

## ST5-IP-EN

DC EtherNet/IP Advanced Microstep Drive

1pc. - 607.00  
50pc. - 455.25

### Product Features

- Programmable microstepping drive with advanced current control and built-in EtherNet/IP networking
- Full Q programming functionality with Q Programmer™ software
- 744 lines of stored program capability
- Math calculations using analog and digital parameters
- Access all commands and data registers from EtherNet/IP network
- Wide current range 0.1 to 5.0 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
- Fast 10/100 Ethernet for programming and communications
- Also supports Ethernet UDP & TCP communication protocols



## Description

The ST5-IP-EN 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 24-48 VDC and can output up to 5.0 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 11 through NEMA 23 frame stepper motors (see Related and Recommended products below).

The ST5-IP-EN incorporates EtherNet/IP network communications, the widely used industrial protocol for manufacturing automation applications. With EtherNet/IP users can control, configure and query the drive using an open, standards-based, industrial Ethernet connection at speeds up to 100 MBits/sec. The ST-IP drives run all of the same control modes as ST-Q drives, with the addition that all drive features can be accessed over EtherNet/IP, including more than 100 commands and 130 registers for controlling motion, I/O, configuration, polling, math, register manipulation, and Q programming.

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.

In addition to EtherNet/IP the drive supports Ethernet TCP and UDP protocols for sending commands from Applied Motion's proprietary Serial Command Language (SCL). The same 10/100 Mbit Ethernet port on the drive is also used for configuring and programming the drive using the [ST Configurator™](#) and [Q Programmer™](#) software applications, respectively.

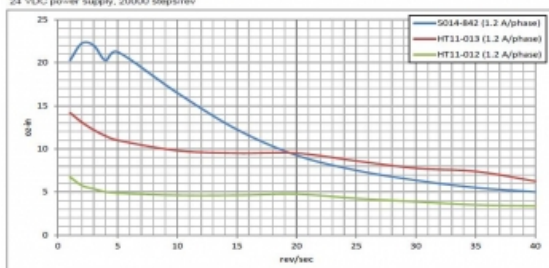
All ST drives are CE approved and RoHS compliant.

## Specifications

<b>Model Number:</b>	ST5-IP-EN
<b>Part Number:</b>	5000-183
<b>Supply Voltage:</b>	24-48 VDC
<b>Supply Voltage Type:</b>	DC
<b>Control Modes:</b>	Streaming Commands Analog Positioning Encoder Following Q Programming EtherNet/IP
<b>Output Current:</b>	0.1-5.0 A/phase
<b>Communication Ports:</b>	Ethernet EtherNet/IP
<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

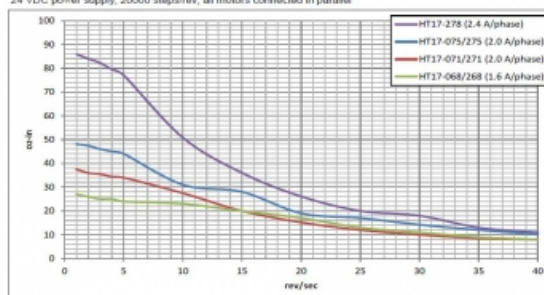
# Torque Curves

**HT11-012, HT11-013, 5014-842**  
24 VDC power supply, 20000 steps/rev



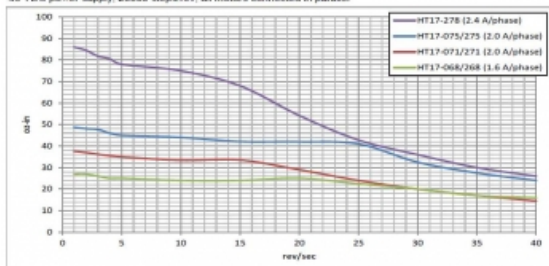
**HT17**

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



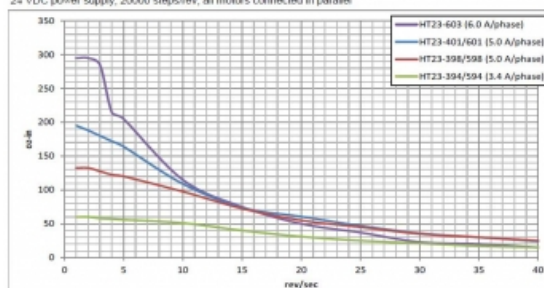
**HT17**

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



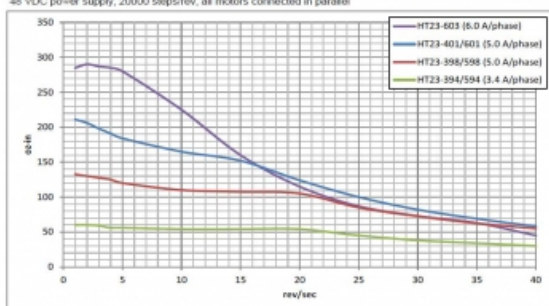
**HT23**

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



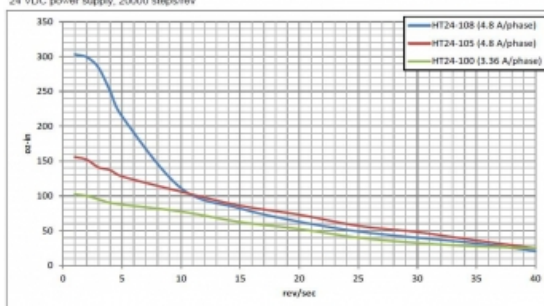
**HT23**

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



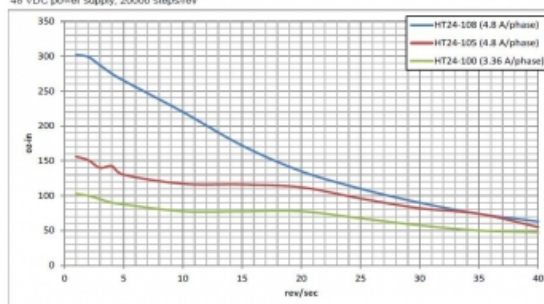
**HT24**

24 VDC power supply, 20000 steps/rev



**HT24**

















48 VDC power supply, 20000 steps/rev



# Software

Software: [SCL Utility](#)  
[ST Configurator™](#)

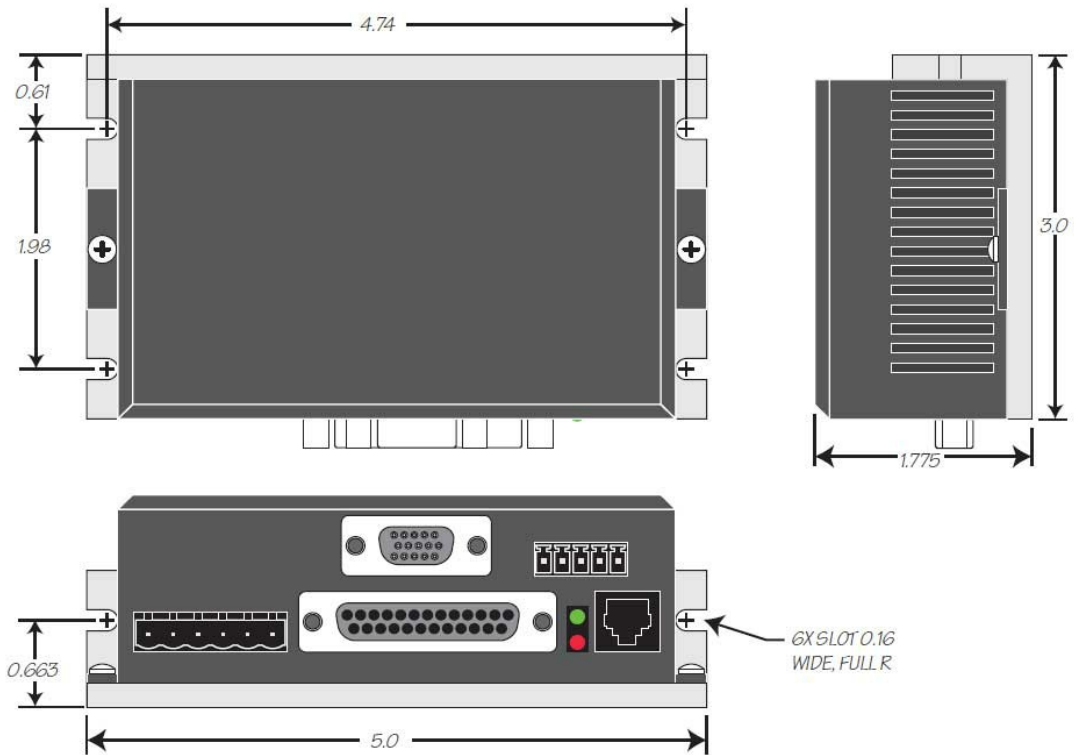
## Downloads

<b>Manuals:</b>	 <a href="#">ST_IP_QuickSetup_920-0048C.pdf</a>  <a href="#">Host Command Reference Rev I.pdf</a>  <a href="#">ST5-10-QSi_Hardware Manual_920-0004F.pdf</a>
<b>Datasheet:</b>	<a href="http://s3.amazonaws.com/applied-motion-pdf/ST5-IP-EN.pdf">http://s3.amazonaws.com/applied-motion-pdf/ST5-IP-EN.pdf</a>
<b>Family Datasheet:</b>	 <a href="#">ST_Datasheet_925-0007.pdf</a>  <a href="#">EtherNet-IP-White-Paper_920-0050.pdf</a>  <a href="#">EIP_EDS_FILES.zip</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="#">APPN0024_AOIs-for-RSLogix5000.zip</a>  <a href="#">APPN0023_MicroLogix-to-EtherNet-IP-drive.zip</a>  <a href="#">APPN0022_CompactLogix-to-EtherNet-IP-drive.zip</a>  <a href="#">APPN0021_5V-Keepalive-Circuit.pdf</a>  <a href="#">APPN0016_Simple-25-pin-mating-connections.pdf</a>

## Pricing

	<b>ST5-IP-EN</b> Part No. 5000-183
<b>1pc.</b>	\$607.00
<b>25pc.</b>	\$522.02
<b>50pc.</b>	\$455.25
<b>100pc.</b>	<a href="#">Contact us</a> for 100+ piece pricing.

## Mechanical Outline



## Products in the Series *EtherNet/IP Products*

Model Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc./50pc.
	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	NA	Ethernet, EtherNet/IP	Yes	\$575.00 / \$431.25
	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	No	\$551.00 / \$413.25
	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	NA	Ethernet, EtherNet/IP	Yes	\$585.00 / \$438.75
	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	NA	Ethernet, EtherNet/IP	Yes	\$595.00 / \$446.25
	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	Yes	\$605.00 / \$453.75
	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	No	\$495.00 / \$371.25
	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	Yes	\$650.00 / \$487.50
	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	No	\$540.00 / \$405.00
	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	Yes	\$706.00 / \$529.50
<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="#">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="#">STAC5-IP-E120</a>	94-135 VAC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.5-5.0 A/Phase	Ethernet, EtherNet/IP	Yes	\$710.00 / \$532.50
<a href="#">STAC5-IP-E220</a>	94-265 VAC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.5-2.55 A/Phase	Ethernet, EtherNet/IP	Yes	\$710.00 / \$532.50
<a href="#">STAC5-IP-N120</a>	94-135 VAC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.5-5.0 A/Phase	Ethernet, EtherNet/IP	No	\$659.00 / \$494.25
<a href="#">STAC5-IP-N220</a>	94-265 VAC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	0.5-2.55 A/Phase	Ethernet, EtherNet/IP	No	\$659.00 / \$494.25
<a href="#">SV7-IP-EE</a>	24-80 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	NA	\$597.00 / \$447.75
<a href="#">SVAC3-IP-E120</a>	108-132 VAC	Streaming Commands, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	NA	\$710.00 / \$532.50
<a href="#">SVAC3-IP-E220</a>	108-242 VAC	Streaming Commands, Q Programming, EtherNet/IP	NA	Ethernet, EtherNet/IP	NA	\$710.00 / \$532.50



## 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