



# Stepping System Drives

## SureStep Series – Microstepping Drives Features Comparison

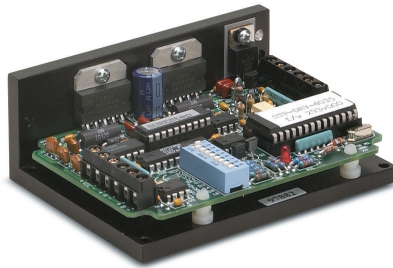
| Drive Model                 |                 | Standard Microstepping Drives                   |                                        |                                                                                                             |                                        |                                                                                                          |                                        | Advanced Microstepping Drives                                                                                                                                                                                    |                                        |                                                                                                                                     |
|-----------------------------|-----------------|-------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                             |                 | STP-DRVAC-24025                                 | STP-DRV-4830                           | STP-DRV-4845                                                                                                | STP-DRV-6575                           | STP-MTRD-x                                                                                               | STP-DRV-4035                           | STP-DRV-4850                                                                                                                                                                                                     | STP-DRV-80100                          | STP-MTRD-xR                                                                                                                         |
| Price                       |                 | \$222.00                                        | \$77.00                                | \$93.00                                                                                                     | \$107.00                               | See Integrated Motor/Drives section                                                                      | Retired                                | \$278.00                                                                                                                                                                                                         | \$332.00                               | See Integrated Motor/Drives section                                                                                                 |
| Drive Type                  |                 | Microstepping drive with pulse input            |                                        |                                                                                                             |                                        | Integrated stepper motor/drive                                                                           | Micro-stepping drive with pulse input  | Advanced microstepping drive with pulse or analog input, serial communication;includes programming/communication cable STP-232RJ11-CBL                                                                           |                                        | Advanced integrated stepper motor/drive with internal encoder                                                                       |
|                             |                 | enclosed                                        |                                        |                                                                                                             |                                        | enclosed                                                                                                 | open-frame                             | enclosed                                                                                                                                                                                                         |                                        | enclosed                                                                                                                            |
| Output Current              |                 | 0.6–2.5 A/phase                                 | 0.35–3.0 A/phase                       | 0.8–4.5 A/phase                                                                                             | 1.0–7.5 A/phase                        | –                                                                                                        | 0.4–3.5 A/phase                        | 0.1–5 A/phase                                                                                                                                                                                                    | 0.1–10 A/phase                         | –                                                                                                                                   |
| Input Voltage               |                 | nominal: 120/240 VAC<br>range: 90–240 VAC       | nominal: 12–48 VDC<br>range: 10–53 VDC | nominal: 24–48 VDC<br>range: 20–60 VDC                                                                      | nominal: 24–75 VDC<br>range: 20–85 VDC | nominal: 12-48 VDC (NEMA 17)<br>12-70 VDC (NEMA 23)<br>range: 10-55 VDC (NEMA 17)<br>11-74 VDC (NEMA 23) | nominal: 12–32 VDC<br>range: 12–42 VDC | nominal: 24–48 VDC<br>range: 18– 53 VDC                                                                                                                                                                          | nominal: 24–80 VDC<br>range: 18–88 VDC | nominal: 12-48 VDC (NEMA 17)<br>12-70 VDC (NEMA 23, 24)<br>range: 10-55 VDC (NEMA 17)<br>11-74 VDC (NEMA 23)<br>10-75 VDC (NEMA 24) |
| Configuration Method        |                 | rotary dial, dip switches, jumpers              |                                        |                                                                                                             |                                        | dip switches                                                                                             |                                        | SureMotion Pro software ( <a href="#">SM-PRO</a> : free download)                                                                                                                                                |                                        |                                                                                                                                     |
| Amplifier Type              |                 | MOSFET, dual H-bridge, 4-quadrant               |                                        |                                                                                                             |                                        | Dual H-bridge, 4 quadrant                                                                                | MOSFET, dual H-bridge, bipolar chopper | MOSFET, dual H-bridge, 4-quadrant                                                                                                                                                                                |                                        | Dual H-bridge, 4 quadrant                                                                                                           |
| Current Control             |                 | 4-state PWM @ 20 kHz                            | 4-state PWM @ 16 kHz                   | 4-state PWM @ 20 kHz                                                                                        |                                        | 4-state PWM @ 16 kHz                                                                                     | 4-state PWM @ 20 kHz                   |                                                                                                                                                                                                                  |                                        |                                                                                                                                     |
| Microstep Resolution        |                 | dipswitch selectable                            |                                        |                                                                                                             |                                        |                                                                                                          | software selectable                    |                                                                                                                                                                                                                  |                                        |                                                                                                                                     |
|                             |                 | 200 to 25,600 steps/rev                         |                                        | 200 to 20,000 steps/rev                                                                                     |                                        | 200 to 25,600 steps/rev                                                                                  | 400 to 10,000 steps/rev                | 200 to 51200 steps/rev                                                                                                                                                                                           |                                        |                                                                                                                                     |
| Modes of Operation          | Step & Dir      | YES                                             | YES                                    | YES                                                                                                         | YES                                    | YES                                                                                                      | YES                                    | YES                                                                                                                                                                                                              | YES                                    | YES                                                                                                                                 |
|                             | CW/CCW          | YES                                             | YES                                    | YES                                                                                                         | YES                                    | YES                                                                                                      | n/a                                    | YES                                                                                                                                                                                                              | YES                                    | YES                                                                                                                                 |
|                             | A/B Quad        | n/a                                             | n/a                                    | n/a                                                                                                         | n/a                                    | n/a                                                                                                      | n/a                                    | YES                                                                                                                                                                                                              | YES                                    | YES                                                                                                                                 |
|                             | Oscillator      | n/a                                             | n/a                                    | n/a                                                                                                         | n/a                                    | n/a                                                                                                      | n/a                                    | YES                                                                                                                                                                                                              | YES                                    | YES                                                                                                                                 |
|                             | Serial Indexing | n/a                                             | n/a                                    | n/a                                                                                                         | n/a                                    | n/a                                                                                                      | n/a                                    | YES                                                                                                                                                                                                              | YES                                    | YES                                                                                                                                 |
| Digital Input Signals       | Step/Pulse      | step & direction, CW/CCW step                   |                                        |                                                                                                             |                                        | step & direction, CW/CCW step                                                                            | step & direction                       | step & direction, CW/CCW step, A/B quadrature, run/stop & direction, jog CW/CCW, CW/CCW limits                                                                                                                   |                                        |                                                                                                                                     |
|                             | Direction       |                                                 |                                        |                                                                                                             |                                        |                                                                                                          |                                        |                                                                                                                                                                                                                  |                                        |                                                                                                                                     |
|                             | Enable          | motor disable                                   |                                        |                                                                                                             |                                        | motor enable                                                                                             | motor disable                          | motor enable, alarm reset, speed select (oscillator mode)                                                                                                                                                        |                                        |                                                                                                                                     |
| Analog Input                |                 | n/a                                             | n/a                                    | n/a                                                                                                         | n/a                                    | n/a                                                                                                      | n/a                                    | speed control                                                                                                                                                                                                    |                                        | signal range, offset, dead band, and filtering                                                                                      |
| Output Signal               |                 | fault                                           | n/a                                    | fault                                                                                                       | fault                                  | fault                                                                                                    | n/a                                    | fault, motion, tach                                                                                                                                                                                              |                                        | brake, fault, motion, tach                                                                                                          |
| Communication Interface     |                 | n/a                                             | n/a                                    | n/a                                                                                                         | n/a                                    | n/a                                                                                                      | n/a                                    | YES (programming/communication cable included)                                                                                                                                                                   |                                        |                                                                                                                                     |
| Non-volatile Memory Storage |                 | n/a                                             | n/a                                    | n/a                                                                                                         | n/a                                    | n/a                                                                                                      | n/a                                    | YES                                                                                                                                                                                                              |                                        |                                                                                                                                     |
| Idle Current Reduction      |                 | YES                                             |                                        |                                                                                                             |                                        |                                                                                                          |                                        |                                                                                                                                                                                                                  |                                        |                                                                                                                                     |
| Self Test                   |                 | YES                                             |                                        |                                                                                                             |                                        |                                                                                                          |                                        |                                                                                                                                                                                                                  |                                        |                                                                                                                                     |
| Additional Features         |                 | Step pulse noise filter, accepts AC power input | Step pulse noise filter                | Load inertia (anti-resonance & damping feature to improve motor performance)<br><br>Step pulse noise filter |                                        |                                                                                                          | n/a                                    | Anti-resonance (Electronic Damping)<br>Auto setup<br>Microstep emulation<br>Torque ripple smoothing<br>(allows for fine adjustment of phase in the range 0.25 to 1.5 rps)<br>Waveform (command signal) smoothing |                                        |                                                                                                                                     |

Refer to Specifications Tables for detailed specifications.



# Stepping System Drives

## SureStep® Standard Microstepping Drives



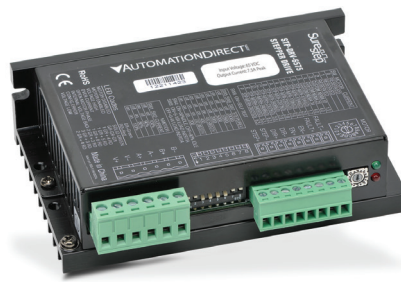
### SureStep Series Specifications – Standard Microstepping Drives

| Microstepping Drive                          |                                | <b>STP-DRV-4035</b>                                                                                                                         | <b>STP-DRV-4830</b>                                                                                                                                                                                                        |
|----------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Drive Type</b>                            |                                | Microstepping drive with pulse input                                                                                                        | Microstepping drive with pulse input                                                                                                                                                                                       |
| <b>Drawing</b>                               |                                | PDF                                                                                                                                         | PDF                                                                                                                                                                                                                        |
| <b>Output Current</b>                        |                                | Selectable from 0.4 to 3.5 A/phase (maximum output power is 140W)                                                                           | Selectable from 0.35 to 3.0 A/phase (peak of sine)                                                                                                                                                                         |
| <b>Input Voltage (external p/s required)</b> |                                | Nominal: 12–32 VDC<br>Range: 12–42 VDC (including ripple voltage)                                                                           | Nominal: 12–48 VDC<br>Range: 10–53 VDC                                                                                                                                                                                     |
| <b>Configuration Method</b>                  |                                | DIP switches                                                                                                                                | DIP switches                                                                                                                                                                                                               |
| <b>Amplifier Type</b>                        |                                | MOSFET, dual H-bridge, bipolar chopper                                                                                                      | MOSFET, dual H-bridge, 4-quadrant                                                                                                                                                                                          |
| <b>Current Control</b>                       |                                | 4-state PWM @ 20 kHz                                                                                                                        | 4-state PWM @ 16 kHz                                                                                                                                                                                                       |
| <b>Protection</b>                            |                                | n/a                                                                                                                                         | n/a                                                                                                                                                                                                                        |
| <b>Recommended Input Fusing</b>              |                                | Fuse: 4A fast-acting; ADC # AGC4; Holder: ADC # DN-F6L110                                                                                   | Fuse: 3A fast-acting; ADC # AGC3; Holder: ADC # DN-F6L110                                                                                                                                                                  |
| <b>Input Signals</b>                         | <b>Input Circuit</b>           | Opto-coupler input with 440Ω resistance (5 to 15 mA input current); Logic Low is input 0.8 VDC or less; Logic High is input 4VDC or higher. | 5–24 VDC nominal (range: 4–30 VDC); (5mA @ 4V; 15 mA @ 30V); Optically isolated, differential                                                                                                                              |
|                                              | <b>Step/Pulse</b>              | Motor steps on falling edge of pulse and minimum pulse width is 0.5 μs (1MHz)                                                               | Minimum pulse width = 1μs. Maximum pulse frequency = 150kHz or 500kHz (user selectable).                                                                                                                                   |
|                                              | <b>Direction</b>               | Needs to change at least 2 microseconds before a step pulse is sent                                                                         | FU NCTIONS: step & direction, CW/CCW step                                                                                                                                                                                  |
|                                              | <b>Enable</b>                  | Logic 1 will disable current to the motor (current is enabled with no hook-up or logic 0)                                                   | FUNCTION: disable motor when closed                                                                                                                                                                                        |
|                                              | <b>Analog</b>                  | n/a                                                                                                                                         | n/a                                                                                                                                                                                                                        |
| <b>Output Signal</b>                         |                                | n/a                                                                                                                                         | n/a                                                                                                                                                                                                                        |
| <b>Features</b>                              | <b>Current Reduction</b>       | n/a                                                                                                                                         | n/a                                                                                                                                                                                                                        |
|                                              | <b>Idle Current Reduction</b>  | 0% or 50% reduction<br>(Idle current setting is active if motor is at rest for 1 second or more)                                            | 90% or 50% of running current.<br>(Holding torque is reduced by the same %.)                                                                                                                                               |
|                                              | <b>Microstep Resolution</b>    | 400 (200x2), 1,000 (200x5), 2,000 (200x10), or 10,000 (200x50) steps/rev                                                                    | 200, 400, 800, 1000, 1600, 2000, 3200, 4000, 5000, 6000, 6400, 8000, 10000, 12800, 20000, 25600                                                                                                                            |
|                                              | <b>Phase Current Setting</b>   | 0.4 to 3.5 A/phase with 32 selectable levels                                                                                                | (peak)(0.35–3.0)<br>(0.25–2.3) RMS                                                                                                                                                                                         |
|                                              | <b>Self Test</b>               | Uses half-step to rotate 1/2 revolution in each direction at 100 steps/second.                                                              | Automatically rotates the motor back and forth two turns in each direction in order to confirm that the motor is operational.                                                                                              |
|                                              | <b>Step Pulse Noise Filter</b> | n/a                                                                                                                                         | Select 150kHz or 500kHz                                                                                                                                                                                                    |
|                                              | <b>Load Inertia</b>            | n/a                                                                                                                                         | n/a                                                                                                                                                                                                                        |
| <b>Connectors</b>                            |                                | Screw terminal blocks with AWG 18 maximum wire size                                                                                         | DEGSON 15EDGK-5.08-02P-14-00AH 2-pin power connector<br>DEGSON 15EDGK-3.1.04P-14-00A(H) 4-pin motor connector<br>DEGSON 15EDGK-3.5-06P-14-00A(H) 6-pin I/O connector<br>ADC part STP-CON-5 contains replacement connectors |
| <b>Maximum Humidity</b>                      |                                | 90% non-condensing                                                                                                                          | 90% non-condensing                                                                                                                                                                                                         |
| <b>Storage/Ambient Temperature</b>           |                                | -20 to 80 °C [-4 to 176 °F]                                                                                                                 | 0 to 40 °C [32 to 104 °F] (mount to suitable heat sink)                                                                                                                                                                    |
| <b>Operating Temperature</b>                 |                                | 0 to 55 °C [32 to 131 °F] recommended; 70 °C [158 °F] maximum                                                                               | 0 to 85 °C [32 to 185 °F] (interior of electronics section)                                                                                                                                                                |
| <b>Drive Cooling Method</b>                  |                                | Natural convection (mount drive to metal surface to dissipate heat)                                                                         | Natural convection (mount drive to metal surface)                                                                                                                                                                          |
| <b>Mounting</b>                              |                                | (4) #4 screws to mount on wide side; (2) #4 screws to mount on narrow side                                                                  | (2) #6 screws to mount to metal surface                                                                                                                                                                                    |
| <b>Weight</b>                                |                                | 9.3 oz. [264 g]                                                                                                                             | 3.0 oz [85.9 g]                                                                                                                                                                                                            |
| <b>Agency Approvals</b>                      |                                | CE                                                                                                                                          | CE                                                                                                                                                                                                                         |



# Stepping System Drives

## SureStep® Standard Microstepping Drives, continued



| SureStep Series Specifications – Standard Microstepping Drives |                         |                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|----------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Microstepping Drive                                            |                         | STP-DRV-4845                                                                                                                                                                                                            | STP-DRV-6575                                                                                                                                                                                                       |
| Drive Type                                                     |                         | Microstepping drive with pulse input                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Drawing                                                        |                         | <a href="#">PDF</a>                                                                                                                                                                                                     | <a href="#">PDF</a>                                                                                                                                                                                                |
| Output Current                                                 |                         | Selectable from 0.8–4.5 A/phase (peak of sine)                                                                                                                                                                          | Selectable from 1.0–7.5 A/phase (peak of sine)                                                                                                                                                                     |
| Input Voltage<br>(external p/s required)                       |                         | Nominal: 24–48 VDC<br>Range: 20–60 VDC                                                                                                                                                                                  | Nominal: 24–65 VDC<br>Range: 20–85 VDC                                                                                                                                                                             |
| Configuration Method                                           |                         | Rotary dial, DIP switches, jumpers                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Amplifier Type                                                 |                         | MOSFET, dual H-bridge, 4-quadrant                                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Current Control                                                |                         | 4-state PWM @ 20 kHz                                                                                                                                                                                                    |                                                                                                                                                                                                                    |
| Protection                                                     |                         | n/a                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Recommended Input Fusing                                       |                         | Fuse: 4A fast-acting; ADC #AGC4; Holder: ADC # DN-F6L110   Fuse: 7A fast-acting; ADC #AGC7; Holder: ADC # DN-F6L110                                                                                                     |                                                                                                                                                                                                                    |
| Input Signals                                                  | Input Circuit           | 5–24 VDC nominal (range: 4–30 VDC); (5mA @ 4V; 15 mA @ 30V); Optically isolated, differential                                                                                                                           |                                                                                                                                                                                                                    |
|                                                                | Step/Pulse              | Minimum pulse width = 1µs. Maximum pulse frequency = 150kHz or 2MHz (user selectable).<br>FUNCTIONS: step & direction, CW/CCW step                                                                                      |                                                                                                                                                                                                                    |
|                                                                | Direction               |                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|                                                                | Enable                  | FUNCTION: disable motor when closed                                                                                                                                                                                     |                                                                                                                                                                                                                    |
|                                                                | Analog                  | n/a                                                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| Output Signal                                                  |                         | 30 VDC / 80 mA max, optically isolated photodarlington, sinking or sourcing.<br>Function = closes on drive fault.                                                                                                       |                                                                                                                                                                                                                    |
| Features                                                       | Current Reduction       | Reduce power consumption and heat generation by limiting motor running current to 100%, 90%, 80%, or 70% of maximum. Current should be increased to 100% if microstepping. (Torque is reduced/increased by the same %.) | Reduce power consumption and heat generation by limiting motor running current to 100%, 90%, or 80% of maximum. Current should be increased to 120% if microstepping. (Torque is reduced/increased by the same %.) |
|                                                                | Idle Current Reduction  | 90% or 50% of running current.<br>(Holding torque is reduced by the same %.)                                                                                                                                            |                                                                                                                                                                                                                    |
|                                                                | Microstep Resolution    | 200, 200 smooth, 400, 400 smooth, 2000, 5000, 12800, 20000                                                                                                                                                              |                                                                                                                                                                                                                    |
|                                                                | Phase Current Setting   | (peak)(1.1–4.5) x 70%–100% DIP switch selectable<br>(0.79–3.2) RMS                                                                                                                                                      | (1.3–6.3) x 80%–120% DIP switch selectable                                                                                                                                                                         |
|                                                                | Self Test               | Automatically rotates the motor back and forth two turns in each direction in order to confirm that the motor is operational.                                                                                           |                                                                                                                                                                                                                    |
|                                                                | Step Pulse Noise Filter | Select 150kHz or 2MHz                                                                                                                                                                                                   |                                                                                                                                                                                                                    |
|                                                                | Load Inertia            | Set motor and load inertia range to 0–4x or 5–10x.                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Connectors                                                     |                         | Removable screw terminal blocks.<br>Motor & Power Supply: 30–12 AWG; Signals: 30–14 AWG<br>ADC part STP-CON-1 contains replacement connectors                                                                           |                                                                                                                                                                                                                    |
| Maximum Humidity                                               |                         | 90% non-condensing                                                                                                                                                                                                      |                                                                                                                                                                                                                    |
| Storage/Ambient Temperature                                    |                         | 0 to 50 °C [32 to 122 °F] (mount to suitable heat sink)                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Operating Temperature                                          |                         | 0 to 85 °C [32 to 185 °F] (interior of electronics section)                                                                                                                                                             |                                                                                                                                                                                                                    |
| Drive Cooling Method                                           |                         | Natural convection (mount drive to metal surface)                                                                                                                                                                       |                                                                                                                                                                                                                    |
| Mounting                                                       |                         | (2) #6 screws to mount to metal surface                                                                                                                                                                                 |                                                                                                                                                                                                                    |
| Weight                                                         |                         | 10.8 oz [306g]                                                                                                                                                                                                          |                                                                                                                                                                                                                    |
| Agency Approvals                                               |                         | CE, cURus                                                                                                                                                                                                               |                                                                                                                                                                                                                    |



# Stepping System Drives

## SureStep® Advanced Microstepping Drives



| SureStep Series Specifications – Advanced Microstepping Drives |                                                                                                                                                                                                                  |                                                                                                                                                                   |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Microstepping Drive                                            | STP-DRV-4850                                                                                                                                                                                                     | STP-DRV-80100                                                                                                                                                     |
| Drive Type                                                     | Advanced microstepping drive with pulse or analog input, serial communication (serial communication allows indexing capability)                                                                                  |                                                                                                                                                                   |
| Drawing                                                        | <a href="#">PDF</a>                                                                                                                                                                                              | <a href="#">PDF</a>                                                                                                                                               |
| Output Current                                                 | 0.1-5.0 A/phase<br>(in 0.01A increments)                                                                                                                                                                         | 0.1-10.0 A/phase<br>(in 0.01A increments)                                                                                                                         |
| Input Voltage<br>(external p/s required)                       | 24-48 VDC (nominal)<br>(range: 18-53 VDC)                                                                                                                                                                        | 24-80 VDC (nominal)<br>(range: 18-88 VDC)                                                                                                                         |
| Configuration Method                                           | SureMotion Pro software (included)                                                                                                                                                                               |                                                                                                                                                                   |
| Amplifier Type                                                 | MOSFET, dual H-bridge, 4-quadrant                                                                                                                                                                                |                                                                                                                                                                   |
| Current Control                                                | 4-state PWM @ 20 kHz                                                                                                                                                                                             |                                                                                                                                                                   |
| Protection                                                     | Over-voltage, under-voltage, over-temperature, external output faults (phase-to-phase & phase-to-ground), inter-amplifier shorts                                                                                 |                                                                                                                                                                   |
| Recommended Input Fusing                                       | Fuse: 4A 3AG delay (ADC #MDL4)<br>Fuse Holder: ADC #DN-F6L110                                                                                                                                                    | Fuse: 6.25A 3AG delay (ADC #MDL6-25)<br>Fuse Holder: ADC #DN-F6L110                                                                                               |
| Input Signals                                                  | Input Circuit                                                                                                                                                                                                    | Opto-coupler input with 5 to 15 mA input current; Logic Low is input 0.8 VDC or less; Logic High is input 4 VDC or higher.                                        |
|                                                                | Step/Pulse                                                                                                                                                                                                       | Optically isolated, differential, 5V, 330Ω;<br>Min pulse width = 250 ns<br>Max pulse frequency = 2MHz                                                             |
|                                                                | Direction                                                                                                                                                                                                        | Adjustable bandwidth digital noise rejection feature<br>FUNCTIONS: step & direction, CW/CCW step, A/B quadrature, run/stop & direction, jog CW/CCW, CW/CCW limits |
|                                                                | Enable                                                                                                                                                                                                           | Optically isolated, 5-12V, 680Ω; FUNCTIONS: motor enable, alarm reset, speed select (oscillator mode)                                                             |
|                                                                | Analog                                                                                                                                                                                                           | Range: 0-5 VDC; Resolution: 12 bit; FUNCTION: speed control                                                                                                       |
| Output Signal                                                  | Optically isolated, 24V, 10mA max; FUNCTIONS: fault, motion, tach                                                                                                                                                |                                                                                                                                                                   |
| Communication Interface                                        | RS-232; RJ11 (6P4C) receptacle                                                                                                                                                                                   |                                                                                                                                                                   |
| Non-volatile Memory Storage                                    | Configurations are saved in FLASH memory on-board the DSP.                                                                                                                                                       |                                                                                                                                                                   |
| Features                                                       | Idle Current Reduction                                                                                                                                                                                           | Reduction range of 0-90% of running current after delay selectable in ms                                                                                          |
|                                                                | Microstep Resolution                                                                                                                                                                                             | Software selectable from 200 to 51200 steps/rev in increments of 2 steps/rev                                                                                      |
|                                                                | Modes of Operation                                                                                                                                                                                               | Step & direction, CW/CCW, A/B quadrature, oscillator, joystick, serial commands                                                                                   |
|                                                                | Phase Current Setting                                                                                                                                                                                            | 0.1-5.0 A/phase<br>(in 0.01A increments)                                                                                                                          |
|                                                                | Self Test                                                                                                                                                                                                        | Checks internal & external power supply voltages, diagnoses open motor phases                                                                                     |
| Additional Features                                            | Anti-resonance (Electronic Damping)<br>Auto setup<br>Microstep emulation<br>Torque ripple smoothing<br>(allows for fine adjustment of phase in the range 0.25 to 1.5 rps)<br>Waveform (command signal) smoothing |                                                                                                                                                                   |
|                                                                | Connectors                                                                                                                                                                                                       |                                                                                                                                                                   |
|                                                                | Communication: RJ11 (6P4C); programming/communication cable STP-232RJ11-CBL included<br>Other: removable screw terminal blocks; Motor & Power Supply: 26-12 AWG; Signals: 28-16 AWG                              |                                                                                                                                                                   |
|                                                                | Maximum Humidity                                                                                                                                                                                                 |                                                                                                                                                                   |
|                                                                | 90% non-condensing                                                                                                                                                                                               |                                                                                                                                                                   |
| Storage Temperature                                            | -20 to 80 °C [-4 to 176 °F]                                                                                                                                                                                      |                                                                                                                                                                   |
| Operating Temperature                                          | 0 to 55 °C [32 to 131 °F]; (mount to suitable heat sink)                                                                                                                                                         |                                                                                                                                                                   |
| Drive Cooling Method                                           | Natural convection (mount to suitable heat sink)                                                                                                                                                                 |                                                                                                                                                                   |
| Mounting                                                       | #6 mounting screws (mount to suitable heat sink)                                                                                                                                                                 |                                                                                                                                                                   |
| Weight                                                         | 8 oz [227g] (approximate)                                                                                                                                                                                        |                                                                                                                                                                   |
| Agency Approvals                                               | CE                                                                                                                                                                                                               |                                                                                                                                                                   |



# Stepping System Drives

## SureStep® High Bus Voltage Microstepping Drives



| SureStep Series Specifications – Standard Microstepping Drives |                                |                                                                                                                                                                                                                                              |
|----------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Microstepping Drive</b>                                     |                                | <b><u>STP-DRVAC-24025</u></b>                                                                                                                                                                                                                |
| <b>Price</b>                                                   |                                | \$222.00                                                                                                                                                                                                                                     |
| <b>Drawing</b>                                                 |                                | <a href="#">PDF</a>                                                                                                                                                                                                                          |
| <b>Drive Type</b>                                              |                                | Microstepping drive with pulse input                                                                                                                                                                                                         |
| <b>Output Current</b>                                          |                                | Selectable from 0.6–2.5 A/phase (peak of sine)                                                                                                                                                                                               |
| <b>Input Voltage</b>                                           |                                | 90–240 VAC                                                                                                                                                                                                                                   |
| <b>Configuration Method</b>                                    |                                | Rotary dial, DIP switches, jumpers                                                                                                                                                                                                           |
| <b>Amplifier Type</b>                                          |                                | MOSFET, dual H-bridge, 4-quadrant                                                                                                                                                                                                            |
| <b>Current Control</b>                                         |                                | 4-state PWM @ 20 kHz                                                                                                                                                                                                                         |
| <b>Protection</b>                                              |                                | Over temp, over voltage, under voltage, over current, excess regen, open circuit                                                                                                                                                             |
| <b>Recommended Input Fusing</b>                                |                                | Fuse: 4A fast-acting; ADC # <a href="#">AGC4</a> ; Holder: ADC # <a href="#">DN-F6L110</a>                                                                                                                                                   |
| <b>Input Signals</b>                                           | <b>Input Circuit</b>           | 5–24 VDC nominal (range: 4–28 VDC); optically isolated, differential.                                                                                                                                                                        |
|                                                                | <b>Step/Pulse</b>              | Minimum pulse width = 1µs. Maximum pulse frequency = 150kHz or 2MHz (user selectable).<br>FUNCTIONS: step & direction, CW/CCW step                                                                                                           |
|                                                                | <b>Direction</b>               |                                                                                                                                                                                                                                              |
|                                                                | <b>Enable</b>                  | FUNCTION: disable motor when closed                                                                                                                                                                                                          |
|                                                                | <b>Analog</b>                  | n/a                                                                                                                                                                                                                                          |
| <b>Output Signal</b>                                           |                                | 30 VDC / 100 mA max, optically isolated photodarlington, sinking or sourcing.<br>Function = closes on drive fault.                                                                                                                           |
| <b>Features</b>                                                | <b>Current Reduction</b>       | n/a                                                                                                                                                                                                                                          |
|                                                                | <b>Idle Current Reduction</b>  | 90% or 50% of running current.<br>(Holding torque is reduced by the same %.)                                                                                                                                                                 |
|                                                                | <b>Microstep Resolution</b>    | 200, 400, 800, 1000, 1600, 2000, 3200, 4000, 5000, 6000, 6400, 8000, 10000, 12800, 20000, 25600                                                                                                                                              |
|                                                                | <b>Phase Current Setting</b>   | 0.6–2.5 Amps RMS                                                                                                                                                                                                                             |
|                                                                | <b>Self Test</b>               | Automatically rotates the motor back and forth two turns in each direction in order to confirm that the motor is operational.                                                                                                                |
|                                                                | <b>Step Pulse Noise Filter</b> | Select 150kHz or 2MHz                                                                                                                                                                                                                        |
|                                                                | <b>Load Inertia</b>            | Set motor and load inertia range to 0–4x or 5–10x.                                                                                                                                                                                           |
| <b>Connectors</b>                                              |                                | DEGSON 2EDGK-7.62-02P-14-00A(H) 2-pin power connector<br>DEGSON 2EDGK-5.08-04P-14-00A(H) 4-pin motor connector<br>DEGSON 15EDGK-3.81-08P-14-00A(H) 8-pin I/O connector<br>ADC part <a href="#">STP-CON-6</a> contains replacement connectors |
| <b>Maximum Humidity</b>                                        |                                | 90% non-condensing                                                                                                                                                                                                                           |
| <b>Storage/Ambient Temperature</b>                             |                                | 0 to 40 °C [32 to 104 °F]                                                                                                                                                                                                                    |
| <b>Operating Temperature</b>                                   |                                | 0 to 85 °C [32 to 185 °F] (interior of electronics section)                                                                                                                                                                                  |
| <b>Drive Cooling Method</b>                                    |                                | Natural convection (mount drive to metal surface)                                                                                                                                                                                            |
| <b>Mounting</b>                                                |                                | (2) M4 screws to mount to metal surface                                                                                                                                                                                                      |
| <b>Weight</b>                                                  |                                | 1 lb 15 oz [0.88 kg]                                                                                                                                                                                                                         |
| <b>Agency Approvals</b>                                        |                                | CE, <a href="#">cURus</a>                                                                                                                                                                                                                    |

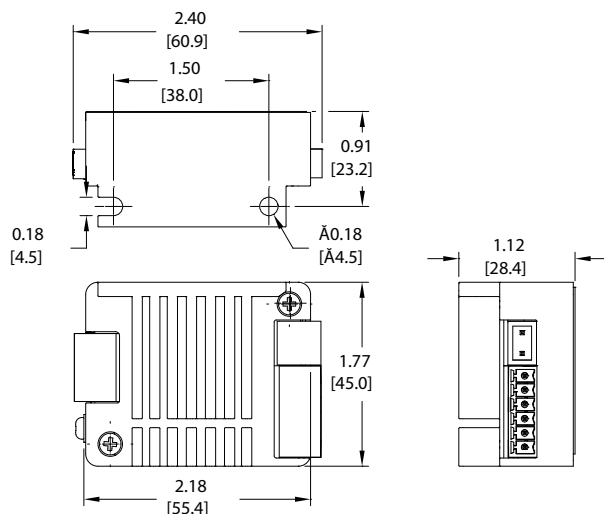


# Stepping System Drives

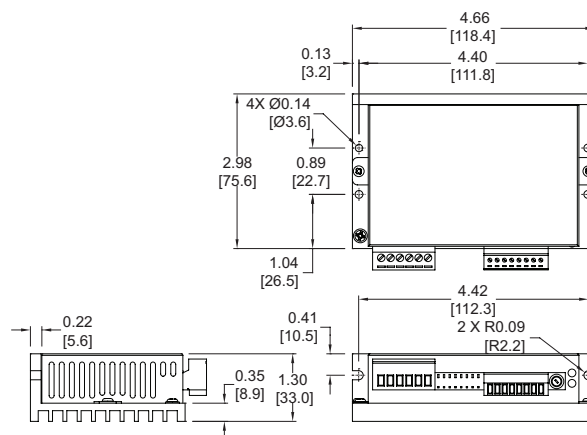
## SureStep® Microstepping Drives Dimensions

Dimensions = in [mm]

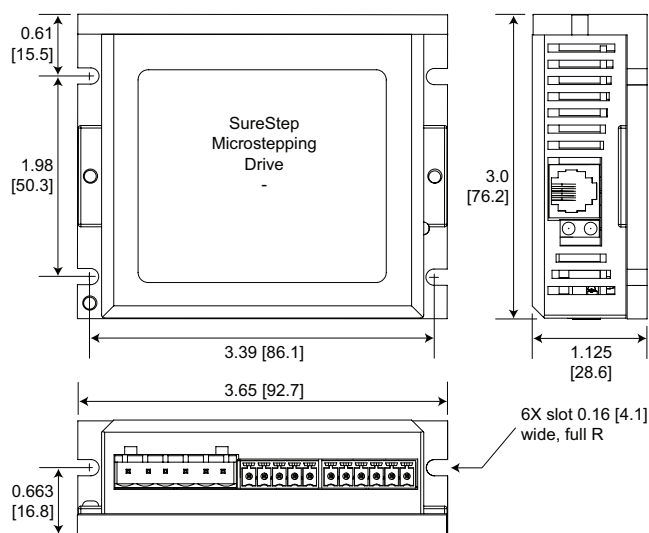
### STP-DRV-4830



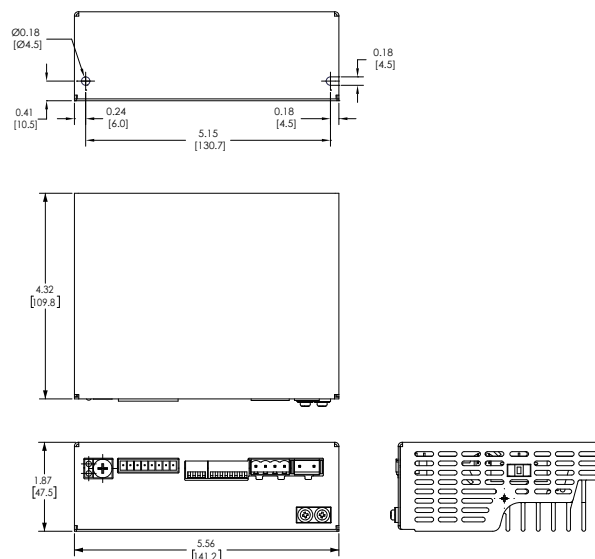
### STP-DRV-4845 & STP-DRV-6575



### STP-DRV-4850 & STP-DRV-80100



### STP-DRVAC-24025



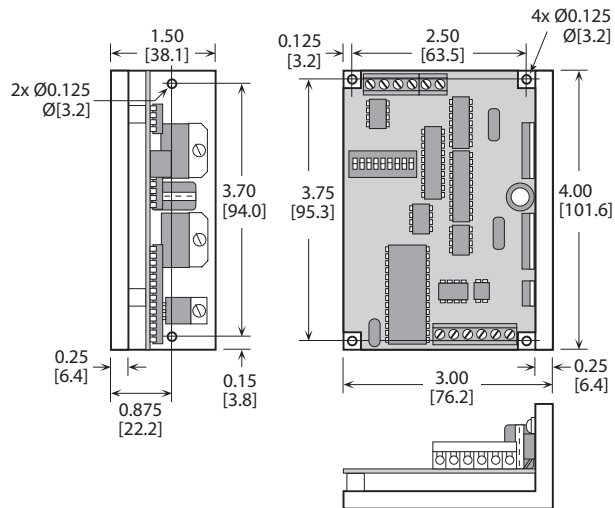


# Stepping System Drives

## SureStep® Microstepping Drives Dimensions

*Dimensions = in [mm]*

### **STP-DRV-4035**





# 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.

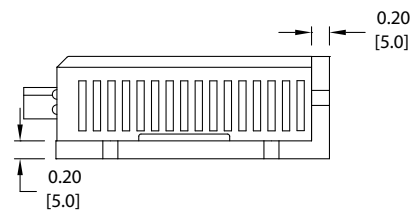
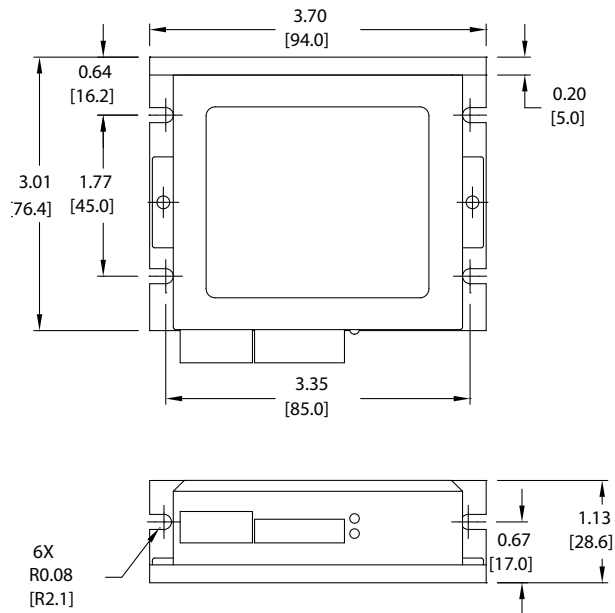


# Stepping System Accessories

## 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).

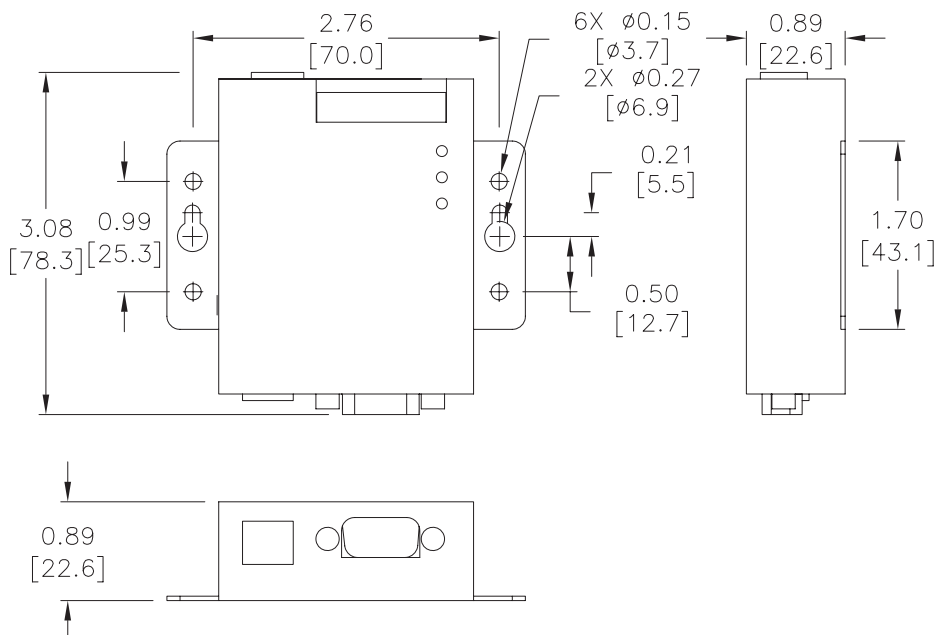
The Advanced Integrated motor/drives use RS-485. While the Advanced Integrated motor/drives can be wired for either 2- or 4-wire networks, 4-wire is require for use with SureMotion Pro due to the Firmware Download utility and the Status Monitor Screen.

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 |                                            |
|-------------------------------------|--------------------------------------------|
| <b>Price</b>                        | \$130.00                                   |
| <b>Drawing</b>                      | <a href="#">PDF</a>                        |
| <b>Communications</b>               | 2-wire RS-232<br>2- or 4-wire RS-485       |
| <b>Configure With</b>               | Internal jumpers and external DIP switches |
| <b>Compatible Cables</b>            | STP-232RJ11-CBL<br>STP-485DB9-CBL-2<br>USB |

**Dimensions = in [mm]**





# 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> |

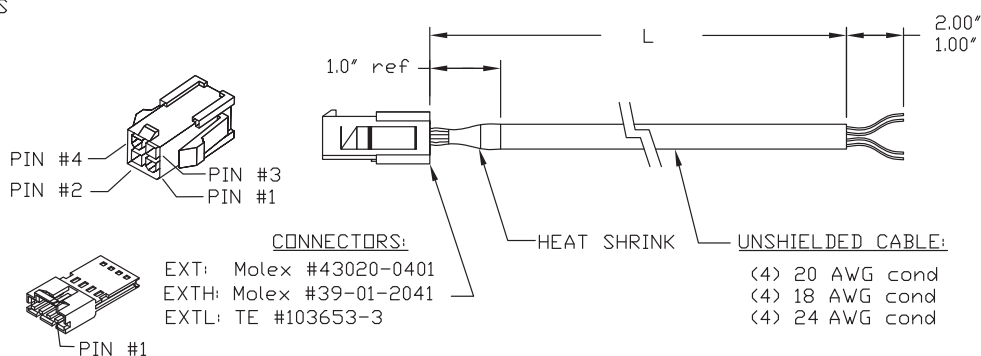
### STP-EXT(x)-0xx Extension Cable Wiring Diagram

EXT &amp; EXTH CABLES

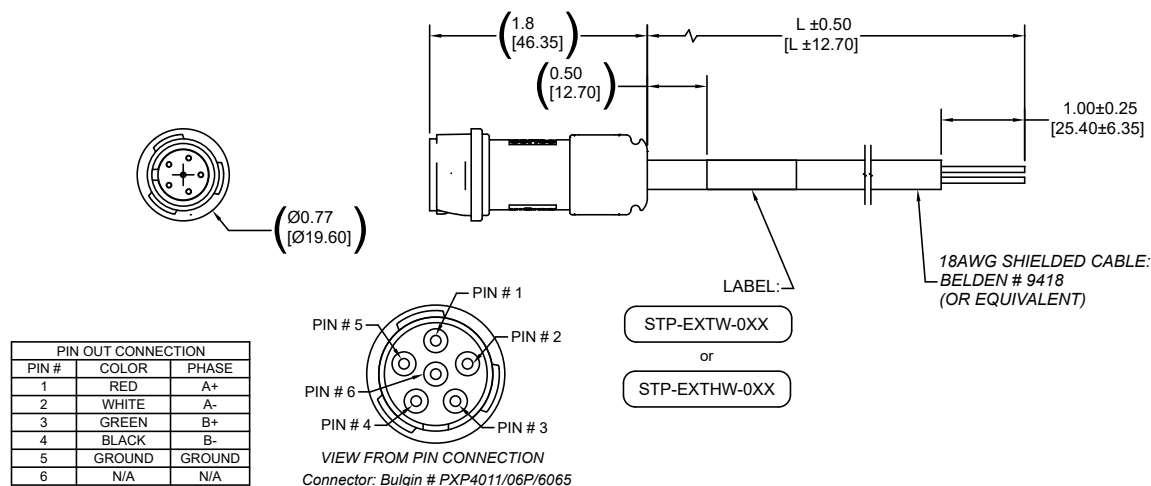
| PIN# | COLOR |
|------|-------|
| 1    | RED   |
| 2    | WHITE |
| 3    | GREEN |
| 4    | BLACK |

EXTL CABLES

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



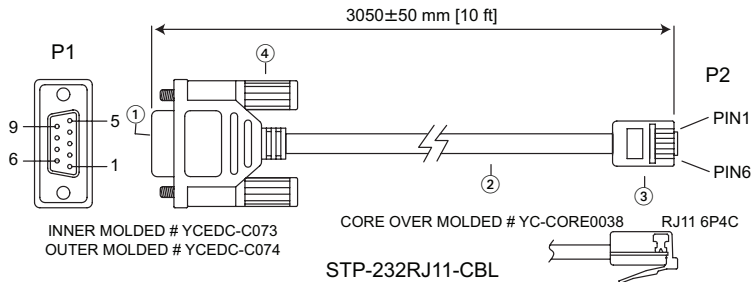
### STP-EXTW-0xx and STP-EXTHW-0xx Extension Cable Wiring Diagram



# Stepping System Cables

## SureStep® Cables, continued

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

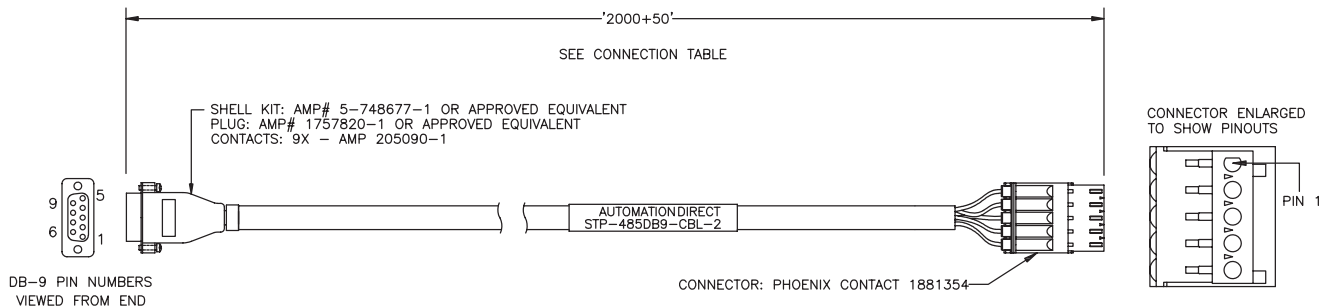


| WIRE CONNECTION |     |     |                |
|-----------------|-----|-----|----------------|
| (DB9) P1        |     |     | P2 (RJ11 6P4C) |
| 2               | RX  | TX  | 3              |
| 3               | TX  | RX  | 5              |
| 4               | nc  | nc  | 4              |
| 5   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

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

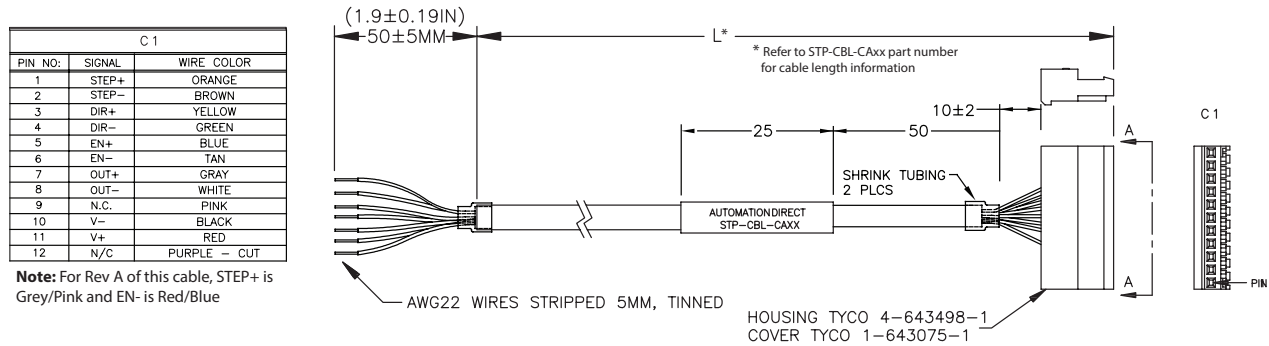
### STP-485DB9-CBL-2 4-wire Programming Cable Wiring Diagram

| 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            |

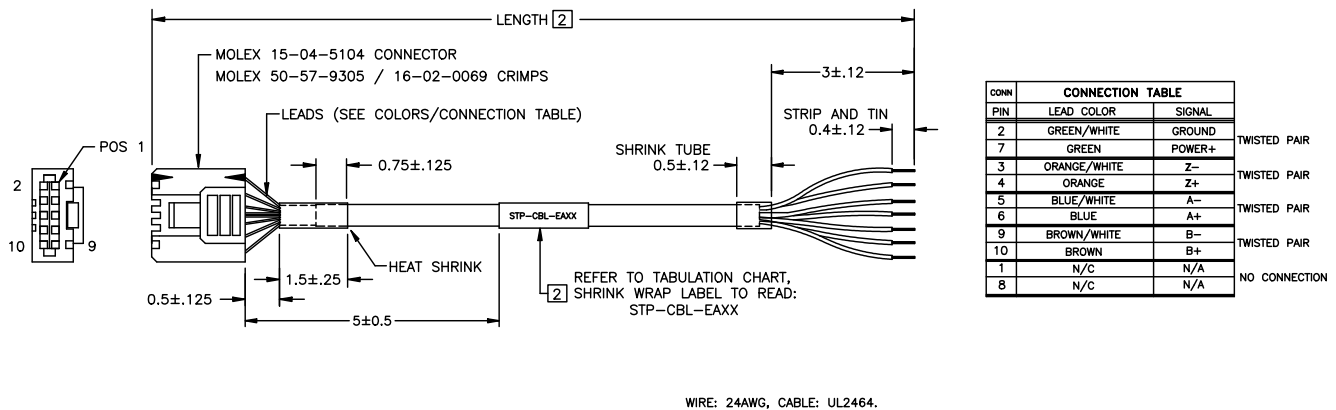


## SureStep® Cables, continued

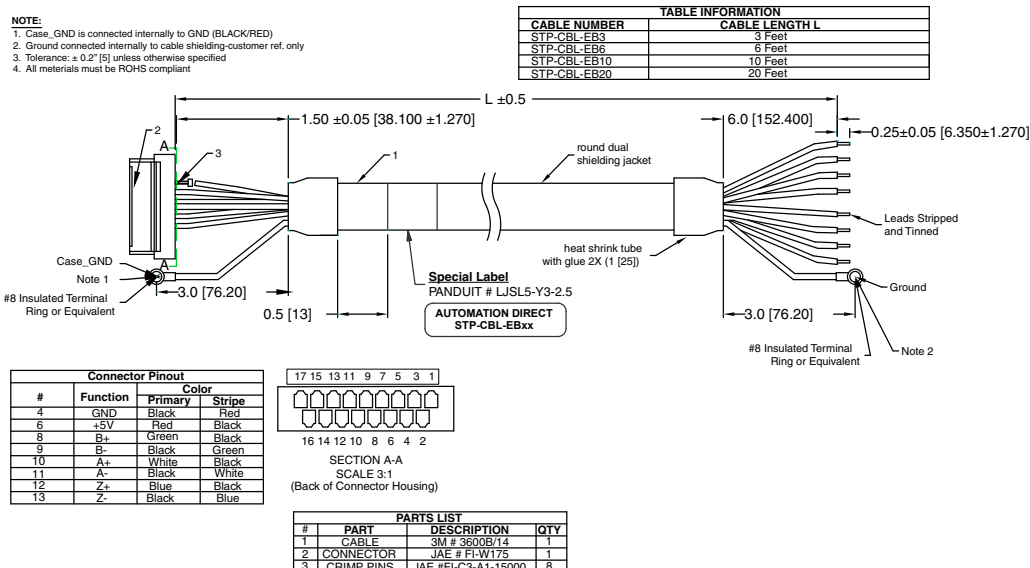
### STP-CBL-CAxx Control Cable Wiring Diagram



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



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





# Stepping System Cables

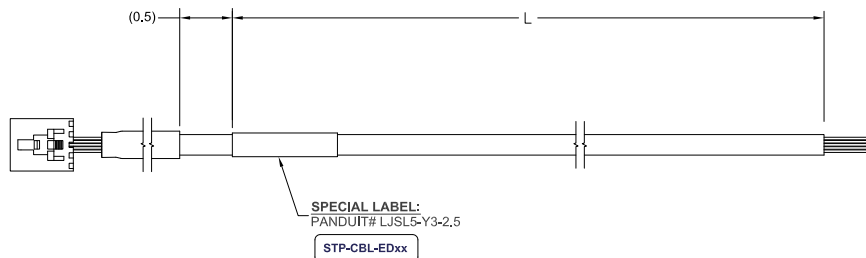
## SureStep® Cables, continued

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

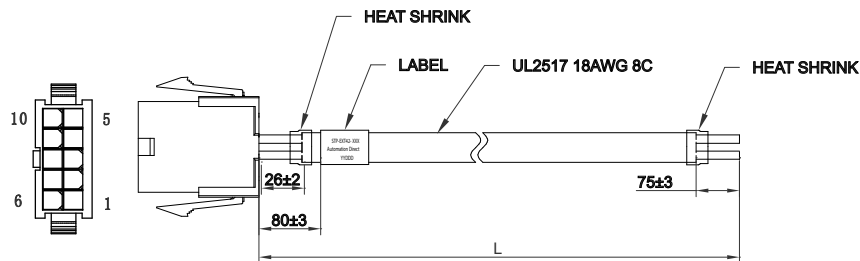
STP-EDxx CABLES

| PIN# | Function    | Color |
|------|-------------|-------|
| 1    | Ground      | Black |
| 2    | Index       | Green |
| 3    | A Channel   | White |
| 4    | +5VDC Power | Red   |
| 5    | B Channel   | Brown |

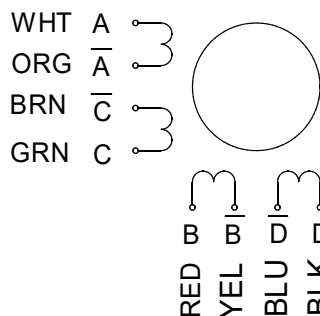
| TABLE INFORMATION |                |
|-------------------|----------------|
| CABLE NUMBER      | CABLE LENGTH L |
| STP-CBL-ED6       | 6 Feet         |
| STP-CBL-ED10      | 10 Feet        |
| STP-CBL-ED20      | 20 Feet        |



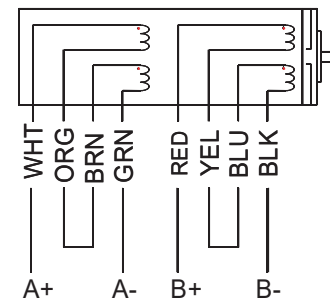
### STP-EXT42(H)-xxx Cable Wiring Diagram



| Pin | Wire Description   |
|-----|--------------------|
| 1   | A - White          |
| 2   | $\bar{A}$ - Orange |
| 3   | C - Green          |
| 4   | $\bar{C}$ - Brown  |
| 5   | B - Red            |
| 6   | $\bar{B}$ - Yellow |
| 7   | D - Black          |
| 8   | $\bar{D}$ - Blue   |
| 9   | GND - Drain wire   |



#### Bi-polar series



#### Bi-polar parallel

