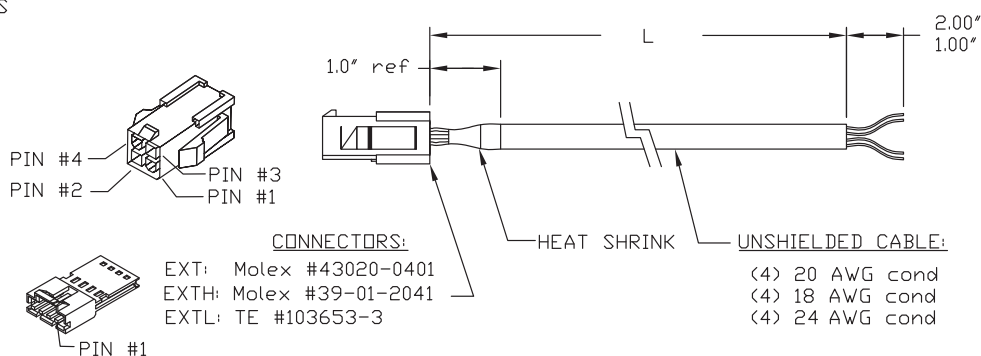
### STP-EXT(x)-0xx Extension Cable Wiring Diagram

EXT &amp; EXTH CABLES

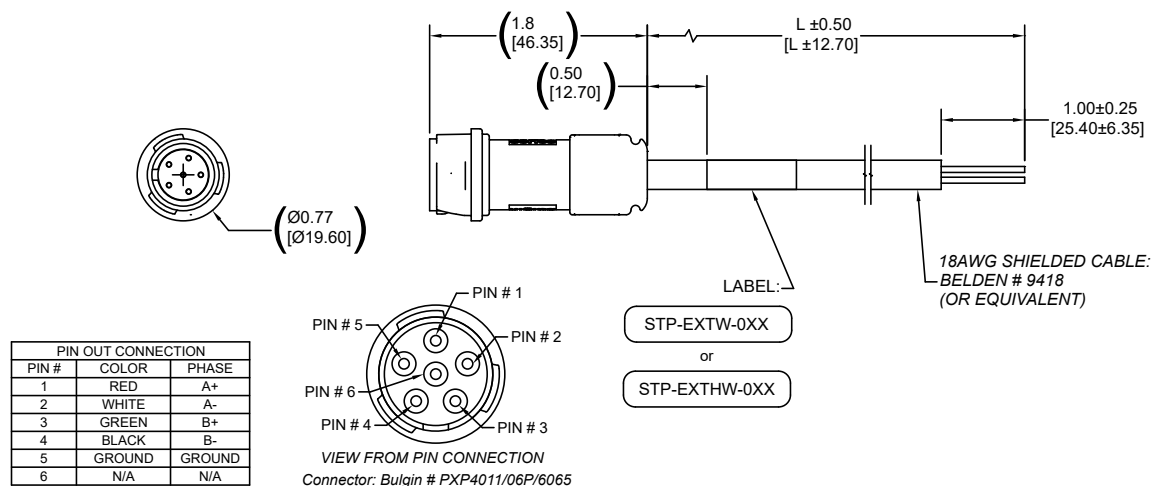
| PIN# | COLOR |
|------|-------|
| 1    | RED   |
| 2    | WHITE |
| 3    | GREEN |
| 4    | BLACK |

EXTL CABLES

| PIN# | COLOR |
|------|-------|
| 1    | RED   |
| 2    | WHITE |
| 3    | GREEN |
| 4    | BLACK |



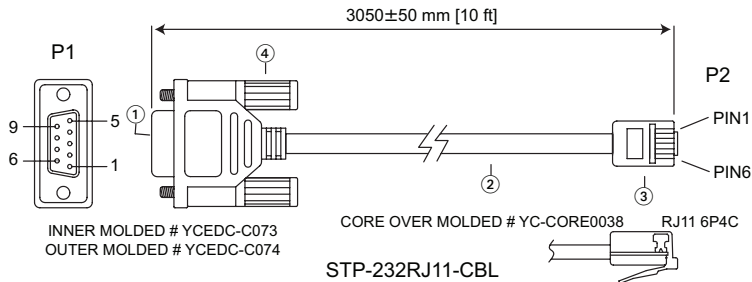
### STP-EXTW-0xx and STP-EXTHW-0xx Extension Cable Wiring Diagram



# Stepping System Cables

## SureStep® Cables, continued

### STP-232RJ11-CBL Programming Cable Wiring Diagram

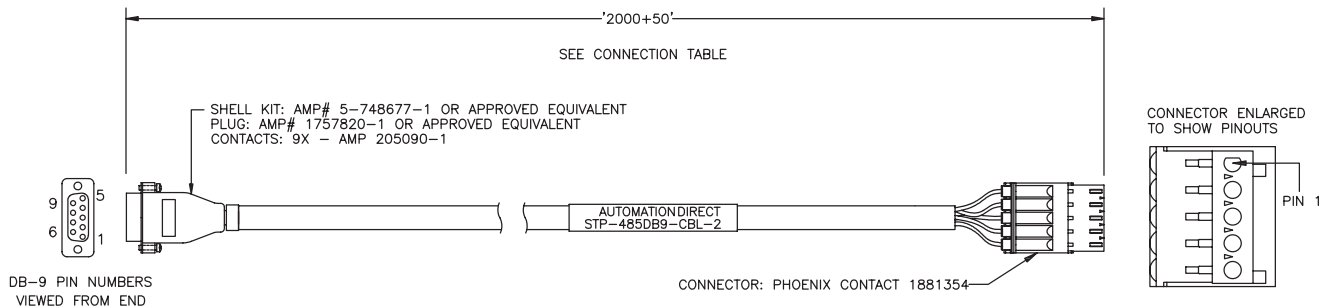


| WIRE CONNECTION |     |     |                |
|-----------------|-----|-----|----------------|
| (DB9) P1        |     |     | P2 (RJ11 6P4C) |
| 2               | RX  | TX  | 3              |
| 3               | TX  | RX  | 5              |
| 4               | nc  | nc  | 4              |
| 5               | GND | GND | 2              |

|   |                                                                               |
|---|-------------------------------------------------------------------------------|
| ① | DB 9P FEMALE CONNECTOR SHELL: FRONT NICKEL BACK TIN<br>INSULATOR COLOR: BLACK |
| ② | CABLE: CAT-5 UTP 24AWG (7/0.203BA*2PR) 100MHz<br>COLOR: BLACK OD: 4.5mm       |
| ③ | RJ11 6P4C PLATED GOLD 3U"                                                     |
| ④ | SCREW: #4-40UNC PD40*175TNP COLOR: BLACK                                      |

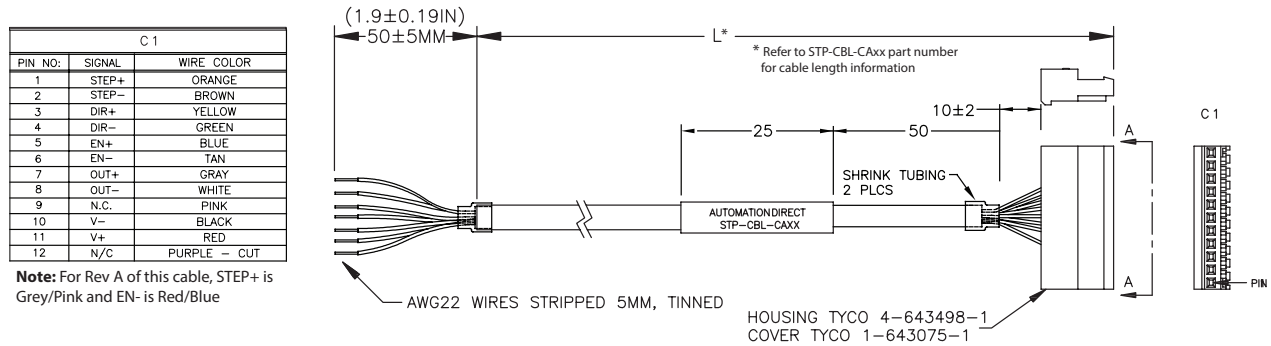
### STP-485DB9-CBL-2 4-wire Programming Cable Wiring Diagram

| CONNECTION CHART |            |            |             |                |
|------------------|------------|------------|-------------|----------------|
| DB-9 CONN PIN    | DB9 SIGNAL | WIRE COLOR | PHOENIX PIN | PHOENIX SIGNAL |
| 2                | TX+        | RED        | 5           | RX+            |
| 1                | TX-        | ORANGE     | 4           | RX-            |
| 3                | RX+        | BLACK      | 3           | TX+            |
| 4                | RX-        | BROWN      | 2           | TX-            |
| 5                | GND        | YELLOW     | 1           | GND            |
| METAL HOUSING    | SHIELD     | SHIELD     | N/C         | N/C            |

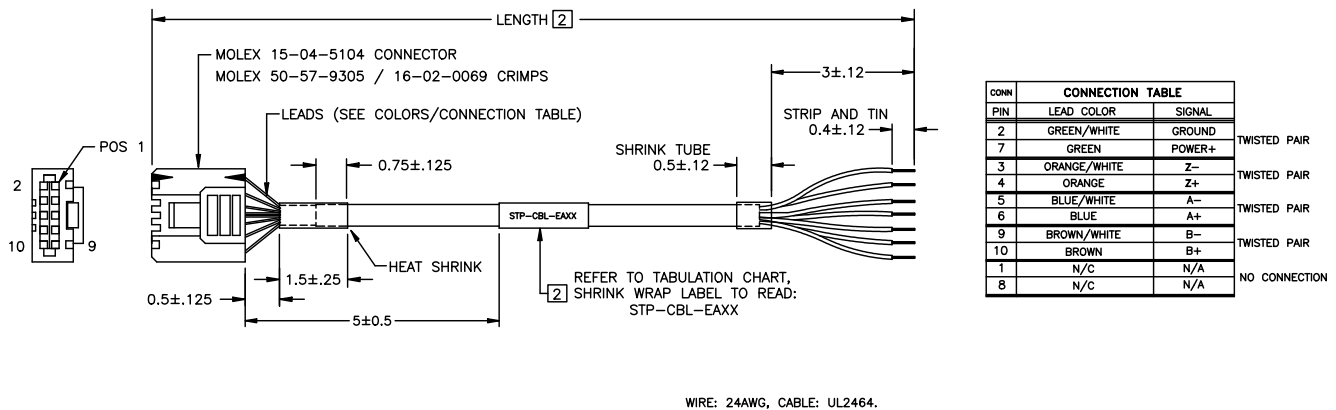


## SureStep® Cables, continued

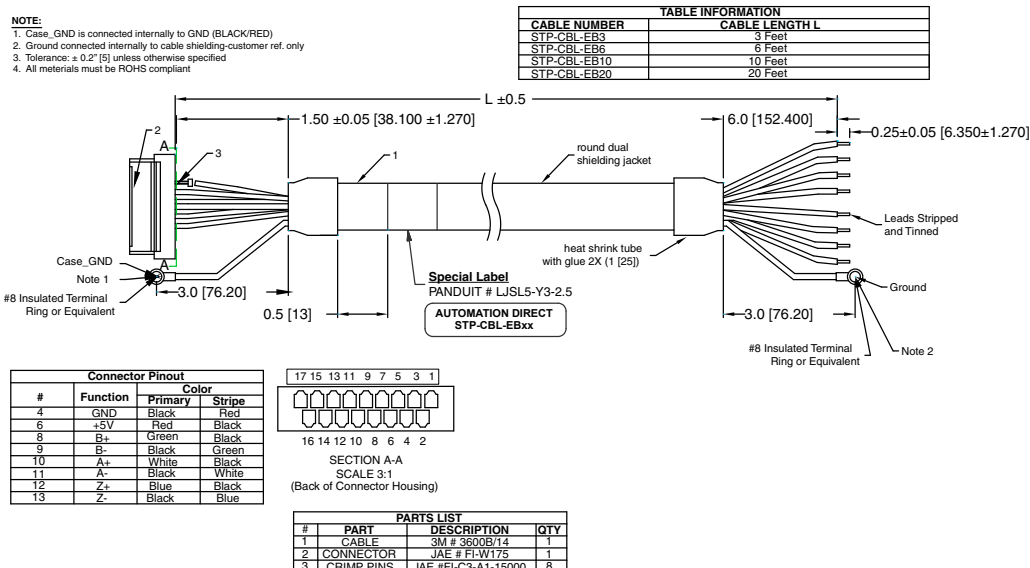
### STP-CBL-CAxx Control Cable Wiring Diagram



### STP-CBL-EAxx Encoder Cable Wiring Diagram



### STP-CBL-EBxx Encoder Cable Wiring Diagram





# Stepping System Accessories

## AMT Series Stepping System Encoders

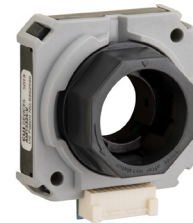
| AMT Series Encoders, continued   |         |                                                                                                                                                                                                                                                        |                            |
|----------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Part Number                      | Price   | Description                                                                                                                                                                                                                                            | Drawing                    |
| <a href="#"><u>AMT132S-V</u></a> | \$34.50 | CUI Devices incremental (quadrature) modular encoder, 5 VDC, radial, push-pull (totem) output, configurable up to 4096 ppr. For use with NEMA 34 and 42 dual shaft motors.                                                                             | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>AMT132Q-V</u></a> | \$38.50 | CUI Devices incremental (quadrature) modular encoder, 5 VDC, radial, line driver (differential) output, configurable up to 4096 ppr. For use with NEMA 34 and 42 dual shaft motors.                                                                    | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>AMT332S-V</u></a> | \$38.50 | CUI Devices incremental (quadrature)/commutation modular encoder, 5 VDC, radial, push-pull (totem) encoder output, configurable up to 4096 ppr, push-pull (totem) commutation output. For use with NEMA 34 and 42 dual shaft motors.                   | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>AMT332D-V</u></a> | \$42.50 | CUI Devices incremental (quadrature)/commutation modular encoder, 5 VDC, radial, line driver (differential) encoder output, configurable up to 4096 ppr, line driver (differential) commutation output. For use with NEMA 34 and 42 dual shaft motors. | <a href="#"><u>PDF</u></a> |

See Accessories section for configuration and signal cables.

CUI Devices Datasheets provide detailed encoder specifications. These datasheets can be found on each encoder's web page at [www.automationdirect.com](http://www.automationdirect.com).



AMT132S-V



AMT332S-V

| AMT Series Encoder Accessories           |        |                                                                                                                                                                                                                                      |
|------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number                              | Price  | Description                                                                                                                                                                                                                          |
| <a href="#"><u>CUI-KIT-1</u></a>         | \$6.50 | CUI Devices encoder accessory kit, replacement. For use with CUI Devices AMT102 encoders. Includes (1) AMT102 base, (1) AMT102 wide base, and (1) AMT10 sleeve kit (9 sleeves sized from 2-8mm).                                     |
| <a href="#"><u>CUI-KIT-2</u></a>         | \$6.50 | CUI Devices encoder accessory kit, replacement. For use with CUI Devices AMT103 encoders. Includes (1) AMT standard base, (1) AMT standard wide base, and (1) AMT10 sleeve kit (9 sleeves sized from 2-8mm).                         |
| <a href="#"><u>CUI-KIT-3</u></a>         | \$6.50 | CUI Devices encoder accessory kit, replacement. For use with CUI Devices AMT11, AMT21, and AMT31 encoders. Includes (1) AMT standard base, (1) AMT standard wide base, and (1) AMT standard sleeve kit (9 sleeves sized from 2-8mm). |
| <a href="#"><u>CUI-KIT-4</u></a>         | \$6.50 | CUI Devices encoder sleeve kit, replacement. For use with CUI Devices AMT13 and AMT33 encoders. Includes (8) sleeves sized from 9-14mm.                                                                                              |
| <a href="#"><u>STP-MTRA-SCRWKT-1</u></a> | \$5.50 | SureStep encoder mounting screw kit, for use with all stepper encoders.                                                                                                                                                              |



CUI-KIT-1



CUI-KIT-2



CUI-KIT-3



CUI-KIT-4



STP-MTRA-SCRWKT-1