Applied Motion Products

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Product Datasheet
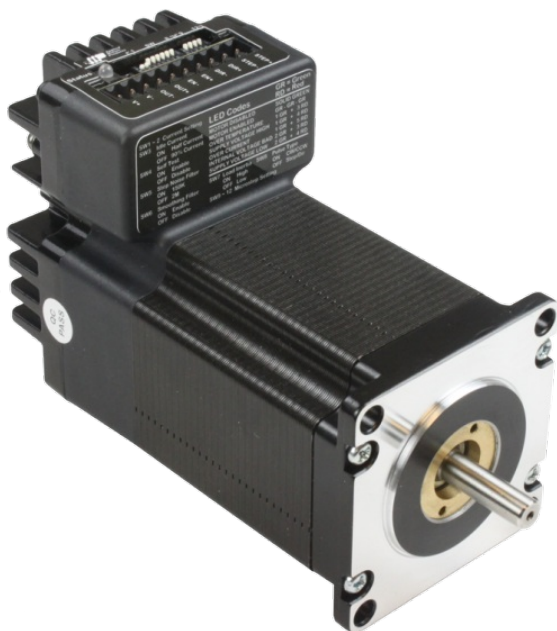*www.Applied-Motion.com*

STM23R-3ND

NEMA 23 Integrated Drive+Motor w/ Double Shaft

Product Features

- *Sophisticated current control*
- *Anti-resonance*
- *Torque ripple smoothing*
- *Microstep emulation*
- *NEMA 23 frame size*
- *Step & direction or CW/CCW pulse control modes*
- *Dip switch setup (no software required)*

Description

The STM23R-3ND 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 STM23R-3ND is designed for step & direction control from an external controller. The external controller can be a motion controller, PLC, or other device that provides two digital outputs: one output for digital pulses to control position and velocity of the motor, and a second output to control the direction of the motor, CW and CCW. Some controllers provide two pulse outputs – referred to as CW/CCW pulse or pulse-pulse – instead of pulse & direction. The STM23R works with these controllers as well simply by changing one of the setup dip switches.

Note that STM23R integrated steppers are not available with any communication options (such as Ethernet, RS-485, etc.) or additional control modes (such as velocity, streaming commands or Q programming). For these and other functions see other models in the STM23 integrated stepper family .

The STM23R-3ND comes with a rear shaft which can be used to mount encoders, hand wheels, couplers, etc. If the rear shaft is not needed purchase the STM23R-3NN . If an encoder is needed consider the STM23R-3NE , which comes with an incremental encoder already assembled to the rear shaft.

Each STM23R integrated stepper comes with 3 digital inputs and 1 digital output. Two of the digital inputs (labeled STEP and DIR) accept signals of 5-24 VDC and are used for controlling position and velocity of the motor, either via pulse & direction or CW/CCW pulse outputs from an external controller. The third digital input (EN) accepts signals of 5-24 VDC and can be used to enable/disable power to the motor shaft. The digital output (OUT) can be used to indicate drive and motor faults by connecting it to an available digital input on the external controller.

To facilitate connecting I/O signals and DC power to the STM23R, a mating connector with 12-inch flying leads is included with each unit.

All STM23R integrated steppers are RoHS compliant.

Specifications

Part Number:	STM23R-3ND
Supply Voltage:	12-70 VDC
Supply Voltage Type:	DC
Control Modes:	Step & Direction
Encoder Feedback:	No
Step Resolution:	Full Half Microstepping Microstep Emulation
Idle Current Reduction:	50% or 90% of running current, switch selectable
Setup Method:	Switch / potentiometer
Digital Inputs:	3
Digital Outputs:	1
Circuit Protection:	Short circuit Over-voltage Under-voltage Over-temp
Status LEDs:	1 red/green
Frame Size:	NEMA 23
Holding Torque:	210 oz-in
Step Angle:	1.8 deg
Rotor Inertia:	6.51E-03 oz-in-sec^2
Length:	4.21 inches
Weight:	42 oz
Operating Temperature Range:	0 to 85 °C
Ambient Temperature Range:	0 to 40 °C
Ambient Humidity:	90% max, non-condensing
Insulation Class:	Class B (130 ºC)

Downloads

Speed-Torque Curves:	⊠ STM23R-speed-torque.pdf
Manuals:	⊠ STM23R-Quick_Setup_Guide_920-0057B.pdf ⊠ STM23R Hardware Manual 920-0056D.pdf
Product PDF - S3 Link:	http://s3.amazonaws.com/applied-motion-pdf/STM23R-3ND.pdf
Datasheet:	⊠ STM-Datasheet-925-0009.pdf
2D Drawing:	⊠ STM23R-3ND_WEB_RevB.pdf
3D Drawing:	☐ STM23R-3ND_10-29-13.igs

Torque Curves

STM23R-2 Torque at 5A/phase — 12V 24V 48V 70V
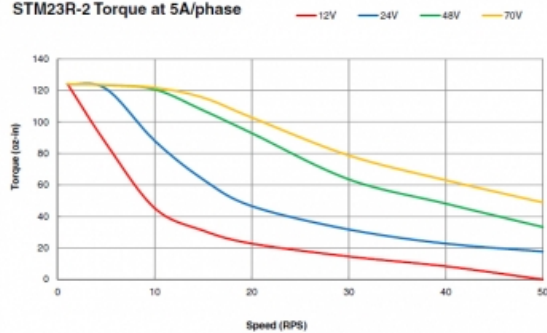
STM23R-3 Torque at 5A/phase — 12V 24V 48V 70V
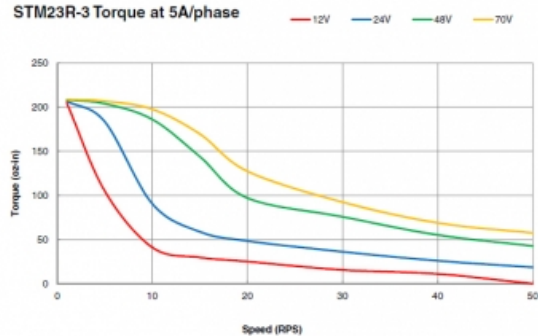
Products in the Series *STM-R Integrated Steppers*

Part Number	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1pc.
STM17R-3ND	NEMA 17	12-48 VDC	Step & Direction	68	NA	No	$118.00
STM17R-3NE	NEMA 17	12-48 VDC	Step & Direction	68	NA	Yes	$204.00
STM17R-3NN	NEMA 17	12-48 VDC	Step & Direction	68	NA	No	$118.00
STM23R-2ND	NEMA 23	12-70 VDC	Step & Direction	125	NA	No	$179.00
STM23R-2NE	NEMA 23	12-70 VDC	Step & Direction	125	NA	Yes	$268.00
STM23R-2NN	NEMA 23	12-70 VDC	Step & Direction	125	NA	No	$179.00
STM23R-3ND	NEMA 23	12-70 VDC	Step & Direction	210	NA	No	$190.00
STM23R-3NE	NEMA 23	12-70 VDC	Step & Direction	210	NA	Yes	$272.00
STM23R-3NN	NEMA 23	12-70 VDC	Step & Direction	210	NA	No	$190.00

Products in the Series *STM23 Integrated Steppers*

Part Number	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1pc.
STM23C-3CE	NEMA 23	12-70 VDC	CANopen	210	RS-232, CANopen	Yes	$642.00
STM23C-3CN	NEMA 23	12-70 VDC	CANopen	210	RS-232, CANopen	No	$552.00
STM23IP-2EE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP	125	Ethernet, EtherNet/IP	Yes	$630.00
STM23IP-2EN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP	125	Ethernet, EtherNet/IP	No	$540.00
STM23IP-3EE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP	210	Ethernet, EtherNet/IP	Yes	$642.00
STM23IP-3EN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP	210	Ethernet, EtherNet/IP	No	$552.00
STM23Q-2AE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU	125	RS-232	Yes	$528.00
STM23Q-2AN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU	125	RS-232	No	$438.00
STM23Q-2EE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP	125	Ethernet	Yes	$542.00
STM23Q-2EN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP	125	Ethernet	No	$452.00
STM23Q-2RE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU	125	RS-485	Yes	$536.00
STM23Q-2RN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU	125	RS-485	No	$446.00
STM23Q-3AE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU	210	RS-232	Yes	$547.00
STM23Q-3AN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus RTU	210	RS-232	No	$457.00
STM23Q-3EE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP	210	Ethernet	Yes	$562.00
STM23Q-3EN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP	210	Ethernet	No	$472.00
STM23Q-3RE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU	210	RS-485	Yes	$556.00
STM23Q-3RN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus RTU	210	RS-485	No	$466.00
STM23R-2ND	NEMA 23	12-70 VDC	Step & Direction	125	NA	No	$179.00
STM23R-2NE	NEMA 23	12-70 VDC	Step & Direction	125	NA	Yes	$268.00
STM23R-2NN	NEMA 23	12-70 VDC	Step & Direction	125	NA	No	$179.00
STM23R-3ND	NEMA 23	12-70 VDC	Step & Direction	210	NA	No	$190.00

STM23R-3NE	NEMA 23	12-70 VDC	Step & Direction	210	NA	Yes	$272.00
STM23R-3NN	NEMA 23	12-70 VDC	Step & Direction	210	NA	No	$190.00
STM23S-2AE	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	125	RS-232	Yes	$420.00
STM23S-2AN	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	125	RS-232	No	$330.00
STM23S-2EE	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	125	Ethernet	Yes	$434.00
STM23S-2EN	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	125	Ethernet	No	$344.00
STM23S-2RE	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	125	RS-485	Yes	$428.00
STM23S-2RN	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	125	RS-485	No	$338.00
STM23S-3AE	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	210	RS-232	Yes	$439.00
STM23S-3AN	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, SiNet Hub Compatible	210	RS-232	No	$349.00
STM23S-3EE	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	210	Ethernet	Yes	$454.00
STM23S-3EN	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	210	Ethernet	No	$364.00
STM23S-3RE	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	210	RS-485	Yes	$448.00
STM23S-3RN	NEMA 23	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	210	RS-485	No	$358.00
STM24IP-3EE	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP	340	Ethernet, EtherNet/IP	Yes	$751.00
STM24IP-3EN	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Modbus TCP	340	Ethernet, EtherNet/IP	No	$661.00
STM24Q-3EE	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP	340	Ethernet	Yes	$691.00
STM24Q-3EN	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus TCP	340	Ethernet	No	$601.00
STM24S-3EE	NEMA 24	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	340	Ethernet	Yes	$583.00
STM24S-3EN	NEMA 24	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	340	Ethernet	No	$493.00