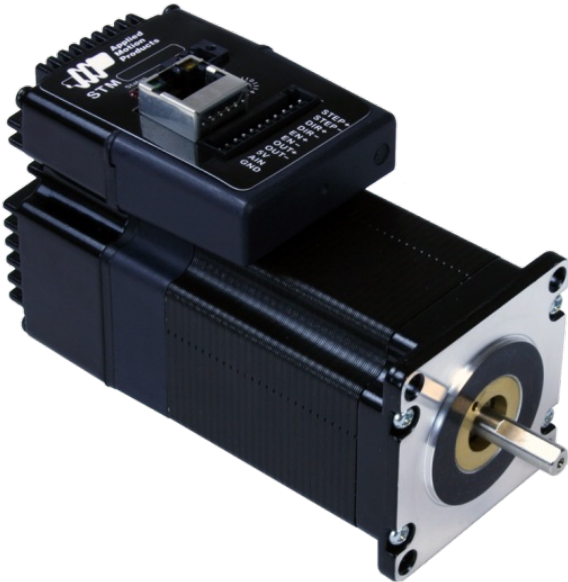


## STM23S-3EN

NEMA 23 Integrated Drive+Motor w/ Ethernet

1pc. - 303.00  
50pc. - 227.25



### Product Features

- *Sophisticated current control*
- *Anti-resonance*
- *Torque ripple smoothing*
- *Microstep emulation*
- *NEMA 23 frame size*
- *Step & direction, CW/CCW pulse, and A/B quadrature pulse control modes*
- *Velocity (oscillator) control mode*
- *Streaming serial commands (SCL) control mode*
- *Fast 10/100 Ethernet for programming and communications*
- *UDP & TCP support*



### Description

The STM23S-3EN integrated stepper is a drive+motor unit, fusing a NEMA 23 step motor and a sophisticated 5.0 A/phase (peak-of-sine) stepper drive into a single device. Power to the drive, located at the rear of the motor, must be supplied by an external DC supply. See Related and Recommended Products below for compatible 24 and 48 volt DC [power supplies](#) .

The STM23S-3EN integrated stepper can operate in the following control modes: step (pulse) & direction, velocity (oscillator), and streaming serial commands (SCL). The STM23S is setup and configured using Applied Motion's [ST Configurator™](#) software.

Each STM23S integrated stepper comes with 3 digital inputs, 1 digital output, and 1 analog input. The digital inputs accept signals of 5-24 VDC and can be used for connecting pulse & direction signals, end-of-travel limit switches, jog switches, quadrature encoder signals, PLC outputs, sensors, or many other signal types. The digital output can be connected to PLC inputs, counters, lights, relays, or other devices. The analog input accepts 0-5 VDC signals and can be used for velocity and position control.

The STM23S-3EN comes with an Ethernet port for configuration and communications. The Ethernet port is fast 10/100 Mbit, and the drive supports both TCP and UDP communication protocols.

All STM23S models are CE approved and RoHS compliant.

## Specifications

|                                     |   |
|-------------------------------------|---|
| <b>Part Number:</b>                 | STM23S-3EN  |
| <b>Supply Voltage:</b>              | 12-70 VDC   |
| <b>Supply Voltage Type:</b>         | DC  |
| <b>Control Modes:</b>               | Step & Direction<br>Velocity (Oscillator)<br>Streaming Commands |
| <b>Communication Ports:</b>         | Ethernet  |
| <b>Encoder Feedback:</b>            | No  |
| <b>Step Resolution:</b>             | Full<br>Half<br>Microstepping<br>Microstep Emulation            |
| <b>Idle Current Reduction:</b>      | 0-90%   |
| <b>Setup Method:</b>                | Software setup  |
| <b>Digital Inputs:</b>              | 3   |
| <b>Digital Outputs:</b>             | 1   |
| <b>Analog Inputs:</b>               | 1 single-ended  |
| <b>Circuit Protection:</b>          | Short circuit<br>Over-voltage<br>Under-voltage<br>Over-temp     |
| <b>Status LEDs:</b>                 | 1 red, 1 green  |
| <b>Frame Size:</b>                  | NEMA 23   |
| <b>Holding Torque:</b>              | 210 oz-in   |
| <b>Step Angle:</b>                  | 1.8 deg   |
| <b>Rotor Inertia:</b>               | 6.51E-03 oz-in-sec <sup>2</sup>                                 |
| <b>Length:</b>                      | 4.50 inches   |
| <b>Weight:</b>                      | 42 oz   |
| <b>Operating Temperature Range:</b> | 0 to 85 °C  |
| <b>Ambient Temperature Range:</b>   | 0 to 40 °C  |
| <b>Ambient Humidity:</b>            | 90% max, non-condensing   |
| <b>Insulation Class:</b>            | Class B (130 °C)  |

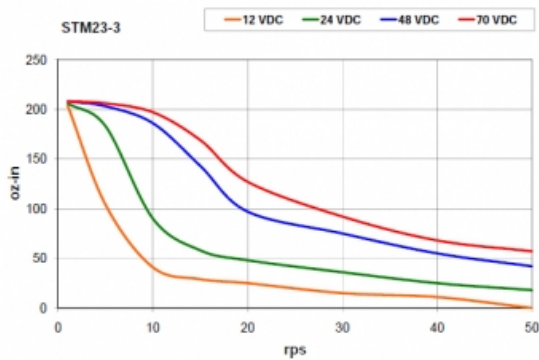
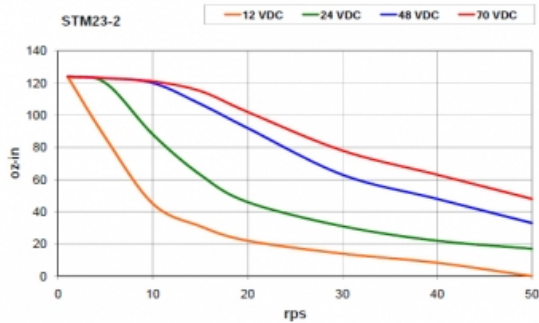
## Downloads

|                             |  |
|-----------------------------|--|
| <b>Speed-Torque Curves:</b> | <a href="#">STM23-speed-torque.pdf</a>   |
| <b>Manuals:</b>             | <a href="#">STM23_Hardware_Manual_920-0021.pdf</a><br><a href="#">STM23_Ethernet_QuickSetup_920-0058.pdf</a><br><a href="#">Host Command Reference Rev I.pdf</a> |
| <b>Datasheet:</b>           | <a href="http://s3.amazonaws.com/applied-motion-pdf/STM23S-3EN.pdf">http://s3.amazonaws.com/applied-motion-pdf/STM23S-3EN.pdf</a>                                |
| <b>Family Datasheet:</b>    | <a href="#">STM-Datasheet-925-0009.pdf</a>   |
| <b>2D Drawing:</b>          | <a href="#">STM23S-3XX_RevC.pdf</a><br><a href="#">STM23S-3_3D.pdf</a>   |
| <b>3D Drawing:</b>          | <a href="#">STM23S-3_5-14_igs</a>  |
| <b>Application Notes:</b>   | <a href="#">APPN0021_5V-Keepalive-Circuit.pdf</a>  |

## Torque Curves

### Torque-Speed Curves

Note: all torque curves were measured at 20,000 steps/rev.



## Software

|                     |   |
|---------------------|---|
| <b>Software:</b>    | <a href="#">SCL Utility</a><br><a href="#">ST Configurator™</a>   |
| <b>Sample Code:</b> | <a href="#">C_sharp_UDP_example.zip</a><br><a href="#">VB6_UDP_example.zip</a><br><a href="#">VB6_TCP_example.zip</a> |

| <b>STM23S-3EN</b><br>Part No. STM23S-3EN |  |
|--|--|
| <b>1pc.</b>                              | \$303.00   |
| <b>25pc.</b>                             | \$260.58   |
| <b>50pc.</b>                             | \$227.25   |
| <b>100pc.</b>                            | <a href="#">Contact us</a> for 100+ piece pricing. |

## Products in the Series *STM23 Integrated Steppers*

| Part Number                 | Frame Size | Supply Voltage | Control Modes  | Holding Torque | Communication Ports   | Encoder Feedback | 1pc./50pc.          |
|-----------------------------|------------|----------------|--|----------------|-----------------------|------------------|---------------------|
| <a href="#">STM23C-3CE</a>  | NEMA 23    | 12-70 VDC      | CANopen  | 210            | RS-232, CANopen       | Yes              | \$535.00 / \$401.25 |
| <a href="#">STM23C-3CN</a>  | NEMA 23    | 12-70 VDC      | CANopen  | 210            | RS-232, CANopen       | No               | \$460.00 / \$345.00 |
| <a href="#">STM23IP-2EE</a> | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP                  | 125            | Ethernet, EtherNet/IP | Yes              | \$525.00 / \$393.75 |
| <a href="#">STM23IP-2EN</a> | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP                  | 125            | Ethernet, EtherNet/IP | No               | \$450.00 / \$337.50 |
| <a href="#">STM23IP-3EE</a> | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP                  | 210            | Ethernet, EtherNet/IP | Yes              | \$535.00 / \$401.25 |
| <a href="#">STM23IP-3EN</a> | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP                  | 210            | Ethernet, EtherNet/IP | No               | \$460.00 / \$345.00 |
| <a href="#">STM23Q-2AE</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus | 125            | RS-232                | Yes              | \$440.00 / \$330.00 |
| <a href="#">STM23Q-2AN</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus | 125            | RS-232                | No               | \$365.00 / \$273.75 |
| <a href="#">STM23Q-2EE</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming                               | 125            | Ethernet              | Yes              | \$452.00 / \$339.00 |
| <a href="#">STM23Q-2EN</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming                               | 125            | Ethernet              | No               | \$377.00 / \$282.75 |
| <a href="#">STM23Q-2RE</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus                       | 125            | RS-485                | Yes              | \$447.00 / \$335.25 |
| <a href="#">STM23Q-2RN</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus                       | 125            | RS-485                | No               | \$372.00 / \$279.00 |
| <a href="#">STM23Q-3AE</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus | 210            | RS-232                | Yes              | \$456.00 / \$342.00 |
| <a href="#">STM23Q-3AN</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus | 210            | RS-232                | No               | \$381.00 / \$285.75 |
| <a href="#">STM23Q-3EE</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming                               | 210            | Ethernet              | Yes              | \$468.00 / \$351.00 |
| <a href="#">STM23Q-3EN</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming                               | 210            | Ethernet              | No               | \$393.00 / \$294.75 |
| <a href="#">STM23Q-3RE</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus                       | 210            | RS-485                | Yes              | \$463.00 / \$347.25 |
| <a href="#">STM23Q-3RN</a>  | NEMA 23    | 12-70 VDC      | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus                       | 210            | RS-485                | No               | \$388.00 / \$291.00 |
| <a href="#">STM23R-2ND</a>  | NEMA 23    | 12-70 VDC      | Step & Direction   | 125            | NA                    | No               | \$172.00 / \$172.00 |
| <a href="#">STM23R-2NE</a>  | NEMA 23    | 12-70 VDC      | Step & Direction   | 125            | NA                    | Yes              | \$219.00 / \$219.00 |
| <a href="#">STM23R-2NN</a>  | NEMA 23    | 12-70 VDC      | Step & Direction   | 125            | NA                    | No               | \$172.00 / \$172.00 |
| <a href="#">STM23R-3ND</a>  | NEMA 23    | 12-70 VDC      | Step & Direction   | 210            | NA                    | No               | \$189.00 / \$189.00 |
| <a href="#">STM23R-3NE</a>  | NEMA 23    | 12-70 VDC      | Step & Direction   | 210            | NA                    | Yes              | \$230.00 / \$230.00 |
| <a href="#">STM23R-3NN</a>  | NEMA 23    | 12-70 VDC      | Step & Direction   | 210            | NA                    | No               | \$189.00 / \$189.00 |
| <a href="#">STM23S-2AE</a>  | NEMA 23    | 12-70 VDC      | Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible                      | 125            | RS-232                | Yes              | \$350.00 / \$262.50 |

|                             |         |           |   |     |                       |     |                     |
|-----------------------------|---------|-----------|---|-----|-----------------------|-----|---------------------|
| <a href="#">STM23S-2AN</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible     | 125 | RS-232                | No  | \$275.00 / \$206.25 |
| <a href="#">STM23S-2EE</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 125 | Ethernet              | Yes | \$362.00 / \$271.50 |
| <a href="#">STM23S-2EN</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 125 | Ethernet              | No  | \$287.00 / \$215.25 |
| <a href="#">STM23S-2RE</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 125 | RS-485                | Yes | \$357.00 / \$267.75 |
| <a href="#">STM23S-2RN</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 125 | RS-485                | No  | \$282.00 / \$211.50 |
| <a href="#">STM23S-3AE</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible     | 210 | RS-232                | Yes | \$366.00 / \$274.50 |
| <a href="#">STM23S-3AN</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible     | 210 | RS-232                | No  | \$291.00 / \$218.25 |
| <a href="#">STM23S-3EE</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 210 | Ethernet              | Yes | \$378.00 / \$283.50 |
| <a href="#">STM23S-3EN</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 210 | Ethernet              | No  | \$303.00 / \$227.25 |
| <a href="#">STM23S-3RE</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 210 | RS-485                | Yes | \$373.00 / \$279.75 |
| <a href="#">STM23S-3RN</a>  | NEMA 23 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 210 | RS-485                | No  | \$298.00 / \$223.50 |
| <a href="#">STM24IP-3EE</a> | NEMA 24 | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP | 340 | Ethernet, EtherNet/IP | Yes | \$626.00 / \$469.50 |
| <a href="#">STM24IP-3EN</a> | NEMA 24 | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP | 340 | Ethernet, EtherNet/IP | No  | \$551.00 / \$413.25 |
| <a href="#">STM24Q-3EE</a>  | NEMA 24 | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming              | 340 | Ethernet              | Yes | \$576.00 / \$432.00 |
| <a href="#">STM24Q-3EN</a>  | NEMA 24 | 12-70 VDC | Streaming Commands, Analog Positioning, Encoder Following, Q Programming              | 340 | Ethernet              | No  | \$501.00 / \$375.75 |
| <a href="#">STM24S-3EE</a>  | NEMA 24 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 340 | Ethernet              | Yes | \$486.00 / \$364.50 |
| <a href="#">STM24S-3EN</a>  | NEMA 24 | 12-70 VDC | Step & Direction, Velocity (Oscillator), Streaming Commands                           | 340 | Ethernet              | No  | \$411.00 / \$308.25 |