Applied Motion Products

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Product Datasheet
www.Applied-Motion.com

ST10-Si-NE

DC Advanced Microstep Drive w/ Si Programming & Encoder Input

1pc. - $630.00
50pc. - $472.50

Product **Features**

- *Programmable microstepping drive with advanced current control*
- *100 lines of icon-based program capability*
- *Si Programmer™ is heralded for its programming ease*
- *Animation mode displays operation in real time, great for debugging*
- *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*
- *Encoder feedback connector for Stall Prevention & Stall Detection*
- *RS-232 cable and mating connectors included*

RoHS   CE

Description

The ST10-Si-NE 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-Si-NE can operate in all of the same control modes as the Q models, plus it has the ability to run a stand-alone Si program stored in non-volatile memory. Si programs are created using the _Si Programmer™_ software, which provides unparalleled simplicity in indexer-drive programming via Applied Motion's unique and powerful icon-based programming environment. Preconfigured motor setup files included with _Si Programmer™_ 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 and 4 digital outputs. Adjustable digital filters are present on the digital inputs for enhanced reliability in noisy environments. _Note: 2 single-ended analog inputs, which can be wired together as 1 differential analog input, are also available, but not in Si program mode_.

The drive comes with an RS-232 port for configuration and programming.

The ST10-Si-NE comes with an encoder feedback connector for applications that demand a higher level of position control than ordinary open-loop step motor systems can provide. Use our double-shaft step motors with incremental encoders and activate either Stall Detection or Stall Prevention in the drive. Stall Detection notifies the system as soon as the required torque is too great for the motor, which results in a loss of synchronization between the rotor and stator, also known as stalling. Stall Prevention automatically adjusts motor speed to maintain synchronization of the rotor to the stator under all conditions. This unique feature allows step motors to operate in a much broader range of applications than previously possible, such as torque-control. The Stall Prevention feature also performs static position maintenance, which maintains the position of the motor shaft when at rest. Additionally, the inclusion of the optional encoder allows the motor to be precisely homed to the index (marker) pulse.

All ST drives are CE approved and RoHS compliant.

Specifications

Model Number	ST10-Si-NE
Part Number	5000-141
Supply Voltage	24-80 VDC
Supply Voltage Type	DC
Control Modes	• Si Programming
Output Current	0.1-10.0 A/phase
Communication Ports	• RS-232
Encoder Feedback	Yes
Step Resolution	• Microstepping • Microstep Emulation
Idle Current Reduction	0-90%
Setup Method	Software setup
Digital Inputs	8
Digital Outputs	4
Analog Inputs	NA
Dimensions	5.0 x 3.0 x 1.75 inches
Weight	10.4 oz
Operating Temperature Range	0-70 °C
Ambient Temperature Range	0-55 °C
Ambient Humidity	90% max, non-condensing
Status LEDs	1 red, 1 green
Circuit Protection	• Short circuit • Over-voltage • Under-voltage • Over-temp

Software

|	
Software Downloads	• DSP Firmware Downloader • Si Firmware Downloader • Si Programmer™
Sample Code	There are no sample code documents at this time.

Downloads

|	
Manuals	ST5_10_Si_QuickSetup_920-0008C.pdf ST5-10-QSi_Hardware_Manual_920-0004F.pdf
Datasheet	ST_Datasheet_925-0007.pdf
2D Drawing	ST5_10 Dimensions.pdf ST_T_simple_3D.pdf
3D Drawing	ST5_10-Q_Si_C_SIMPLE.igs
Speed-Torque Curves	ST_speed-torque.pdf
Agency Approvals	ST-Q-Si-C-IP_CE_DOC.pdf
Application Notes	APPN0016_Simple-25-pin-mating-connections.pdf APPN0015_Make-a-serial-programming-cable.pdf

Pricing

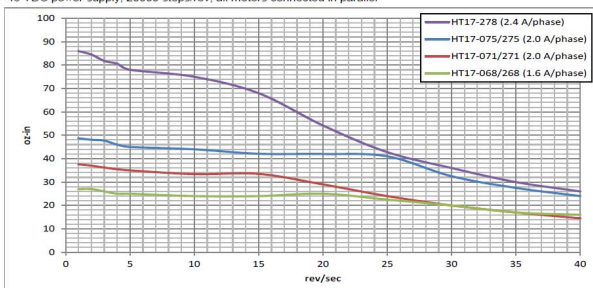|	ST10-Si-NE Part No. 5000-141
1pc.	$630.00
25pc.	$541.80
50pc.	$472.50
100pc.	Contact us for 100+ piece pricing.

Torque Curves

HT11-012, HT11-013, 5014-842
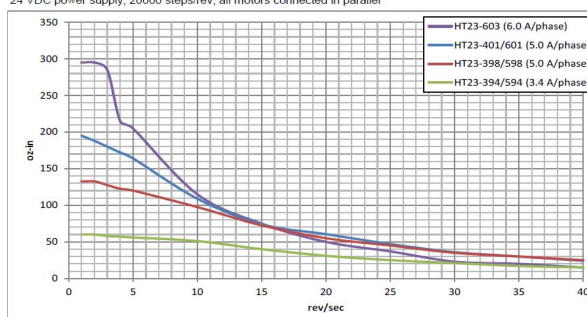24 VDC power supply, 20000 steps/rev
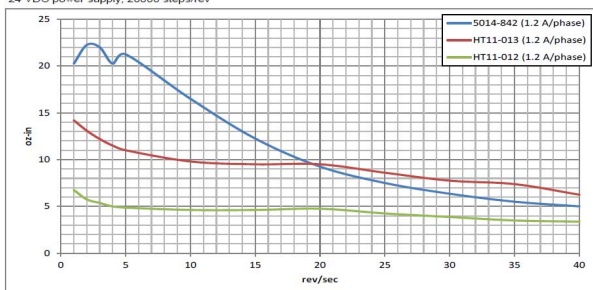
HT17
24 VDC power supply, 20000 steps/rev, all motors connected in parallel
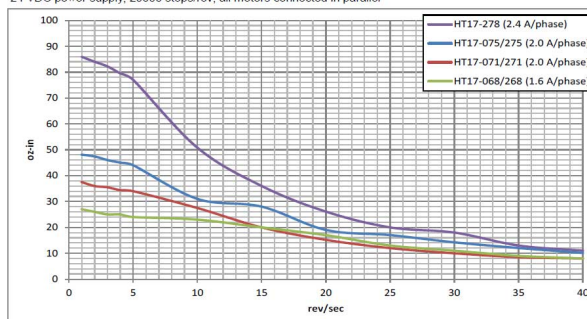
HT17
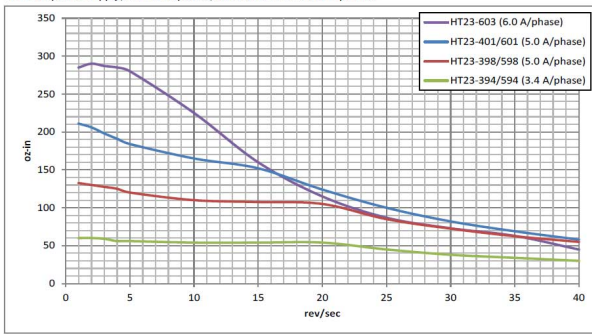48 VDC power supply, 20000 steps/rev, all motors connected in parallel

HT23
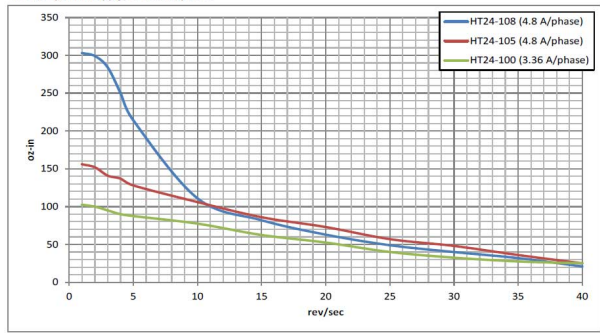24 VDC power supply, 20000 steps/rev, all motors connected in parallel

HT23
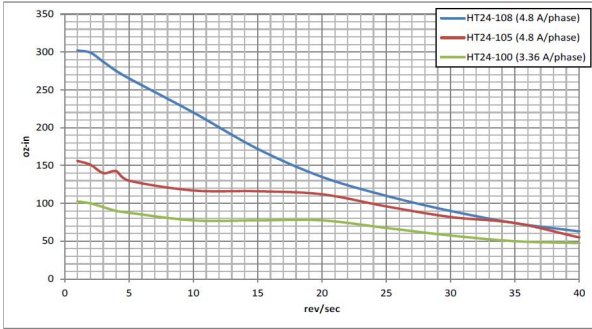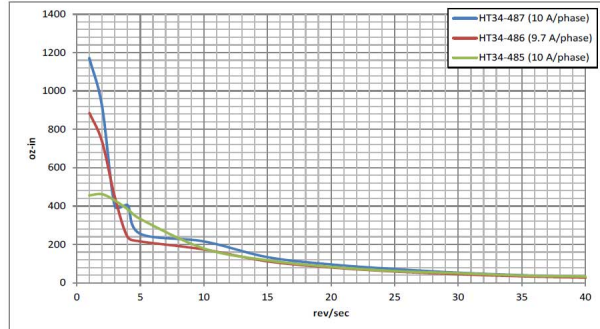48 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT23-603 (6.0 A/phase)
- HT23-401/601 (5.0 A/phase)
- HT23-398/598 (5.0 A/phase)
- HT23-394/594 (3.4 A/phase)

HT24
24 VDC power supply, 20000 steps/rev

Legend:
- HT24-108 (4.8 A/phase)
- HT24-105 (4.8 A/phase)
- HT24-100 (3.36 A/phase)

HT24
48 VDC power supply, 20000 steps/rev

Legend:
- HT24-108 (4.8 A/phase)
- HT24-105 (4.8 A/phase)
- HT24-100 (3.36 A/phase)

HT34-485/486/487 with ST10
24 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT34-487 (10 A/phase)
- HT34-486 (9.7 A/phase)
- HT34-485 (10 A/phase)

## HT34-485/486/487 with ST10
48 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT34-487 (10 A/phase)
- HT34-486 (9.7 A/phase)
- HT34-485 (10 A/phase)
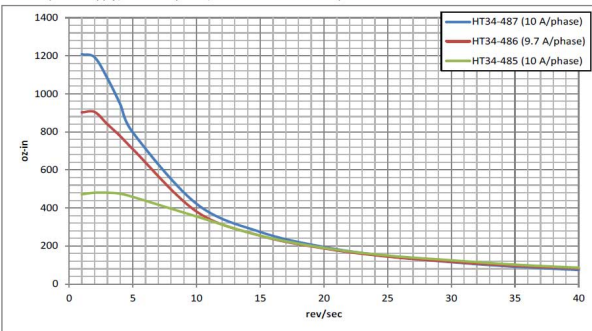
HT34-485/486/487 with ST10
80 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT34-487 (10 A/phase)
- HT34-486 (9.7 A/phase)
- HT34-485 (10 A/phase)
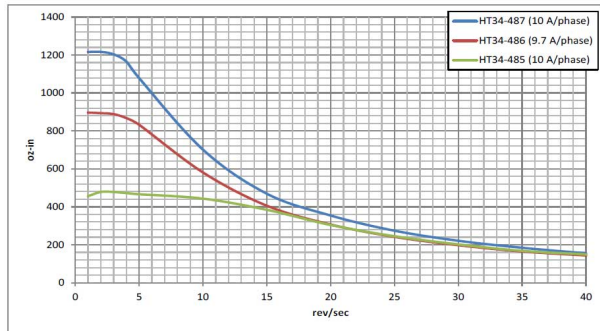
HT34-504/505/506 with ST10
24 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT34-506 (6.72 A/phase)
- HT34-505 (7.56 A/phase)
- HT34-504 (7.56 A/phase)
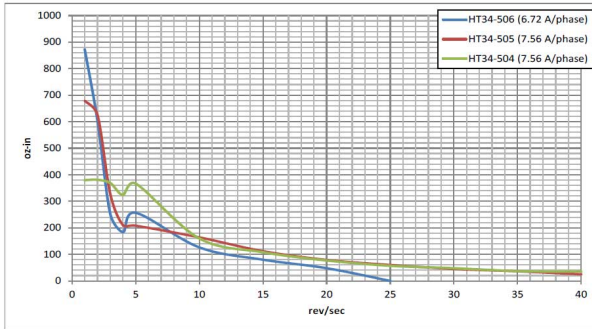
HT34-504/505/506 with ST10
48 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT34-506 (6.72 A/phase)
- HT34-505 (7.56 A/phase)
- HT34-504 (7.56 A/phase)
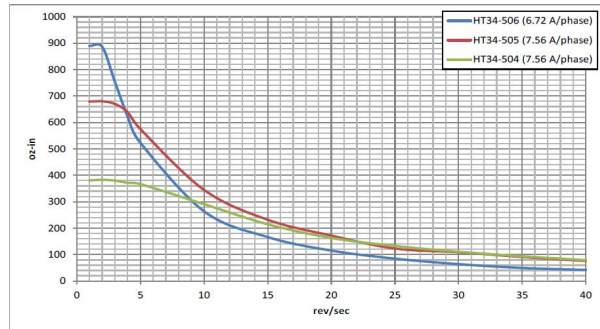
HT34-504/505/506 with ST10
60 VDC power supply, 20000 steps/rev, all motors connected in parallel

Legend:
- HT34-506 (6.72 A/phase)
- HT34-505 (7.56 A/phase)
- HT34-504 (7.56 A/phase)

2D Drawings
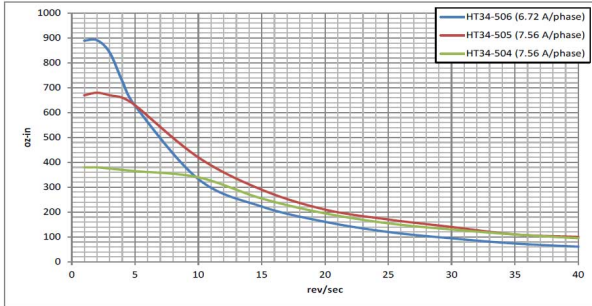
Mechanical Outline
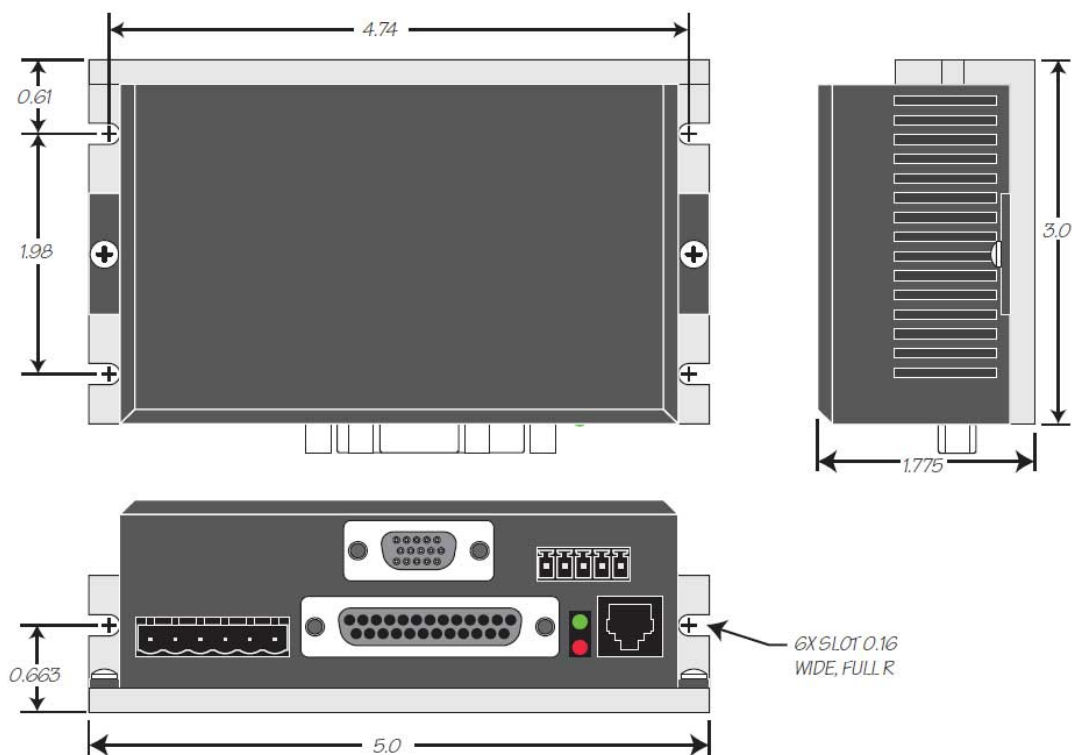
Products in the Series *ST Stepper Drives*

Model Number	Supply Voltage	Control Modes	Output Current	Communication Ports	Encoder Feedback	1pc./50pc.
ST10-C-CE	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232 CANopen	Yes	$682.00 / $511.50
ST10-C-CN	24-80 VDC	CANopen	0.1-10.0 A/Phase	RS-232 CANopen	No	$631.00 / $473.25
ST10-IP-EE	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
ST10-IP-EN	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
ST10-Plus	24-80 VDC	Streaming Commands Analog Positioning Encoder Following Q Programming	0.1-10.0 A/Phase	RS-232	No	$440.00 / $330.00
ST10-Q-EE	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
ST10-Q-EN	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
		Step & Direction Velocity (Oscillator) Streaming Commands				

Part Number	Voltage	Features	Current	Communication	Encoder	Price (List / Net)
ST10-Q-NE	24-80 VDC	Analog Positioning Encoder Following Q Programming SiNet Hub Compatible Modbus	0.1-10.0 A/Phase	RS-232	Yes	$580.00 / $435.00
ST10-Q-NF	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
ST10-Q-NN	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
ST10-Q-RE	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
ST10-Q-RN	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
ST10-S	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
ST10-Si-NE	24-80 VDC	Si Programming	0.1-10.0 A/Phase	RS-232	Yes	$630.00 / $472.50
ST10-Si-NF	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
ST10-Si-NN	24-80 VDC	Si Programming	0.1-10.0 A/Phase	RS-232	No	$580.00 / $435.00
ST5-C-CE	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232 CANopen	Yes	$585.00 / $438.75
ST5-C-CN	24-48 VDC	CANopen	0.1-5.0 A/Phase	RS-232 CANopen	No	$541.00 / $405.75
ST5-IP-EE	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
ST5-IP-EN	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
ST5-Plus	24-48 VDC	Streaming Commands Analog Positioning Encoder Following Q Programming	0.1-5.0 A/Phase	RS-232	No	$346.00 / $259.50
ST5-Q-EE	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
ST5-Q-EN	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
ST5-Q-NE	24-48 VDC	Step & Direction Velocity (Oscillator) Streaming Commands Analog Positioning Encoder Following	0.1-5.0 A/Phase	RS-232	Yes	$540.00 / $405.00

		Q Programming SiNet Hub Compatible Modbus				
ST5-Q-NF	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
ST5-Q-NN	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
ST5-Q-RE	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
ST5-Q-RN	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
ST5-S	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
ST5-Si-NE	24-48 VDC	Si Programming	0.1-5.0 A/Phase	RS-232	Yes	$579.00 / $434.25
ST5-Si-NF	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
ST5-Si-NN	24-48 VDC	Si Programming	0.1-5.0 A/Phase	RS-232	No	$490.00 / $367.50

Mouser Electronics

Authorized Distributor

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