

## ST10-C-CN

DC CANopen Advanced Microstepping Drive

1pc. - 631.00  
50pc. - 473.25



### Product Features

- Advanced current control microstepping drive with built-in CANopen networking
- CANopen DS301 and DSP402 supported
- Profile position and velocity modes
- Several homing modes
- Objects for Q programming
- Objects for data registers
- Wide current range 0.1 to 10.0 A/phase (peak of sine) with idle current reduction
- Advanced anti-resonance algorithm
- Torque ripple smoothing
- Microstepping and Microstep Emulation
- 8 digital inputs, 4 digital outputs, optically isolated
- 2 analog inputs, +/- 10 volt range
- RS-232 cable and mating connectors included



### Description

The ST10-C-CN stepper drive is a DC-powered microstepping drive for controlling two-phase, bipolar step motors. It offers advanced current control and a sophisticated 3rd generation anti-resonance algorithm that electronically dampens motor and system resonances to improve motor smoothness and usable torque over a wide speed range. The drive also employs electronic torque ripple smoothing and microstep emulation to greatly reduce motor noise and vibration. The drive must be powered from 24-80 VDC and can output up to 10.0 A/phase (peak-of-sine) to the step motor. Over-voltage, over-temperature and over-current protection features prevent damage while running in adverse conditions. The drive is complemented by a specifically matched set of NEMA 23 and NEMA 34 frame stepper motors (see Related and Recommended products below).

The ST10-C-CN is designed to operate on a CANopen communication network and conforms to Can in Automation (CiA) DS301 and DSP402 specifications. It supports Profile Position, Profile Velocity, and Homing modes, as well as the ability to run stored Q programs via Applied Motion-specific CANopen objects. The drive is setup and configured using Applied Motion's [ST Configurator™](#) software. Preconfigured motor setup files included with *ST Configurator™* make it easy to set up the drive for optimum results.

For connecting to external devices such as control signals, incremental encoders, limit switches, proximity or photoelectric sensors, PLC I/O, lamps, and other devices, the drive comes with 8 digital inputs, 4 digital outputs, and 2 single-ended analog inputs (analog inputs can be wired together as 1 differential analog input). Adjustable digital filters are present on the digital inputs for enhanced reliability in noisy environments.

The drive comes with an RS-232 port for configuration and programming. It also comes with a CANopen port for connecting to the CANopen data network.

All ST drives are CE approved and RoHS compliant.

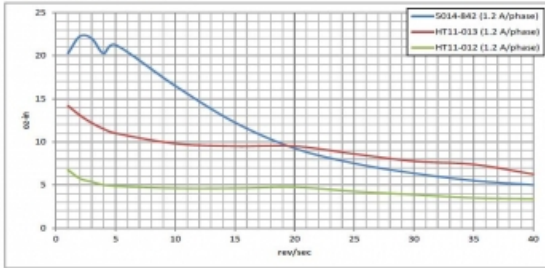
## Specifications

<b>Model Number:</b>	ST10-C-CN
<b>Part Number:</b>	5000-146
<b>Supply Voltage:</b>	24-80 VDC
<b>Supply Voltage Type:</b>	DC
<b>Control Modes:</b>	CANopen
<b>Output Current:</b>	0.1-10.0 A/phase
<b>Communication Ports:</b>	RS-232 CANopen
<b>Encoder Feedback:</b>	No
<b>Step Resolution:</b>	Full Half Microstepping Microstep Emulation
<b>Idle Current Reduction:</b>	0-90%
<b>Setup Method:</b>	Software setup
<b>Digital Inputs:</b>	8
<b>Digital Outputs:</b>	4
<b>Analog Inputs:</b>	1 differential or 2 single-ended
<b>Dimensions:</b>	5.0 x 3.0 x 1.75 inches
<b>Weight:</b>	10.4 oz
<b>Operating Temperature Range:</b>	0-70 °C
<b>Ambient Temperature Range:</b>	0-55 °C
<b>Ambient Humidity:</b>	90% max, non-condensing
<b>Status LEDs:</b>	1 red, 1 green
<b>Circuit Protection:</b>	Short circuit Over-voltage Under-voltage Over-temp

# Torque Curves

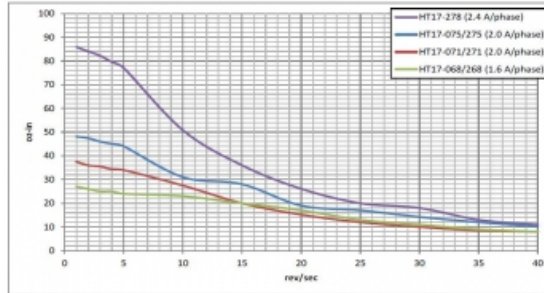
**HT11-012, HT11-013, 5014-842**

24 VDC power supply, 20000 steps/rev



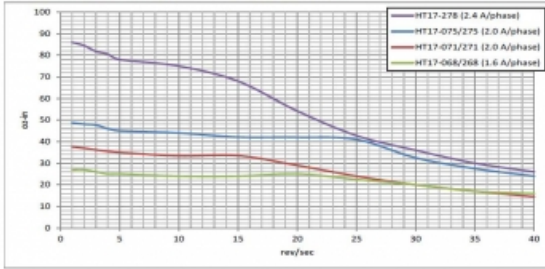
**HT17**

24 VDC power supply, 20000 steps/rev, all motors connected in parallel



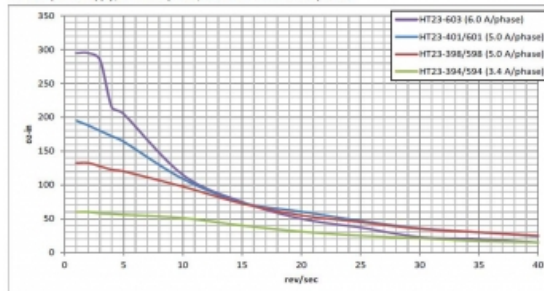
**HT17**

48 VDC power supply, 20000 steps/rev, all motors connected in parallel



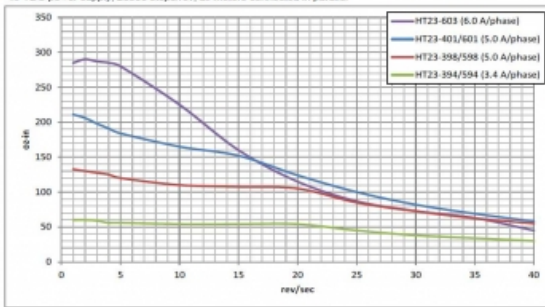
**HT23**

24 VDC power supply, 20000 steps/rev, all motors connected in parallel



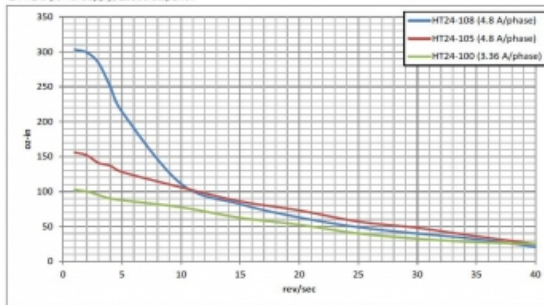
**HT23**

48 VDC power supply, 20000 steps/rev, all motors connected in parallel



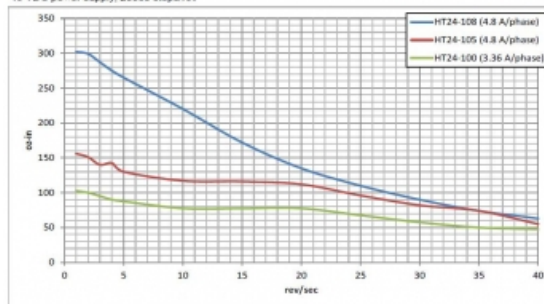
**HT24**

24 VDC power supply, 20000 steps/rev



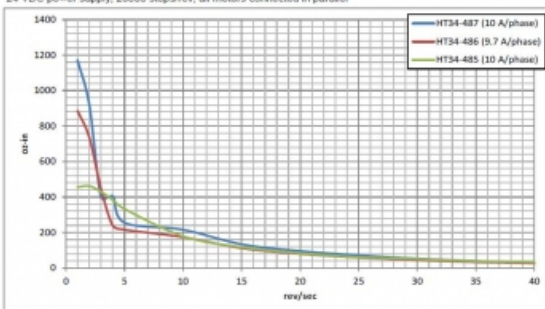
**HT24**

48 VDC power supply, 20000 steps/rev



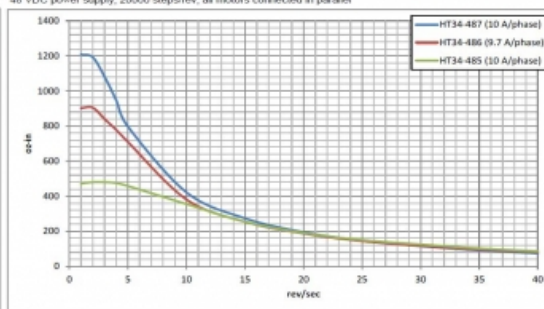
**HT34-485/486/487 with ST10**

24 VDC power supply, 20000 steps/rev, all motors connected in parallel



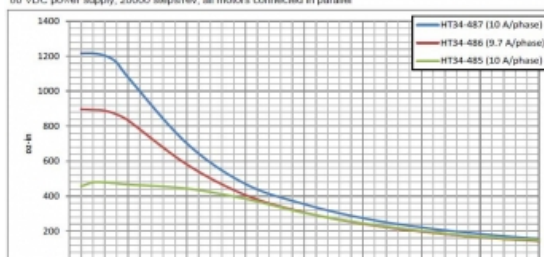
**HT34-485/486/487 with ST10**

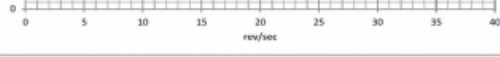
48 VDC power supply, 20000 steps/rev, all motors connected in parallel



**HT34-485/486/487 with ST10**

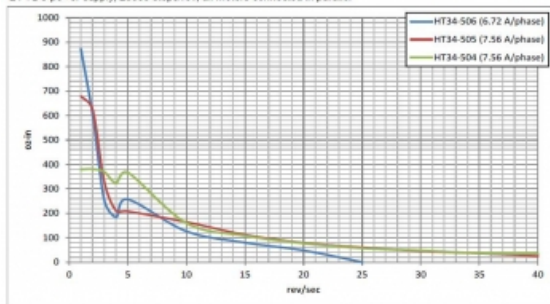
80 VDC power supply, 20000 steps/rev, all motors connected in parallel





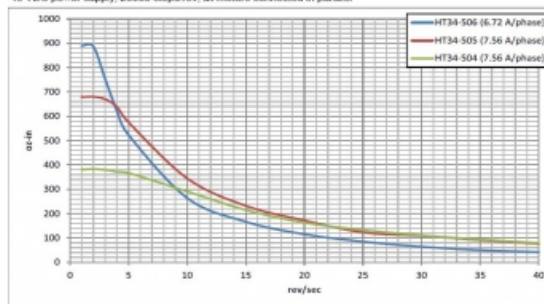
#### HT34-504/505/506 with ST10

24 VDC power supply, 20000 steps/rev, all motors connected in parallel



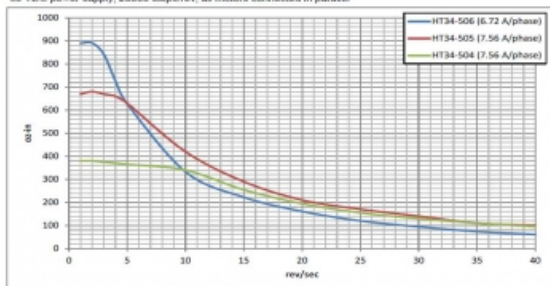
#### HT34-504/505/506 with ST10

48 VDC power supply, 20000 steps/rev, all motors connected in parallel



#### HT34-504/505/506 with ST10

60 VDC power supply, 20000 steps/rev, all motors connected in parallel
















## Software

Software: [ST Configurator™](#)

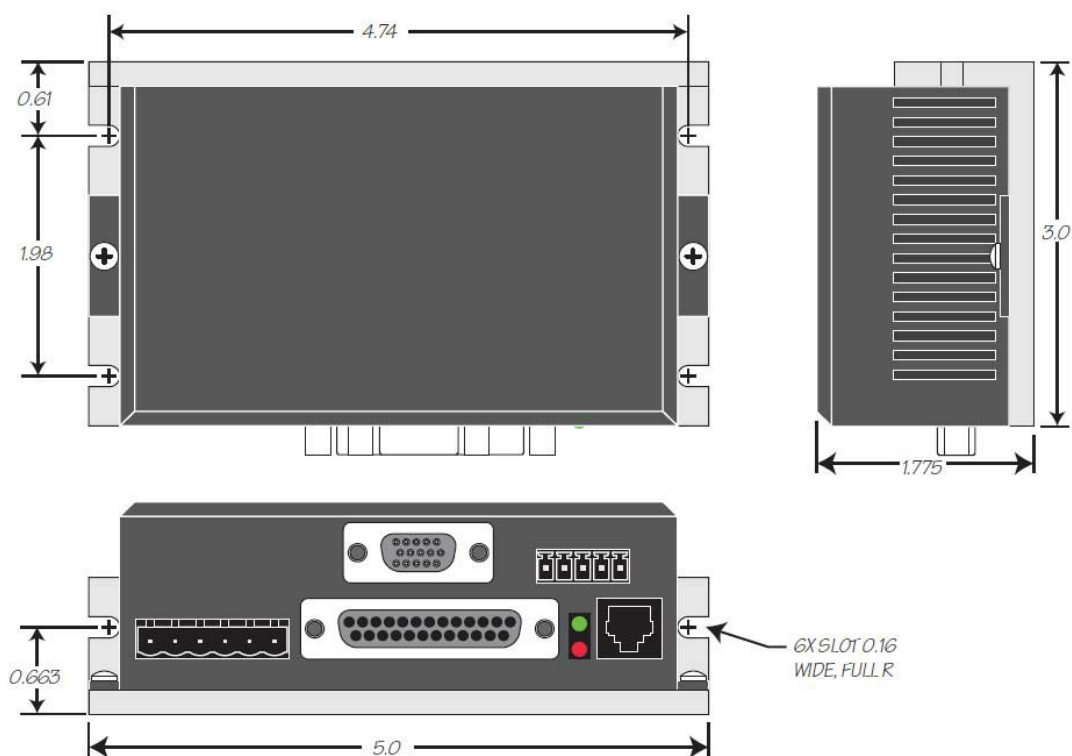
Sample Code:  [CANopen\\_Example.zip](#)

## Downloads

<b>Manuals:</b>	<a href="#"> ST5-10C_QuickSetup_920-0042C.pdf</a> <a href="#"> ST5-10-QSi_Hardware Manual_920-0004F.pdf</a> <a href="#"> CANopen_Manual_920-0025J.pdf</a>
<b>Datasheet:</b>	<a href="http://s3.amazonaws.com/applied-motion-pdf/ST10-C-CN.pdf">http://s3.amazonaws.com/applied-motion-pdf/ST10-C-CN.pdf</a>
<b>Family Datasheet:</b>	<a href="#"> ST_Datasheet_925-0007.pdf</a> <a href="#"> CANopen_FAQ2.pdf</a> <a href="#"> ST-CANopen-EDS.eds</a>
<b>2D Drawing:</b>	<a href="#"> ST5_10_Dimensions.pdf</a> <a href="#"> ST_T_simple_3D.pdf</a>
<b>3D Drawing:</b>	<a href="#"> ST5_10-Q_Si_C_SIMPLE.igs</a>
<b>Speed-Torque Curves:</b>	<a href="#"> ST_speed-torque.pdf</a>
<b>Agency Approvals:</b>	<a href="#"> ST-Q-Si-C-IP_CE_DOC.pdf</a>
<b>Application Notes:</b>	<a href="#"> APPN0016_Simple-25-pin-mating-connections.pdf</a> <a href="#"> APPN0015_Make-a-serial-programming-cable.pdf</a>

## Pricing

ST10-C-CN Part No. 5000-146	
1pc.	\$631.00
25pc.	\$542.66
50pc.	\$473.25
100pc.	<a href="#">Contact us</a> for 100+ piece pricing.

**Mechanical Outline****Products in the Series *CANopen Products***

Model Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc./50pc.
	12-70 VDC	CANopen	NA	RS-232, CANopen	Yes	\$674.00 / \$505.50
	12-70 VDC	CANopen	NA	RS-232, CANopen	No	\$588.00 / \$441.00
	12-70 VDC	CANopen	NA	RS-232, CANopen	Yes	\$710.00 / \$532.50
	12-70 VDC	CANopen	NA	RS-232, CANopen	No	\$588.00 / \$441.00
	12-48 VDC	CANopen	NA	RS-232, CANopen	Yes	\$513.00 / \$384.75
	12-48 VDC	CANopen	NA	RS-232, CANopen	No	\$408.00 / \$306.00
<a href="#">ST10-C-CE</a>	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	Yes	\$682.00 / \$511.50
<a href="#">ST10-C-CN</a>	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	No	\$631.00 / \$473.25
<a href="#">ST5-C-CE</a>	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	Yes	\$585.00 / \$438.75
<a href="#">ST5-C-CN</a>	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	No	\$541.00 / \$405.75
<a href="#">STAC6-C</a>	94-135 VAC	CANopen	0.5-6.0 A/Phase	RS-232, CANopen	Yes	\$1107.00 / \$830.25
<a href="#">STAC6-C-220</a>	94-265 VAC	CANopen	0.5-3.2 A/Phase	RS-232, CANopen	Yes	\$1212.00 / \$909.00
<a href="#">SV7-C-CE</a>	24-80 VDC	CANopen	NA	RS-232, CANopen	NA	\$585.00 / \$438.75



## Products in the Series *ST Stepper Drives*

Model Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc./50pc.
<a href="#">ST10-C-CE</a>	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	Yes	\$682.00 / \$511.50
<a href="#">ST10-C-CN</a>	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232, CANopen	No	\$631.00 / \$473.25
<a href="#">ST10-IP-EE</a>	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-10.0 A/Phase	Ethernet, EtherNet/IP	Yes	\$710.00 / \$532.50
<a href="#">ST10-IP-EN</a>	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-10.0 A/Phase	Ethernet, EtherNet/IP	No	\$659.00 / \$494.25
<a href="#">ST10-Plus</a>	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-10.0 A/Phase	RS-232	No	\$440.00 / \$330.00
<a href="#">ST10-Q-EE</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-10.0 A/Phase	Ethernet	Yes	\$726.00 / \$544.50
<a href="#">ST10-Q-EN</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-10.0 A/Phase	Ethernet	No	\$660.00 / \$495.00
<a href="#">ST10-Q-NE</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-10.0 A/Phase	RS-232	Yes	\$580.00 / \$435.00
<a href="#">ST10-Q-NF</a>	24-80 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control	0.1-10.0 A/Phase	RS-232	Yes	\$557.00 / \$417.75
<a href="#">ST10-Q-NN</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-10.0 A/Phase	RS-232	No	\$515.00 / \$386.25
<a href="#">ST10-Q-RE</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-10.0 A/Phase	RS-232, RS-485	Yes	\$690.00 / \$517.50
<a href="#">ST10-Q-RN</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-10.0 A/Phase	RS-232, RS-485	No	\$630.00 / \$472.50
<a href="#">ST10-S</a>	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	0.1-10.0 A/Phase	RS-232	No	\$405.00 / \$303.75
<a href="#">ST10-Si-NE</a>	24-80 VDC	Si Programming	0.1-10.0 A/Phase	RS-232	Yes	\$630.00 / \$472.50
<a href="#">ST10-Si-NF</a>	24-80 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Si Programming, Q Programming, SiNet Hub Compatible, Velocity Control	0.1-10.0 A/Phase	RS-232	Yes	\$636.00 / \$477.00
<a href="#">ST10-Si-NN</a>	24-80 VDC	Si Programming	0.1-10.0 A/Phase	RS-232	No	\$580.00 / \$435.00
<a href="#">ST5-C-CE</a>	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	Yes	\$585.00 / \$438.75
<a href="#">ST5-C-CN</a>	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232, CANopen	No	\$541.00 / \$405.75
<a href="#">ST5-IP-EE</a>	24-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-5.0 A/Phase	Ethernet, EtherNet/IP	Yes	\$655.00 / \$491.25
<a href="#">ST5-IP-EN</a>	24-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.1-5.0 A/Phase	Ethernet, EtherNet/IP	No	\$607.00 / \$455.25
<a href="#">ST5-Plus</a>	24-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-5.0 A/Phase	RS-232	No	\$346.00 / \$259.50
<a href="#">ST5-Q-EE</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-5.0 A/Phase	Ethernet	Yes	\$614.00 / \$460.50
<a href="#">ST5-Q-EN</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming	0.1-5.0 A/Phase	Ethernet	No	\$564.00 / \$423.00
<a href="#">ST5-Q-NE</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-5.0 A/Phase	RS-232	Yes	\$540.00 / \$405.00
<a href="#">ST5-Q-NF</a>	24-48 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control	0.1-5.0 A/Phase	RS-232	Yes	\$530.00 / \$397.50
<a href="#">ST5-Q-NN</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	0.1-5.0 A/Phase	RS-232	No	\$467.00 / \$350.25

<a href="#">ST5-Q-RE</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-5.0 A/Phase	RS-232, RS-485	Yes	\$625.00 / \$468.75
<a href="#">ST5-Q-RN</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	0.1-5.0 A/Phase	RS-232, RS-485	No	\$570.00 / \$427.50
<a href="#">ST5-S</a>	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	0.1-5.0 A/Phase	RS-232	No	\$302.00 / \$226.50
<a href="#">ST5-Si-NE</a>	24-48 VDC	Si Programming	0.1-5.0 A/Phase	RS-232	Yes	\$579.00 / \$434.25
<a href="#">ST5-Si-NF</a>	24-48 VDC	Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Si Programming, Q Programming, SiNet Hub Compatible, Velocity Control	0.1-5.0 A/Phase	RS-232	Yes	\$606.00 / \$454.50
<a href="#">ST5-Si-NN</a>	24-48 VDC	Si Programming	0.1-5.0 A/Phase	RS-232	No	\$490.00 / \$367.50