

## STM23S-2RE

NEMA 23 Integrated Drive+Motor w/ Encoder



### Product Features

- Sophisticated current control
- Anti-resonance
- Torque ripple smoothing
- Microstep emulation
- Step & direction, CW/CCW pulse, and A/B quadrature control modes
- Oscillator (velocity) control mode
- Streaming serial commands
- SiNet™ Hub compatible
- RS-485 port for programming and communications
- Built-in incremental encoder



### Description

The STM23S-2RE 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-2RE integrated stepper can operate in the following control modes: step (pulse) & direction, velocity (oscillator), streaming serial commands (SCL), and operation with an Applied Motion 4-axis or 8-axis SiNet Hub. All STM23 units are setup and configured using Applied Motion's [ST Configurator™](#) software.

An integral 1000-line (4000 count/rev) incremental encoder is housed inside the same enclosure as the drive electronics, providing protection from dust and debris. The integration of the encoder means the STM23S-2RE can perform special functions not available otherwise. 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 actually prevents stalling of the step motor by dynamically adjusting 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 available to step motors, such as torque-control applications. The Stall Prevention feature also performs static position maintenance, which maintains the position of the motor shaft when at rest.

Each STM23 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-2RE comes with an RS-485 port for programming and serial communications.

|                                    |   |
|------------------------------------|---|
| <b>Part Number</b>                 | STM23S-2RE  |
| <b>Supply Voltage</b>              | 12-70 VDC   |
| <b>Supply Voltage Type</b>         | DC  |
| <b>Control Modes</b>               | <ul style="list-style-type: none"> <li>• Step &amp; Direction</li> <li>• Velocity (Oscillator)</li> <li>• Streaming Commands</li> </ul> |
| <b>Communication Ports</b>         | <ul style="list-style-type: none"> <li>• RS-485</li> </ul>  |
| <b>Encoder Feedback</b>            | Yes   |
| <b>Step Resolution</b>             | <ul style="list-style-type: none"> <li>• Full</li> <li>• Half</li> <li>• Microstepping</li> <li>• Microstep Emulation</li> </ul>        |
| <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>          | <ul style="list-style-type: none"> <li>• Short circuit</li> <li>• Over-voltage</li> <li>• Under-voltage</li> <li>• Over-temp</li> </ul> |
| <b>Status LEDs</b>                 | 1 red, 1 green  |
| <b>Frame Size</b>                  | NEMA 23   |
| <b>Holding Torque</b>              | 125 oz-in   |
| <b>Step Angle</b>                  | 1.8 deg   |
| <b>Rotor Inertia</b>               | 3.68E-03 oz-in-sec <sup>2</sup>   |
| <b>Length</b>                      | 3.64 inches   |
| <b>Weight</b>                      | 30 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)  |
| <b>Maximum Radial Load</b>         | NA  |
| <b>Maximum Thrust Load</b>         | NA  |
| <b>Shaft Run Out</b>               | NA  |
| <b>Radial Play</b>                 | NA  |
| <b>End Play</b>                    | NA  |