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		$0432p:	$432n:	$432o:	$-009uj:	See Integrated Motor/Drives section	Retired	$-009ui:	$009uk:	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 range: 90–240 VAC	nominal: 12–48 VDC range: 10–53 VDC	nominal: 24–48 VDC range: 20–60 VDC	nominal: 24–75 VDC range: 20–85 VDC	nominal: 12-48 VDC (NEMA 17) 12-70 VDC (NEMA 23) range: 10-55 VDC (NEMA 17) 11-74 VDC (NEMA 23)	nominal: 12–32 VDC range: 12–42 VDC	nominal: 24–48 VDC range: 18– 53 VDC	nominal: 24–80 VDC range: 18–88 VDC	nominal: 12-48 VDC (NEMA 17) 12-70 VDC (NEMA 23, 24) range: 10-55 VDC (NEMA 17) 11-74 VDC (NEMA 23) 10-75 VDC (NEMA 24)
Configuration Method		rotary dial, dip switches, jumpers				dip switches		SureMotion Pro software (SM-PRO: 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) Step pulse noise filter			n/a	Anti-resonance (Electronic Damping) Auto setup Microstep emulation Torque ripple smoothing (allows for fine adjustment of phase in the range 0.25 to 1.5 rps) 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		***STP-DRV-4035***	***STP-DRV-4830***
Drive Type		Microstepping drive with pulse input	Microstepping drive with pulse input
Drawing		PDF	PDF
Output Current		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)
Input Voltage (external p/s required)		Nominal: 12–32 VDC Range: 12–42 VDC (including ripple voltage)	Nominal: 12–48 VDC Range: 10–53 VDC
Configuration Method		DIP switches	DIP switches
Amplifier Type		MOSFET, dual H-bridge, bipolar chopper	MOSFET, dual H-bridge, 4-quadrant
Current Control		4-state PWM @ 20 kHz	4-state PWM @ 16 kHz
Protection		n/a	n/a
Recommended Input Fusing		Fuse: 4A fast-acting; ADC # AGC4; Holder: ADC # DN-F6L110	Fuse: 3A fast-acting; ADC #AGC3; Holder: ADC # DN-F6L110
Input Signals	***Input Circuit***	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
	Step/Pulse	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).
	Direction	Needs to change at least 2 microseconds before a step pulse is sent	FU NCTIONS: step & direction, CW/CCW step
	Enable	Logic 1 will disable current to the motor (current is enabled with no hook-up or logic 0)	FUNCTION: disable motor when closed
	Analog	n/a	n/a
Output Signal		n/a	n/a
Features	***Current Reduction***	n/a	n/a
	Idle Current Reduction	0% or 50% reduction (Idle current setting is active if motor is at rest for 1 second or more)	90% or 50% of running current. (Holding torque is reduced by the same %.)
	Microstep Resolution	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
	Phase Current Setting	0.4 to 3.5 A/phase with 32 selectable levels	(peak)(0.35–3.0) (0.25–2.3) RMS
	Self Test	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.
	Step Pulse Noise Filter	n/a	Select 150kHz or 500kHz
	Load Inertia	n/a	n/a
Connectors		Screw terminal blocks with AWG 18 maximum wire size	DEGSON 15EDGK-5.08-02P-14-00AH 2-pin power connector DEGSON 15EDGK-3.1.04P-14-00A(H) 4-pin motor connector DEGSON 15EDGK-3.5-06P-14-00A(H) 6-pin I/O connector ADC part STP-CON-5 contains replacement connectors
Maximum Humidity		90% non-condensing	90% non-condensing
Storage/Ambient Temperature		-20 to 80 °C [-4 to 176 °F]	0 to 40 °C [32 to 104 °F] (mount to suitable heat sink)
Operating Temperature		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)
Drive Cooling Method		Natural convection (mount drive to metal surface to dissipate heat)	Natural convection (mount drive to metal surface)
Mounting		(4) #4 screws to mount on wide side; (2) #4 screws to mount on narrow side	(2) #6 screws to mount to metal surface
Weight		9.3 oz. [264 g]	3.0 oz [85.9 g]
Agency Approvals		CE	CE

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		PDF	PDF
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 (external p/s required)		Nominal: 24–48 VDC Range: 20–60 VDC	Nominal: 24–65 VDC 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). 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. 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. (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 (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. Motor & Power Supply: 30–12 AWG; Signals: 30–14 AWG 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, $_{C}$UR$_{US}$	

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		PDF	PDF
Output Current		0.1-5.0 A/phase (in 0.01A increments)	0.1-10.0 A/phase (in 0.01A increments)
Input Voltage (external p/s required)		24-48 VDC (nominal) (range: 18-53 VDC)	24-80 VDC (nominal) (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) Fuse Holder: ADC #DN-F6L110	Fuse: 6.25A 3AG delay (ADC #MDL6-25) 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; Min pulse width = 250 ns Max pulse frequency = 2MHz Adjustable bandwidth digital noise rejection feature FUNCTIONS: step & direction, CW/CCW step, A/B quadrature, run/stop & direction, jog CW/CCW, CW/CCW limits	
	Direction		
	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 (in 0.01A increments)	0.1-10.0 A/phase (in 0.01A increments)
	Self Test	Checks internal & external power supply voltages, diagnoses open motor phases	
	Additional Features	Anti-resonance (Electronic Damping) Auto setup Microstep emulation Torque ripple smoothing (allows for fine adjustment of phase in the range 0.25 to 1.5 rps) Waveform (command signal) smoothing	
Connectors		Communication: RJ11 (6P4C); programming/communication cable STP-232RJ11-CBL included 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	

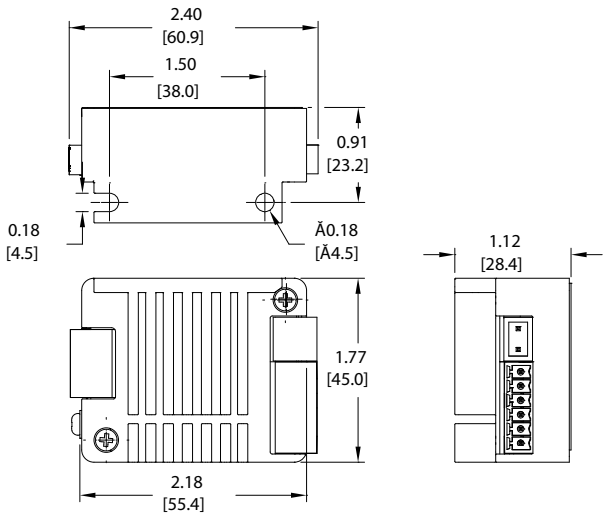
SureStep® High Bus Voltage Microstepping Drives

SureStep Series Specifications – Standard Microstepping Drives		
Microstepping Drive		***STP-DRVAC-24025***
Price		$0432p:
Drawing		PDF
Drive Type		Microstepping drive with pulse input
Output Current		Selectable from 0.6–2.5 A/phase (peak of sine)
Input Voltage		90–240 VAC
Configuration Method		Rotary dial, DIP switches, jumpers
Amplifier Type		MOSFET, dual H-bridge, 4-quadrant
Current Control		4-state PWM @ 20 kHz
Protection		Over temp, over voltage, under voltage, over current, excess regen, open circuit
Recommended Input Fusing		Fuse: 4A fast-acting; ADC #AGC4; Holder: ADC # DN-F6L110
Input Signals	***Input Circuit***	5–24 VDC nominal (range: 4–28 VDC); optically isolated, differential.
	Step/Pulse	Minimum pulse width = 1µs. Maximum pulse frequency = 150kHz or 2MHz (user selectable). FUNCTIONS: step & direction, CW/CCW step
	Direction	
	Enable	FUNCTION: disable motor when closed
	Analog	n/a
Output Signal		30 VDC / 100 mA max, optically isolated photodarlington, sinking or sourcing. Function = closes on drive fault.
Features	***Current Reduction***	n/a
	Idle Current Reduction	90% or 50% of running current. (Holding torque is reduced by the same %.)
	Microstep Resolution	200, 400, 800, 1000, 1600, 2000, 3200, 4000, 5000, 6000, 6400, 8000, 10000, 12800, 20000, 25600
	Phase Current Setting	0.6–2.5 Amps RMS
	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		DEGSON 2EDGK-7.62-02P-14-00A(H) 2-pin power connector DEGSON 2EDGK-5.08-04P-14-00A(H) 4-pin motor connector DEGSON 15EDGK-3.81-08P-14-00A(H) 8-pin I/O connector ADC part STP-CON-6 contains replacement connectors
Maximum Humidity		90% non-condensing
Storage/Ambient Temperature		0 to 40 °C [32 to 104 °F]
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) M4 screws to mount to metal surface
Weight		1 lb 15 oz [0.88 kg]
Agency Approvals		CE, $_{C}$UR$_{US}$

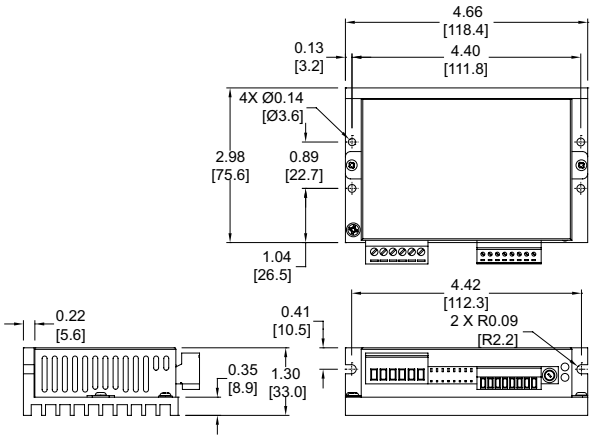
SureStep® Microstepping Drives Dimensions

Dimensions = in [mm]

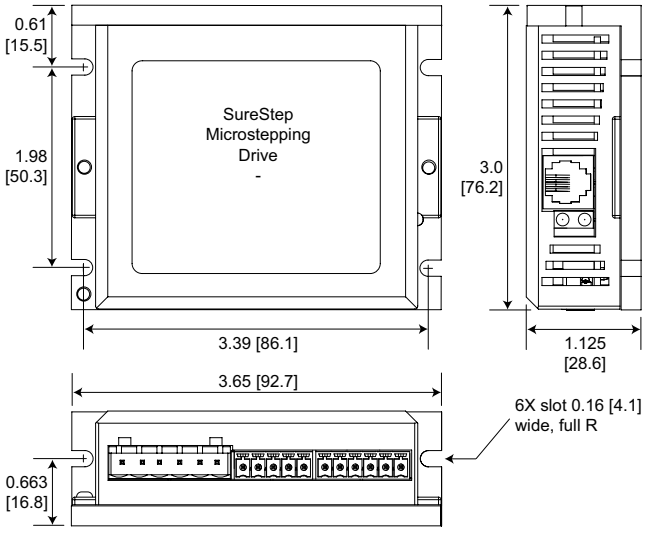
STP-DRV-4830



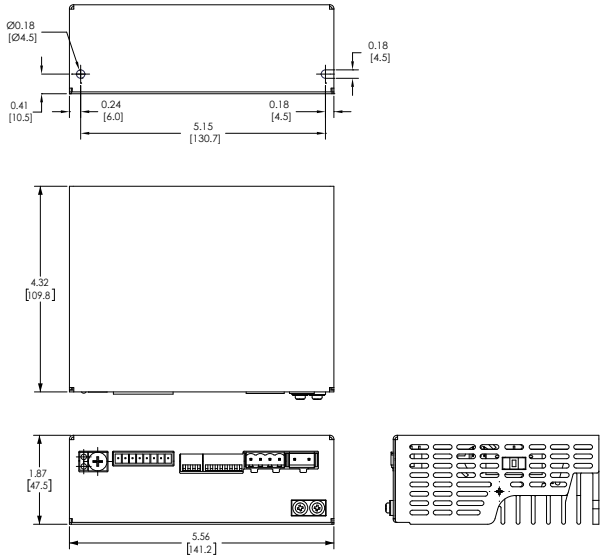
STP-DRV-4845 & STP-DRV-6575



STP-DRV-4850 & STP-DRV-80100



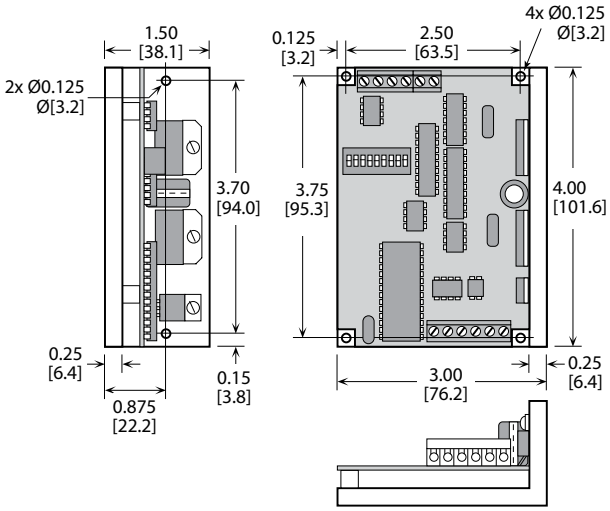
STP-DRVAC-24025



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

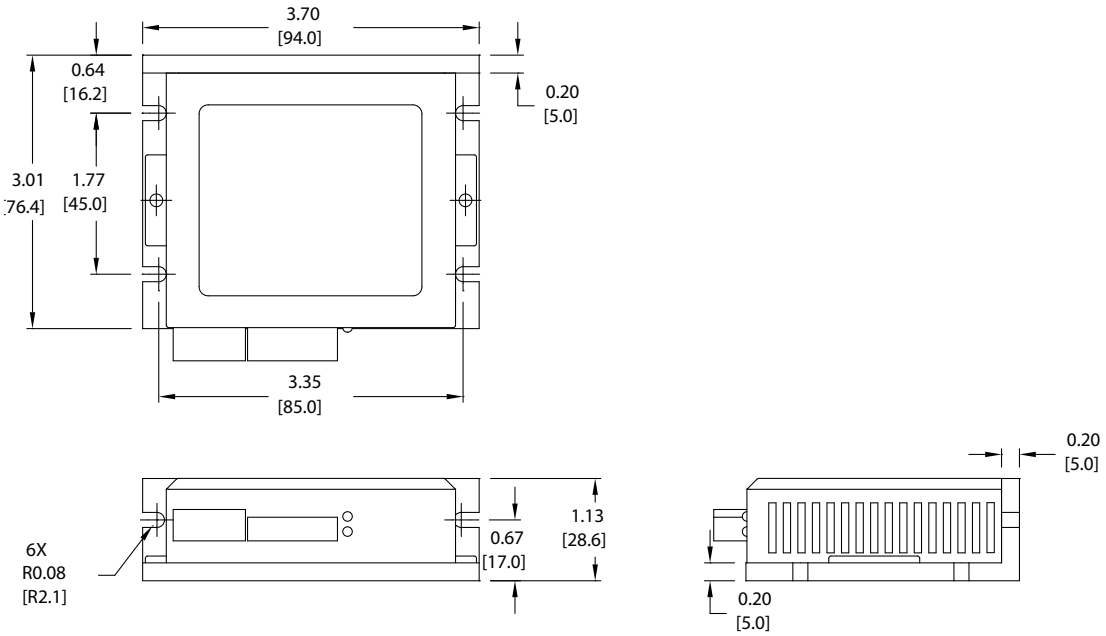
Sure Step Series Specifications – Microstepping Drives Optional Accessories			
Part Number	***Price***	***Description***	***Drawing***
STP-DRVA-RC-050A*	$4327:	Regen Clamp: 50W, for DC input stepper and servo drives, enclosed	PDF
STP-MTRA-17DMP	$2e9y:	SureStep damper, metal body. For use with NEMA 17 stepper motors with 5mm shafts. Mounting set screw included.	PDF
STP-MTRA-23DMP	$2e9z:	SureStep damper, metal body. For use with NEMA 23 stepper motors with 1/4 inch shafts. Mounting set screw included.	PDF

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

SureStep® Microstepping Drives Accessories

Dimensions = in [mm]

STP-DRVA-RC-050A



SureStep® Microstepping Drives Accessories

USB to RS-485 Adapter

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

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

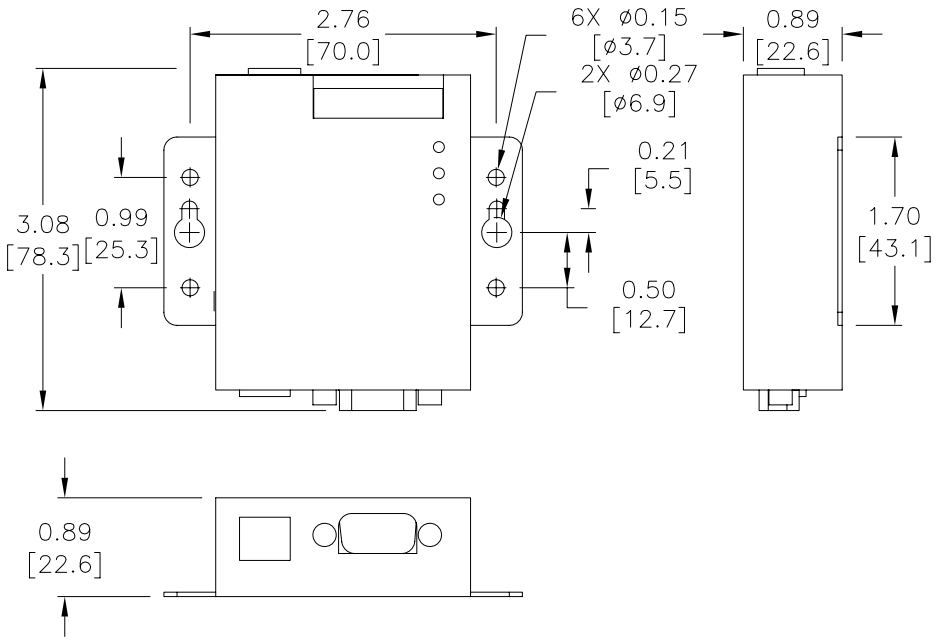
SureStep Advanced Drives communicate via RS-232 (for control and for configuration via SureMotion Pro).

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

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

SureStep PC Adapter - STP-USB485-4W	
Price	$;02b[_:
Drawing	PDF
Communications	2-wire RS-232 2- or 4-wire RS-485
Configure With	Internal jumpers and external DIP switches
Compatible Cables	STP-232RJ11-CBL STP-485DB9-CBL-2 USB

Dimensions = in [mm]



Stepping System Cables

SureStep® Cables

SureStep Series – Stepping System Cables						
Cable	**Price**	**Purpose**	**Length**	**Use With**	**Cable End Connectors**	**Drawing**
STP-EXT-006	$-2e9i:	motor to drive extension	6 ft	STP-MTR-xxxxx(x)	pigtail / Molex 43020-0401 connector	PDF
STP-EXT-010	$-2e9j:		10 ft			PDF
STP-EXT-020	$04vd:		20 ft			PDF
STP-EXTH-006	$2e9k:		6 ft	STP-MTR**H**-xxxxx(x)	pigtail / Molex 39-01-2041 connector	PDF
STP-EXTH-010	$-2e9l:		10 ft			PDF
STP-EXTH-020	$04ve:		20 ft			PDF
STP-EXTHW-006	$;3?]8:		6 ft	STP-MTR**HW**-xxxxx(x)	Bulgin # PXP4011/06P/6065	PDF
STP-EXTHW-010	$;3?]3:		10 ft			PDF
STP-EXTHW-020	$;03?]5:		20 ft			PDF
STP-EXTL-006	$2e9n:		6 ft	STP-MTR**L**-xxxxx(x)	pigtail / Molex 105308-22004 connector	PDF
STP-EXTL-010	$2e9d:		10 ft			PDF
STP-EXTL-020	$2e9e:		20 ft			PDF
STP-EXTW-006	$;3?]6:		6 ft	STP-MTR**W**-xxxxx(x)	Bulgin # PXP4011/06P/6065	PDF
STP-EXTW-010	$;3?]7:		10 ft			PDF
STP-EXTW-020	$;03?]4:		20 ft			PDF
STP-EXT42-006	$;4!qb:	motor to drive extension	6 ft	STP-MTRAC-42xxxx	10-pin / pigtail	PDF
STP-EXT42-010	$;4!qc:		10 ft			PDF
STP-EXT42-020	$;4!qd:		20 ft			PDF
STP-EXT42H-006	$;4!qe:		6 ft	STP-MTRACH-42xxxxx		PDF
STP-EXT42H-010	$;;4!qf:		10 ft			PDF
STP-EXT42H-020	$;4!qa:		20 ft			PDF
STP-232RJ11-CBL*	$04yx:	programming/ communication	10 ft	STP-DRV-4850, STP-DRV-80100	DB9 female / RJ11(6P4C)	PDF
STP-232HD15-CBL-2**	$;04yf:	communication	6.6 ft	STP-DRV-4850, STP-DRV-80100 DL06, D2-250-1, D2-260	HD 15-pin male / RJ12 6-pin plug	n/a
STP-232RJ12-CBL-2**	$04yg:	communication	6.6 ft	STP-DRV-4850, STP-DRV-80100 DL05, CLICK	RJ11 (6P4C) plug / RJ12 6-pin plug	n/a
STP-CBL-CA6	$;2b[y:	control cable	6 ft	STP-MTRD-17038 STP-MTRD-17038E	11-pin / pigtail	PDF
STP-CBL-CA10	$;2b[z:	control cable	10 ft		11-pin / pigtail	PDF
STP-CBL-CA20	$;;02b[]:	control cable	20 ft		11-pin / pigtail	PDF
STP-CBL-EA6	$;2b[u:	encoder cable	6 ft	STP-MTRD-xxxxxE STP-MTRA-ENC1, STP-MTRA-ENC3 STP-MTRA-ENC5, STP-MTRA-ENC7 STP-MTRA-ENC11, STP-MTRA-ENC13 (for line driver encoders)	10-pin / pigtail	PDF
STP-CBL-EA10	$;2b[v:	encoder cable	10 ft		10-pin / pigtail	PDF
STP-CBL-EA20	$;2b[x:	encoder cable	20 ft		10-pin / pigtail	PDF
STP-CBL-EB3	$3?8z:	encoder cable	3 ft	AMT112Q-V AMT112S-V (for both line driver and push-pull (totem) encoders)	17-pin / pigtail	PDF
STP-CBL-EB6	$;2e9f:	encoder cable	6 ft		17-pin / pigtail	PDF
STP-CBL-EB10	$02e9g:	encoder cable	10 ft		17-pin / pigtail	PDF
STP-CBL-EB20	$02e9h:	encoder cable	20 ft		17-pin / pigtail	PDF
STP-CBL-ED6	$2e9s:	encoder cable	6 ft	STP-MTRA-ENC2, STP-MTRA-ENC4 STP-MTRA-ENC6, STP-MTRA-ENC8 STP-MTRA-ENC12, STP-MTRA-ENC14 (for push-pull (totem) encoders)	5-pin / pigtail	PDF
STP-CBL-ED10	$;2e9t:	encoder cable	10 ft		5-pin / pigtail	PDF
STP-CBL-ED20	$2e9u:	encoder cable	20 ft		5-pin / pigtail	PDF
STP-CON-1	$;2b[#:	replacement connector kit	n/a	STP-DRV-4845 & -6575	-	n/a
STP-CON-2	$;;2b[!:	replacement connector kit	n/a	STP-DRV-4850 & 80100	-	n/a

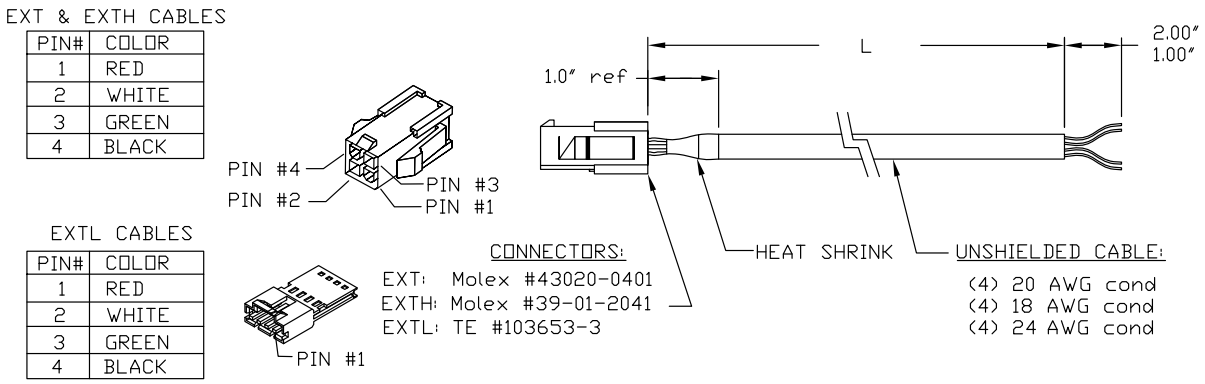
** Programming/communication cable STP-232RJ11-CBLis available for spare or replacement purposes. (One cable is included with each software programmable drive.)*

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

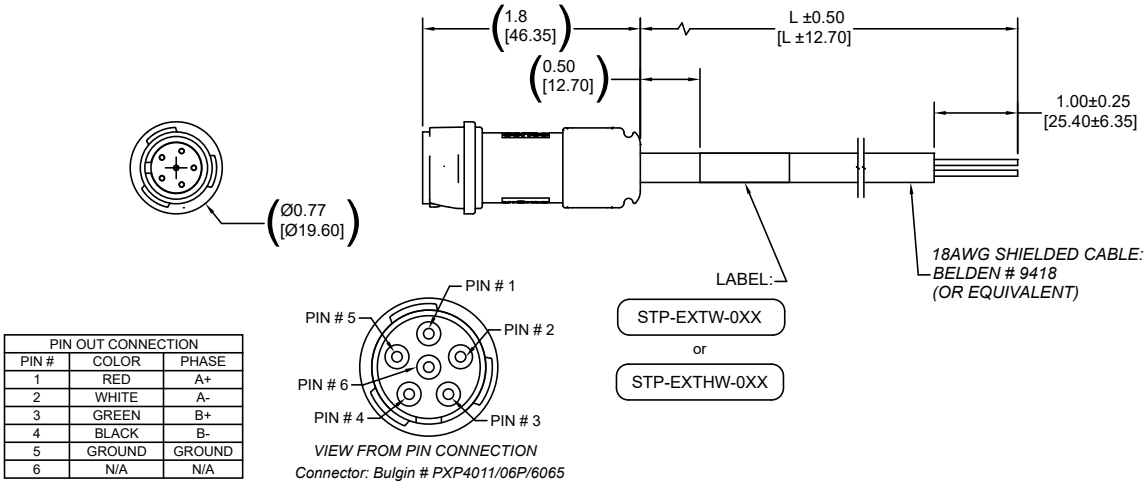
SureStep® Cables, *continued*

SureStep Series – Stepping System Cables						
Cable	***Price***	***Purpose***	***Length***	***Use With***	***Cable End Connectors***	***Drawing***
STP-CON-3	$;2b[?:	replacement connector kit	n/a	STP-MTRD-xxxxxR	-	n/a
STP-CON-4	$432s:	replacement connector kit	n/a	STP-DRVA-RC-050**A**	-	n/a
STP-CON-5	$;432t:	replacement connector kit	n/a	STP-DRV-4830	-	PDF
STP-CON-6	$432u:	replacement connector kit	n/a	STP-DRVAC-24025	-	n/a
STP-485DB9-CBL-2	$;;2b[[:	4-wire programming cable	6.5 ft	STP-MTRD-xxxxxR	DB9 / Phoenix 5-conductor plug	PDF

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



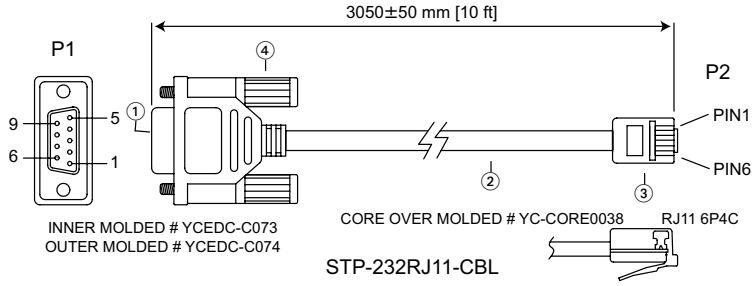
STP-EXTW-0xx and STP-EXTHW-0xx Extension Cable Wiring Diagram



PIN OUT CONNECTION		
PIN #	COLOR	PHASE
1	RED	A+
2	WHITE	A-
3	GREEN	B+
4	BLACK	B-
5	GROUND	GROUND
6	N/A	N/A

SureStep® Cables, continued

STP-232RJ11-CBL Programming Cable Wiring Diagram



WIRE CONNECTION

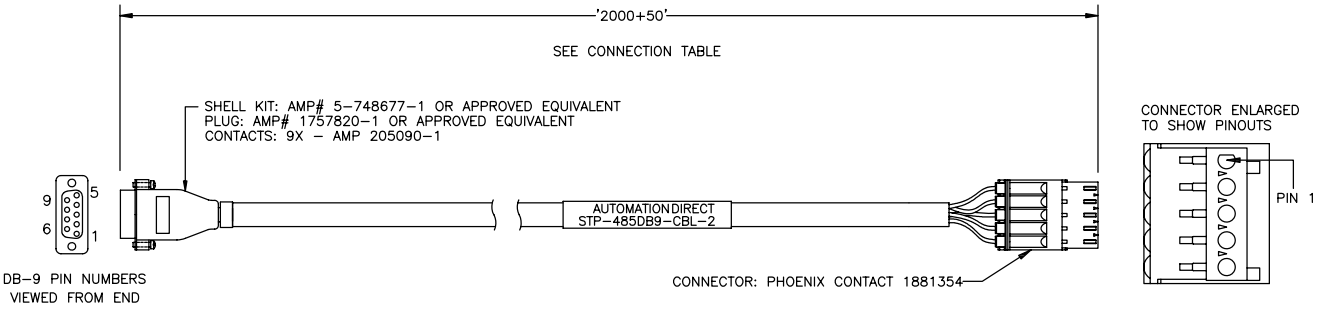
(DB9) P1		P2 (RJ11 6P4C)
2	RX — TX	3
3	TX — RX	5
4	nc — nc	4
5	GND — GND	2

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

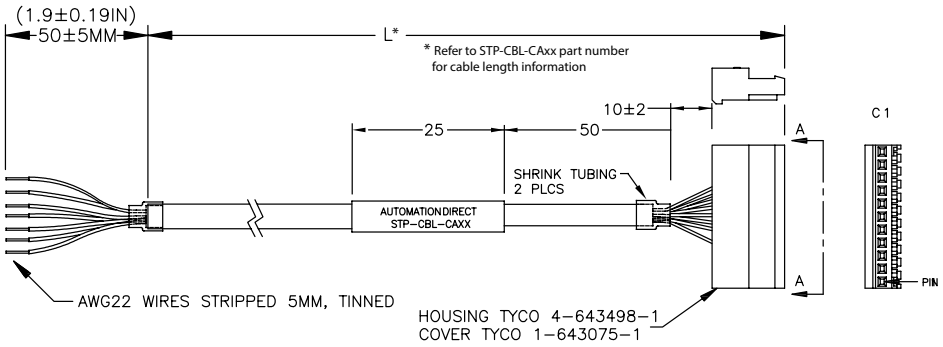


SureStep® Cables, continued

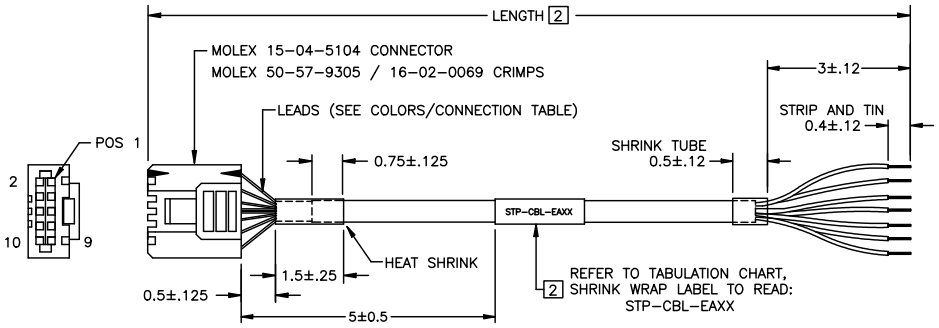
STP-CBL-CAxx Control Cable Wiring Diagram

C1		
PIN NO:	SIGNAL	WIRE COLOR
1	STEP+	ORANGE
2	STEP–	BROWN
3	DIR+	YELLOW
4	DIR–	GREEN
5	EN+	BLUE
6	EN–	TAN
7	OUT+	GRAY
8	OUT–	WHITE
9	N.C.	PINK
10	V–	BLACK
11	V+	RED
12	N/C	PURPLE – CUT

Note: For Rev A of this cable, STEP+ is Grey/Pink and EN- is Red/Blue



STP-CBL-EAxx Encoder Cable Wiring Diagram



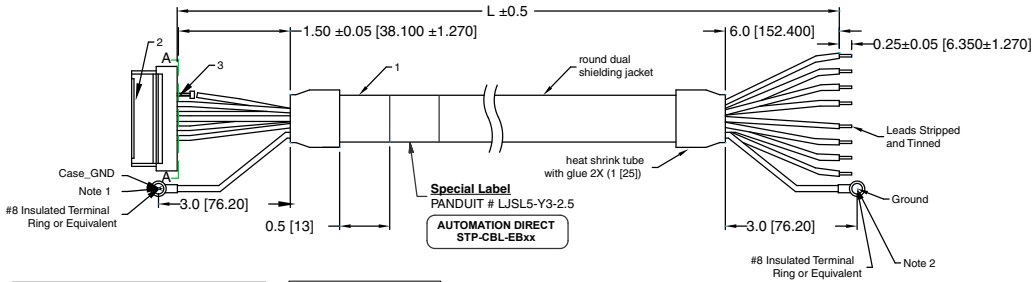
CONN	CONNECTION TABLE		
PIN	LEAD COLOR	SIGNAL	
2	GREEN/WHITE	GROUND	
7	GREEN	POWER+	TWISTED PAIR
3	ORANGE/WHITE	Z–	
4	ORANGE	Z+	TWISTED PAIR
5	BLUE/WHITE	A–	
6	BLUE	A+	TWISTED PAIR
9	BROWN/WHITE	B–	
10	BROWN	B+	TWISTED PAIR
1	N/C	N/A	
8	N/C	N/A	NO CONNECTION

WIRE: 24AWG, CABLE: UL2464.

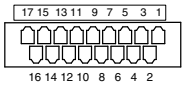
STP-CBL-EBxx Encoder Cable Wiring Diagram

NOTE:
1. Case_GND is connected internally to GND (BLACK/RED)
2. Ground connected internally to cable shielding-customer ref. only
3. Tolerance: ± 0.2" [5] unless otherwise specified
4. All meterials must be ROHS compliant

TABLE INFORMATION	
CABLE NUMBER	CABLE LENGTH L
STP-CBL-EB3	3 Feet
STP-CBL-EB6	6 Feet
STP-CBL-EB10	10 Feet
STP-CBL-EB20	20 Feet



Connector Pinout			
#	Function	Color	
		Primary	Stripe
4	GND	Black	Red
6	+5V	Red	Black
8	B+	Green	Black
9	B-	Black	Green
10	A+	White	Black
11	A-	Black	White
12	Z+	Blue	Black
13	Z-	Black	Blue



SECTION A-A
SCALE 3:1
(Back of Connector Housing)

PARTS LIST			
#	PART	DESCRIPTION	QTY
1	CABLE	3M # 3600B/14	1
2	CONNECTOR	JAE # FI-W175	1
3	CRIMP PINS	JAE #FI-C3-A1-15000	8

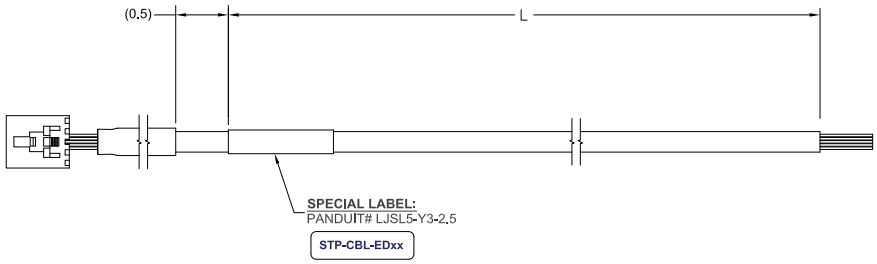
SureStep® Cables, continued

STP-CBL-EDxx Encoder Cable Wiring Diagram

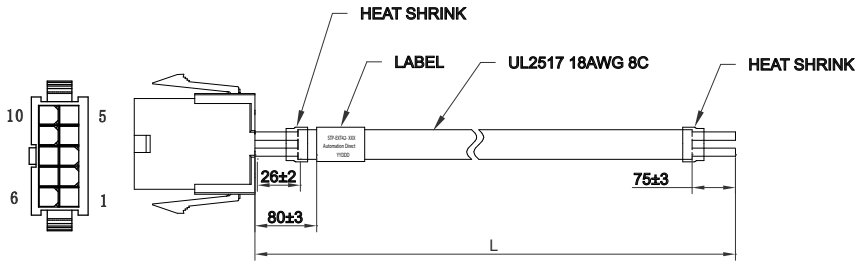
STP–EDxx CABLES

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

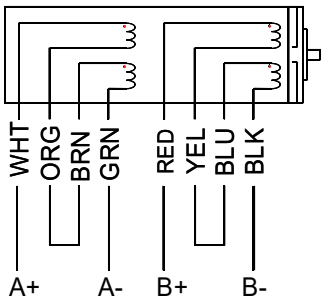


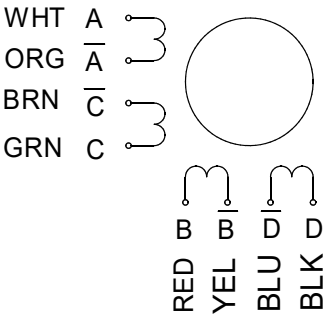
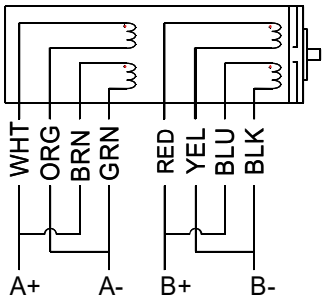
STP-EXT42(H)-xxx Cable Wiring Diagram



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

Bi-polar series





Bi-polar parallel