

ST10-Q-RE

DC Advanced Microstep Drive w/ Q Programming & Encoder Input



Product Features

- Programmable microstepping drive with advanced current control
- Q Programmer™ for robust motion control programming
- 744 lines of stored program capability
- Math calculations using analog and digital parameters
- Supports all "S" drive control modes as well
- Modbus/RTU for easy PLC and HMI communication
- Compatible with many 3rd party HMIs
- Wide current range 0.1 to 10.0 A/phase (peak of sine) with idle current reduction
- Advanced anti-resonance algorithm
- Torque ripple smoothing
- 8 digital inputs, 4 digital outputs, optically isolated
- 2 analog inputs, +/-10 volt range
- Encoder feedback connector for Stall Prevention & Stall Detection
- RS-232 cable and mating connectors included
- RS-485 port for serial networking up to 32 axes

Description

The ST10-Q-RE 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-Q-RE can operate in all of the same control modes as the S model (pulse & direction, velocity, streaming commands, SiNet Hub operation), plus it has the ability to run stand-alone Q programs stored in non-volatile memory. Q programs are created using the [Q Programmer™](#) software, which provides multi-tasking, math functions, conditional processing, data register manipulation, and more features in a robust yet simple text-based programming language. 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, serial communications and programming. It also comes with an RS-485 port for streaming serial commands over serial networks with up to 32 axes.

The ST10-Q-RE 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.

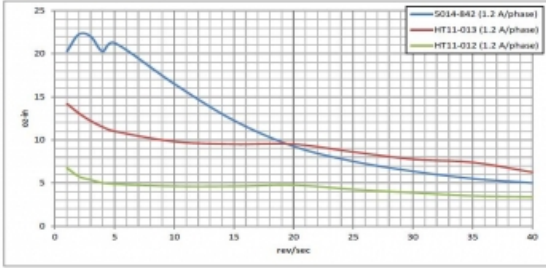
Specifications

| | |
|-------------------------------------|---|
| Model Number: | ST10-Q-RE |
| Part Number: | 5000-144 |
| Supply Voltage: | 24-80 VDC |
| Supply Voltage Type: | DC |
| Control Modes: | Step & Direction Velocity (Oscillator) Streaming Commands Analog Positioning Encoder Following Q Programming Modbus RTU |
| Output Current: | 0.1-10.0 A/phase |
| Communication Ports: | RS-232 RS-485 |
| Encoder Feedback: | Yes |
| Step Resolution: | Full Half Microstepping Microstep Emulation |
| Idle Current Reduction: | 0-90% |
| Setup Method: | Software setup |
| Digital Inputs: | 8 |
| Digital Outputs: | 4 |
| Analog Inputs: | 1 differential or 2 single-ended |
| 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 |

Torque Curves

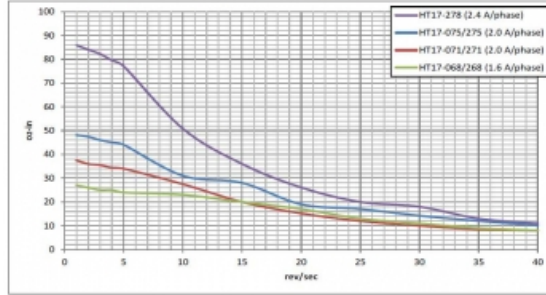
HT11-012, HT11-013, 5014-842

24 VDC power supply, 20000 steps/rev



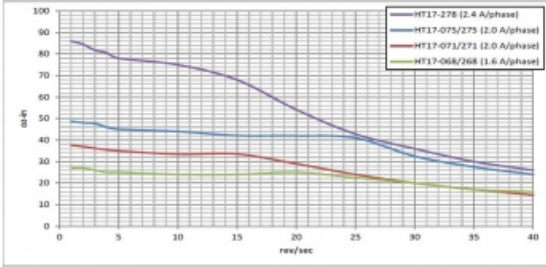
HT17

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



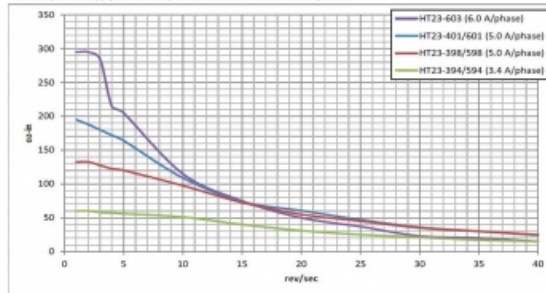
HT17

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



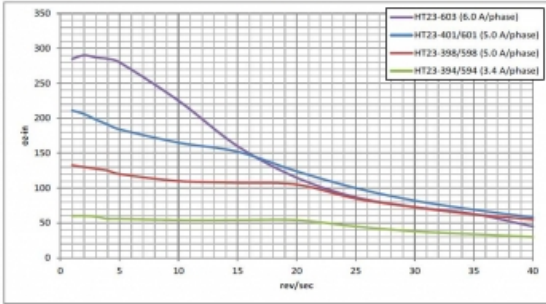
HT23

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



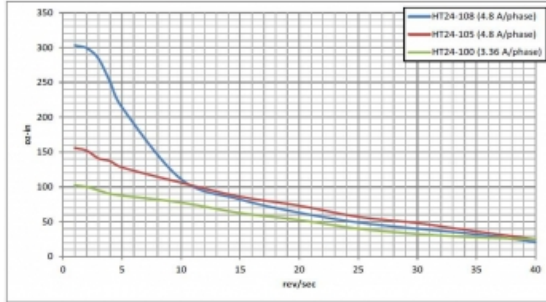
HT23

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



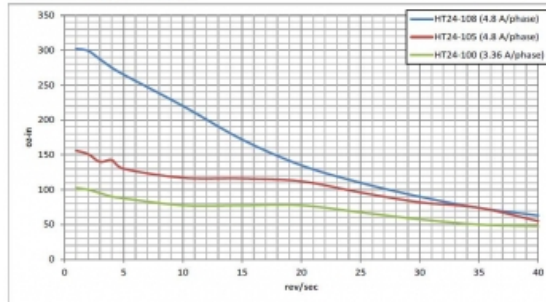
HT24

24 VDC power supply, 20000 steps/rev



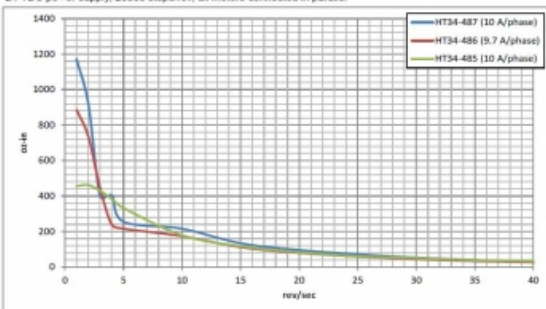
HT24

48 VDC power supply, 20000 steps/rev



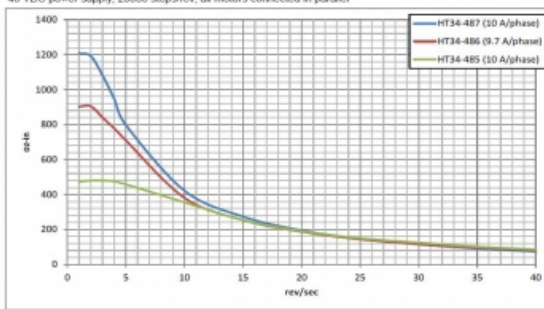
HT34-485/486/487 with ST10

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



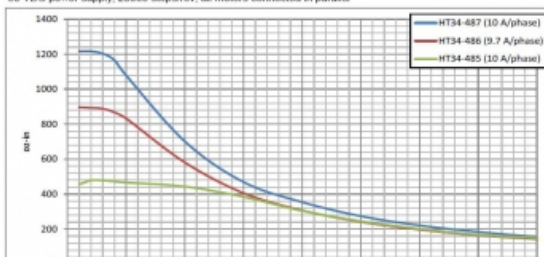
HT34-485/486/487 with ST10

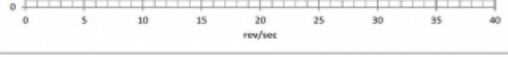
48 VDC power supply, 20000 steps/rev, all motors connected in parallel



HT34-485/486/487 with ST10

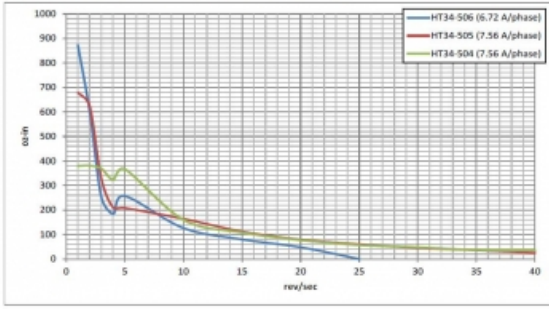
80 VDC power supply, 20000 steps/rev, all motors connected in parallel





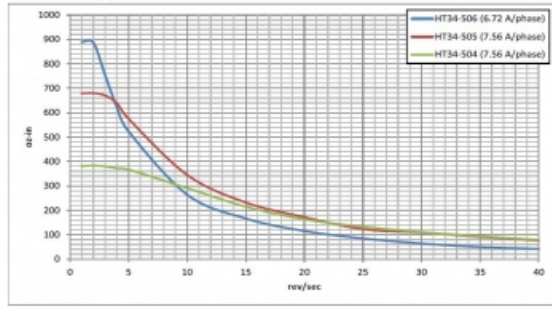
HT34-504/505/506 with ST10

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



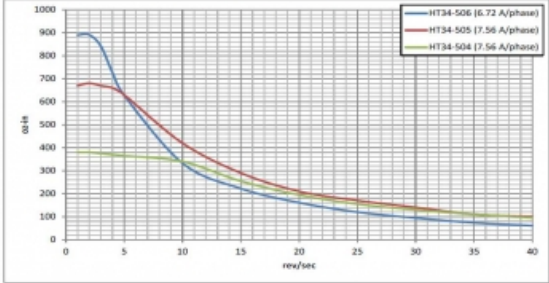
HT34-504/505/506 with ST10

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

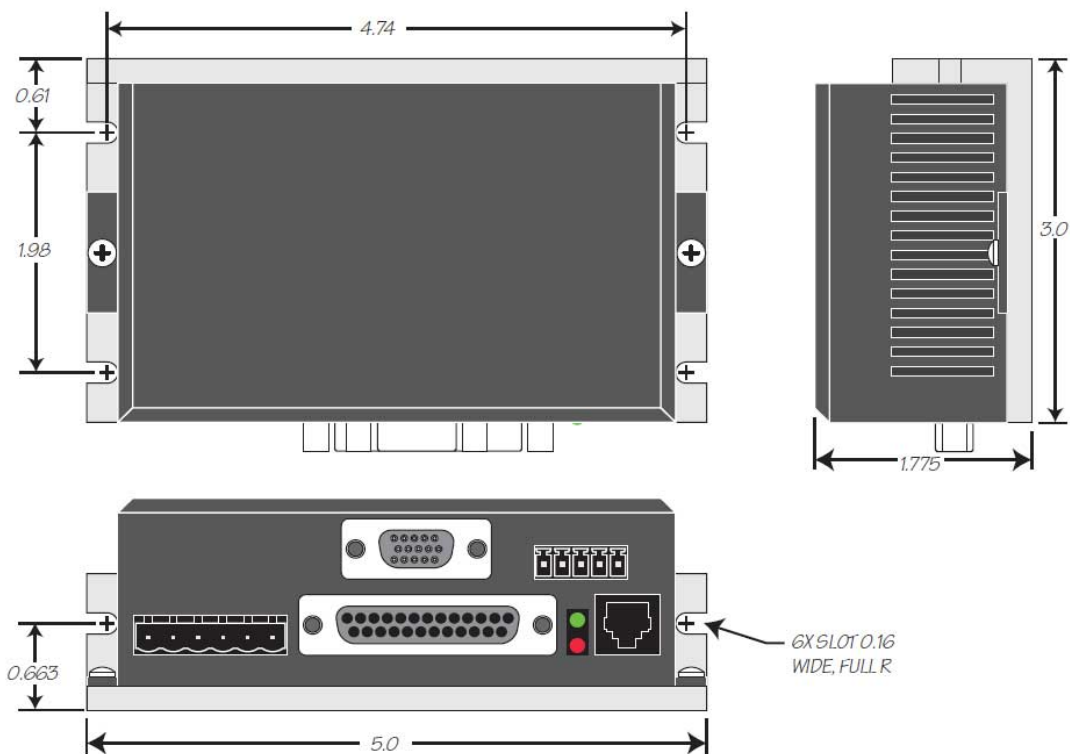
Sample Code:  [scldemo.zip](#)

Downloads

| | |
|-------------------------------|---|
| Manuals: | <ul style="list-style-type: none">  ST5-10-QSi_Hardware_Manual_920-0004F-opt-.pdf  ST5_10_Q_QuickSetupGuide_920-0007F.pdf  ModbusManual_920-0072F.pdf  Host-Command-Reference_920-0002R.pdf |
| Product PDF - S3 Link: | http://s3.amazonaws.com/applied-motion-pdf/ST10-Q-RE.pdf |
| Datasheet: |  ST-Datasheet_925-0007.pdf |
| 2D Drawing: | <ul style="list-style-type: none">  ST_T_simple_3D.pdf  ST5_10_Dimensions.pdf |
| 3D Drawing: |  ST5_10-Q_Si_C_SIMPLE.igs |
| Speed-Torque Curves: |  ST_Speed_Torque_revF.pdf |
| Agency Approvals: |  ST-Q-Si-C-IP_CE_DOC.pdf |
| Application Notes: | <ul style="list-style-type: none">  APPN0034B-ModbusRTU-from-Proface-HMI-with-Q.zip  APPN0026B-LabVIEW-communication-using-streaming-commands.zip  APPN0019_Analog-positioning-using-Q-program.zip  APPN0018_EZ-Series-Touchpanel-HMI.zip  APPN0016_Simple-25-pin-mating-connections.pdf  APPN0015_Make-a-serial-programming-cable.pdf |

2D Drawings

Mechanical Outline



Products in the Series *Modbus RTU Products*

| Model Number | Supply Voltage | Control Modes | Output Current | Communication Ports | Encoder Feedback | 1pc. |
|--------------|----------------|--|----------------|---------------------|------------------|-----------|
| | 12-70 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$608.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$732.00 |
| | 12-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$968.00 |
| | 48-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$1339.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | No | \$334.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | No | \$354.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | No | \$466.00 |
| | 15-30 VDC | Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$325.00 |
| | 12-70 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$617.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$752.00 |
| | 12-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$982.00 |
| | | Step & Direction, Analog Torque / Velocity, Streaming Commands. | | | | |

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|--|-----------|--|----|--------|-----|-----------|
| | 48-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$1434.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | Yes | \$420.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | NA | RS-232 | Yes | \$528.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | Yes | \$677.00 |
| | 15-30 VDC | Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$342.00 |
| | 12-70 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$625.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$823.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$1075.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | No | \$330.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | NA | RS-232 | No | \$438.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | No | \$587.00 |
| | 12-48 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$494.00 |
| | 12-70 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$635.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$844.00 |

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|--|-----------|---|----|--------|-----|-----------|
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$1170.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$427.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$536.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$686.00 |
| | 12-70 VDC | Step & Direction, Analog Torque / Velocity, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | Yes | \$926.00 |
| | 12-48 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$502.00 |
| | 12-48 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$498.00 |
| | 12-70 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$691.00 |
| | 48-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$925.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$1146.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | No | \$337.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | No | \$446.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | No | \$596.00 |
| | 12-70 VDC | Step & Direction, Streaming Commands, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$308.00 |

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|--|-----------|--|----|--------|-----|-----------|
| | 15-30 VDC | Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$506.00 |
| | 12-48 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$505.00 |
| | 12-70 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$701.00 |
| | 48-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$946.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$1241.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | Yes | \$416.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | Yes | \$424.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | NA | RS-232 | Yes | \$547.00 |
| | 15-30 VDC | Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$325.00 |
| | 12-48 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$502.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$661.00 |
| | 12-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$916.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-232 | Yes | \$1237.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus | NA | RS-232 | No | \$326.00 |

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|---------------------------|-----------|---|------------------|--------|-----|-----------|
| | | RTU | | | | |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-232 | No | \$346.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | NA | RS-232 | No | \$457.00 |
| | 15-30 VDC | Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$317.00 |
| | 12-48 VDC | Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$509.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$682.00 |
| | 12-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$929.00 |
| | 24-70 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$1332.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$424.00 |
| | 12-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$432.00 |
| | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | Yes | \$556.00 |
| | 15-30 VDC | Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus RTU | NA | RS-485 | Yes | \$334.00 |
| ST10-Q-NE | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus RTU | 0.1-10.0 A/Phase | RS-232 | Yes | \$696.00 |
| ST10-Q-NF | 24-80 VDC | Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus RTU | 0.1-10.0 A/Phase | RS-232 | Yes | \$668.00 |
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|----------------------------|------------|---|------------------|---|-----|----------|
| ST10-Q-NN | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | 0.1-10.0 A/Phase | RS-232 | No | \$618.00 |
| ST10-Q-RE | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-10.0 A/Phase | RS-232, RS-485 | Yes | \$828.00 |
| ST10-Q-RN | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-10.0 A/Phase | RS-232, RS-485 | No | \$756.00 |
| ST5-Q-NE | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | 0.1-5.0 A/Phase | RS-232 | Yes | \$648.00 |
| ST5-Q-NF | 24-48 VDC | Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus RTU | 0.1-5.0 A/Phase | RS-232 | Yes | \$636.00 |
| ST5-Q-NN | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | 0.1-5.0 A/Phase | RS-232 | No | \$560.00 |
| ST5-Q-RE | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-5.0 A/Phase | RS-232, RS-485 | Yes | \$750.00 |
| ST5-Q-RN | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-5.0 A/Phase | RS-232, RS-485 | No | \$684.00 |
| STF03 | 12-48 VDC | Streaming Commands, Q Programming, CANopen, EtherNet/IP, Modbus RTU, Modbus TCP, EtherCAT | 0.1-3.0 A/Phase | RS-485, CANopen, Ethernet, EtherNet/IP, EtherCAT, Ethernet, dual-port | No | \$185.00 |
| STF06 | 12-48 VDC | Streaming Commands, Q Programming, CANopen, EtherNet/IP, Modbus RTU, Modbus TCP, EtherCAT | 0.1-6.0 A/Phase | RS-485, CANopen, Ethernet, EtherNet/IP, EtherCAT, Ethernet, dual-port | No | \$198.00 |
| STF10 | 24-70 VDC | Streaming Commands, Q Programming, CANopen, EtherNet/IP, Modbus RTU, Modbus TCP, EtherCAT | 0.1-10.0 A/Phase | RS-485, CANopen, Ethernet, EtherNet/IP, EtherCAT, Ethernet, dual-port | No | \$211.00 |
| SV2A3-Q-RE | 78-139 VAC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | NA | \$623.00 |
| SV2A5-Q-RE | 78-139 VAC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | NA | \$779.00 |
| | | Streaming Commands, Analog Positioning | | | | |

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|-----------------------------|-------------|--|----|--------|----|----------|
| SV2B3-Q-RE | 156-264 VAC | Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | NA | \$623.00 |
| SV2B5-Q-RE | 156-264 VAC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | NA | \$779.00 |
| SV2D10-Q-AE | 24-60 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming | NA | RS-232 | NA | \$431.00 |
| SV2D10-Q-RE | 24-60 VDC | Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | NA | RS-485 | NA | \$431.00 |

Products in the Series *ST Stepper Drives*

| Model Number | Supply Voltage | Control Modes | Output Current | Communication Ports | Encoder Feedback | 1pc. |
|----------------------------|----------------|---|------------------|-----------------------|------------------|----------|
| ST10-C-CE | 24-80 VDC | CANopen | 0.1-10.0 A/Phase | RS-232, CANopen | Yes | \$818.00 |
| ST10-C-CN | 24-80 VDC | CANopen | 0.1-10.0 A/Phase | RS-232, CANopen | No | \$757.00 |
| ST10-IP-EE | 24-80 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP | 0.1-10.0 A/Phase | Ethernet, EtherNet/IP | Yes | \$852.00 |
| ST10-IP-EN | 24-80 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP | 0.1-10.0 A/Phase | Ethernet, EtherNet/IP | No | \$791.00 |
| ST10-Plus | 24-80 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming | 0.1-10.0 A/Phase | RS-232 | No | \$322.00 |
| ST10-Q-EE | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP | 0.1-10.0 A/Phase | Ethernet | Yes | \$871.00 |
| ST10-Q-EN | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP | 0.1-10.0 A/Phase | Ethernet | No | \$792.00 |
| ST10-Q-NE | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus RTU | 0.1-10.0 A/Phase | RS-232 | Yes | \$696.00 |
| ST10-Q-NF | 24-80 VDC | Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus RTU | 0.1-10.0 A/Phase | RS-232 | Yes | \$668.00 |
| ST10-Q-NN | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | 0.1-10.0 A/Phase | RS-232 | No | \$618.00 |
| ST10-Q-RE | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-10.0 A/Phase | RS-232, RS-485 | Yes | \$828.00 |
| ST10-Q-RN | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-10.0 A/Phase | RS-232, RS-485 | No | \$756.00 |
| ST10-S | 24-80 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible | 0.1-10.0 A/Phase | RS-232 | No | \$274.00 |
| ST10-Si-NE | 24-80 VDC | Si Programming | 0.1-10.0 A/Phase | RS-232 | Yes | \$756.00 |
| ST10-Si-NF | 24-80 VDC | Si Programming | 0.1-10.0 A/Phase | RS-232 | Yes | \$763.00 |
| ST10-Si-NN | 24-80 VDC | Si Programming | 0.1-10.0 A/Phase | RS-232 | No | \$696.00 |
| ST5-C-CE | 24-48 VDC | CANopen | 0.1-5.0 A/Phase | RS-232, CANopen | Yes | \$702.00 |
| ST5-C-CN | 24-48 VDC | CANopen | 0.1-5.0 A/Phase | RS-232, CANopen | No | \$649.00 |
| ST5-IP-EE | 24-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP | 0.1-5.0 A/Phase | Ethernet, EtherNet/IP | Yes | \$786.00 |
| | | Streaming Commands, Analog | | | | |

| | | | | | | |
|---------------------------|-----------|---|-----------------|-----------------------|-----|----------|
| ST5-IP-EN | 24-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP | 0.1-5.0 A/Phase | Ethernet, EtherNet/IP | No | \$728.00 |
| ST5-Plus | 24-48 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming | 0.1-5.0 A/Phase | RS-232 | No | \$295.00 |
| ST5-Q-EE | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP | 0.1-5.0 A/Phase | Ethernet | Yes | \$737.00 |
| ST5-Q-EN | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP | 0.1-5.0 A/Phase | Ethernet | No | \$677.00 |
| ST5-Q-NE | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | 0.1-5.0 A/Phase | RS-232 | Yes | \$648.00 |
| ST5-Q-NF | 24-48 VDC | Step & Direction, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus RTU | 0.1-5.0 A/Phase | RS-232 | Yes | \$636.00 |
| ST5-Q-NN | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU | 0.1-5.0 A/Phase | RS-232 | No | \$560.00 |
| ST5-Q-RE | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-5.0 A/Phase | RS-232, RS-485 | Yes | \$750.00 |
| ST5-Q-RN | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU | 0.1-5.0 A/Phase | RS-232, RS-485 | No | \$684.00 |
| ST5-S | 24-48 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible | 0.1-5.0 A/Phase | RS-232 | No | \$247.00 |
| ST5-Si-NE | 24-48 VDC | Si Programming | 0.1-5.0 A/Phase | RS-232 | Yes | \$695.00 |
| ST5-Si-NF | 24-48 VDC | Si Programming | 0.1-5.0 A/Phase | RS-232 | Yes | \$727.00 |
| ST5-Si-NN | 24-48 VDC | Si Programming | 0.1-5.0 A/Phase | RS-232 | No | \$588.00 |