

## TSM23Q-2RG

NEMA 23 Integrated StepSERVO™ Motor w/ Q Programming & Modbus/RTU

1pc. - 514.00  
50pc. - 385.50



### **Product Features**

- StepSERVO™ technology featuring space vector current control
- NEMA 23 frame size
- Q programming control mode for stand-alone operation
- Modbus/RTU for easy PLC and HMI communication
- “Boost” torque of 25-50% higher than holding torque
- RS-485 port for programming and communications
- Built-in 20,000 count/rev encoder for closed-loop control



## Description

The TSM23Q-2RG integrated StepSERVO™ is a drive+motor unit, fusing a NEMA 23 step motor and a servo 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](#) .

StepSERVO technology combines the high torque capabilities of a step motor with the closed loop dynamic control of a servo system. The result is a highly customizable all-in-one motion control solution that operates quietly and efficiently, requiring only the minimum amount of current to maintain commanded position and velocity. Boost torque of 25-50% higher than the rated holding torque that is available from this integrated StepSERVO motor increases the limits of acceleration, leading to faster cycle times. With software selectable servo loops that have been pre-tuned for various inertial loads, the TSM StepSERVO can be applied in systems where a traditional stepper would not be capable of achieving the high accuracy required.

The TSM23Q-2RG integrated StepSERVO can be operated in several different control modes, including Streaming Command mode using either SCL or Modbus/RTU, Pulse & Direction mode, and Velocity mode, plus it has the ability to run a Q program stored in non-volatile memory. Q programs are created using Applied Motion's Q Programmer™ software, which provides powerful commands for motion, I/O, conditional processing, multi-tasking, math functions, and more. All TSM23 units are setup, configured and tuned using Applied Motion's Step-Servo Quick Tuner software with built in Q Programmer.

Each TSM23 integrated stepper comes with 8 digital inputs, 4 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 outputS 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 TSM23Q-2RG comes with an RS-485 port for programming and serial communications to allow for the use either Modbus/RTU or Applied Motion's Streaming Command Language (SCL). An integral 5000-line (20,000 count/rev) incremental encoder is housed inside the same enclosure as the drive electronics and used for closed-loop servo control to attain highly accurate position and velocity control. Encoder counts can be accessed over the network or from within the Q program using SCL registers.

### What's in the Box?

- TSM23Q-2RG integrated motor
- Mating power connector (2-pin)
- 3004-308-2M I/O cable (for details see Accessories below)
- 3004-310-1M RS-485 cable (for details see Accessories below)
- 3004-313-1M RS-485/CANopen cable (for details see Accessories below)
- Screwdriver
- Quick Setup Guide (also available in Downloads)

### NOT included:

- DC power supply (required), see Power Supplies below
- Regen clamp (optional), see Accessories below
- Additional accessories available below

## Specifications

<b>Part Number:</b>	TSM23Q-2RG
<b>Supply Voltage:</b>	12-70 VDC
<b>Supply Voltage Type:</b>	DC
<b>Control Modes:</b>	Analog Torque / Velocity Streaming Commands Analog Positioning Encoder Following Q Programming Velocity Control Modbus
<b>Communication Ports:</b>	RS-485
<b>Encoder Feedback:</b>	Yes
<b>Setup Method:</b>	Software setup
<b>Digital Inputs:</b>	8
<b>Digital Outputs:</b>	4
<b>Analog Inputs:</b>	1 single-ended
<b>Circuit Protection:</b>	Short circuit Over-voltage Under-voltage Over-temp
<b>Status LEDs:</b>	1 red, 1 green
<b>Frame Size:</b>	NEMA 23
<b>Holding Torque:</b>	142 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>	3.76 inches
<b>Weight:</b>	30 oz
<b>Operating Temperature Range:</b>	0-85 °C
<b>Ambient Temperature Range:</b>	0-40 °C
<b>Ambient Humidity:</b>	90% max, non-condensing
<b>Insulation Class:</b>	Class B (130 °C)
<b>Maximum Radial Load:</b>	17 lbs
<b>Maximum Thrust Load:</b>	1.8 lbs

## Downloads

<b>Manuals:</b>	<a href="#">TSM23S-Q Hardware Manual_EN-AMP_11-21-14_920-0081A.pdf</a> <a href="#">TSM23S-Q Quick Set-up guide_EN-AMP10.14_920-0074A.pdf</a> <a href="#">Host Command Reference Rev I.pdf</a> <a href="#">ModbusManual_920-0072E.pdf</a>
<b>Datasheet:</b>	<a href="http://s3.amazonaws.com/applied-motion-pdf/TSM23Q-2RG.pdf">http://s3.amazonaws.com/applied-motion-pdf/TSM23Q-2RG.pdf</a>
<b>2D Drawing:</b>	<a href="#">TSM23Q-2RG_RevA.pdf</a>
<b>3D Drawing:</b>	<a href="#">TSM23X-2XX.igs</a>
<b>Application Notes:</b>	<a href="#">StepSERVO Tuning Guide_962-0002A.pdf</a> <a href="#">APPN0034B-ModbusRTU-from-Proface-HMI-with-Q.zip</a> <a href="#">APPN0026B-LabVIEW-communication-using-streaming-commands.zip</a> <a href="#">APPN0019_Analog-positioning-using-Q-program.zip</a> <a href="#">APPN0018_EZ-Series-Touchpanel-HMI.zip</a>

## Software

<b>Software:</b>	<a href="#">SCL Utility</a> <a href="#">Step-Servo Quick Tuner</a>
<b>Sample Code:</b>	<a href="#">scldemo.zip</a>

## Pricing

TSM23Q-2RG	
Part No. TSM23Q-2RG	
1pc.	\$514.00
25pc.	\$442.04
50pc.	\$385.50
100pc.	<a href="#">Request a Quote</a> for 100+ piece pricing.

## Products in the Series *StepSERVO™ Integrated Motors*

Part Number	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1 pc.
<a href="#">IP-2EG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	142	Ethernet, EtherNet/IP	Yes	\$575.00
<a href="#">IP-3EG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	212	Ethernet, EtherNet/IP	Yes	\$585.00
<a href="#">IP-4EG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	340	Ethernet, EtherNet/IP	Yes	\$595.00
<a href="#">Q-1RM</a>	NEMA 11	15-30 VDC	Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus	9.2	RS-485	Yes	\$257.00
<a href="#">Q-2RM</a>	NEMA 11	15-30 VDC	Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus	11.3	RS-485	Yes	\$264.00
<a href="#">Q-3RM</a>	NEMA 11	15-30 VDC	Step & Direction, Streaming Commands, Encoder Following, Q Programming, Velocity Control, Modbus	17.7	RS-485	Yes	\$271.00
<a href="#">C-1CG</a>	NEMA 17	12-48 VDC	Q Programming, CANopen	40	CANopen	Yes	\$547.00
<a href="#">C-2CG</a>	NEMA 17	12-48 VDC	Q Programming, CANopen	59	CANopen	Yes	\$551.00
<a href="#">C-3CG</a>	NEMA 17	12-48 VDC	Q Programming, CANopen	73	CANopen	Yes	\$554.00
<a href="#">P-1AG</a>	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	40	RS-232	Yes	\$378.00
<a href="#">P-2AG</a>	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	59	RS-232	Yes	\$380.00
<a href="#">P-3AG</a>	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	73	RS-232	Yes	\$383.00
<a href="#">Q-1AG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	40	RS-232	Yes	\$412.00
<a href="#">Q-1RG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	40	RS-485	Yes	\$418.00
<a href="#">Q-2AG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	59	RS-232	Yes	\$415.00
<a href="#">Q-2RG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	59	RS-485	Yes	\$421.00
<a href="#">Q-3AG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	73	RS-232	Yes	\$418.00
<a href="#">Q-3RG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	73	RS-485	Yes	\$424.00
<a href="#">C-2CG</a>	NEMA 23	12-70 VDC	Q Programming, CANopen	142	CANopen	Yes	\$562.00
<a href="#">C-3CG</a>	NEMA 23	12-70 VDC	Q Programming, CANopen	212	CANopen	Yes	\$576.00
<a href="#">C-4CG</a>	NEMA 23	12-70 VDC	Q Programming, CANopen	340	CANopen	Yes	\$631.00
<a href="#">IP-2AG</a>	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	142	RS-232	Yes	\$392.00
<a href="#">IP-3AG</a>	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	212	RS-232	Yes	\$403.00
<a href="#">IP-4AG</a>	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	340	RS-232	Yes	\$445.00
<a href="#">Q-2AG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	142	RS-232	Yes	\$507.00

Part #	Frame Size	Supply Voltage	Control Modes / Velocity, Streaming Commands, Analog Positioning,	Holding Torque	Communication Ports	Encoder Feedback	1pc.
<a href="#">Q-2AG</a>	NEMA 23	12-70 VDC	Encoder Following, Q Programming, Velocity Control, Modbus	142	RS-485	Yes	\$514.00
<a href="#">Q-3AG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	212	RS-232	Yes	\$521.00
<a href="#">Q-3RG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	212	RS-485	Yes	\$529.00
<a href="#">Q-4AG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	340	RS-232	Yes	\$576.00
<a href="#">Q-4RG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	340	RS-485	Yes	\$584.00
<a href="#">S-2AG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	142	RS-232	Yes	\$427.00
<a href="#">S-2RG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	142	RS-485	Yes	\$433.00
<a href="#">S-3AG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	212	RS-232	Yes	\$439.00
<a href="#">S-3RG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	212	RS-485	Yes	\$446.00
<a href="#">S-4AG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	340	RS-232	Yes	\$485.00
<a href="#">S-4RG</a>	NEMA 23	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	340	RS-485	Yes	\$491.00
<a href="#">C-1CG</a>	NEMA 24	12-70 VDC	Q Programming, CANopen	116	RS-232, CANopen	Yes	\$824.00
<a href="#">C-3CG</a>	NEMA 24	12-70 VDC	Q Programming, CANopen	340	RS-232, CANopen	Yes	\$868.00
<a href="#">IP-1EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	116	Ethernet, EtherNet/IP	Yes	\$854.00
<a href="#">IP-3EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP, Velocity Control	340	Ethernet, EtherNet/IP	Yes	\$898.00
<a href="#">Q-1AG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	116	RS-232	Yes	\$763.00
<a href="#">Q-1EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control	116	Ethernet	Yes	\$785.00
<a href="#">Q-1RG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	116	RS-485	Yes	\$774.00
<a href="#">Q-3AG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	340	RS-232	Yes	\$807.00
<a href="#">Q-3EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control	340	Ethernet	Yes	\$829.00
<a href="#">Q-4EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control	340	Ethernet	Yes	\$854.00

Model	NEMA 24 Frame Size	12-70 VDC Supply Voltage	Control Modes Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	340 Holding Torque	RS-485 Communication Ports	Encoder Yes Feedback	\$818.00 1pc.
<a href="#">S-1AG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	116	RS-232	Yes	\$636.00
<a href="#">S-1EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	116	Ethernet	Yes	\$658.00
<a href="#">S-1RG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	116	RS-485	Yes	\$647.00
<a href="#">S-3AG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	340	RS-232	Yes	\$672.00
<a href="#">S-3EG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	340	Ethernet	Yes	\$694.00
<a href="#">S-3RG</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Velocity Control	340	RS-485	Yes	\$683.00

## Products in the Series *Modbus Products*

Part Number	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1pc.
<a href="#">Q-128</a>	NA	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	NA	RS-232	No	\$467.00
<a href="#">Q-130</a>	NA	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	NA	RS-232	Yes	\$540.00
<a href="#">Q-132</a>	NA	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	NA	RS-232, RS-485	No	\$570.00
<a href="#">Q-134</a>	NA	24-48 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	NA	RS-232, RS-485	Yes	\$625.00
<a href="#">Q-138</a>	NA	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	NA	RS-232	No	\$515.00
<a href="#">Q-140</a>	NA	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Velocity Control, Modbus	NA	RS-232	Yes	\$580.00
<a href="#">Q-142</a>	NA	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	NA	RS-232, RS-485	No	\$630.00
<a href="#">Q-144</a>	NA	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	NA	RS-232, RS-485	Yes	\$690.00
<a href="#">Q-1AE</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	31	RS-232	Yes	\$347.00
<a href="#">Q-1AN</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	31	RS-232	No	\$272.00
<a href="#">Q-1RE</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	31	RS-485	Yes	\$353.00
<a href="#">Q-2AE</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-232	Yes	\$350.00
<a href="#">Q-2AN</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-232	No	\$275.00
<a href="#">Q-2RE</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-485	Yes	\$356.00
<a href="#">Q-2RN</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-485	No	\$281.00
<a href="#">Q-3AE</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-232	Yes	\$353.00
<a href="#">Q-3AN</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-232	No	\$288.00
<a href="#">Q-3RE</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-485	Yes	\$360.00
<a href="#">Q-3RN</a>	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-485	No	\$295.00



Part #	Frame Size	Supply Voltage	Programming, Modbus Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1pc.
<a href="#">Q-2AE</a>	NEMA 23	12-70 VDC	Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	125	RS-232	Yes	\$440.00
<a href="#">Q-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
<a href="#">Q-2RE</a>	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	125	RS-485	Yes	\$447.00
<a href="#">Q-2RN</a>	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	125	RS-485	No	\$372.00
<a href="#">Q-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
<a href="#">Q-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
<a href="#">Q-3RE</a>	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	210	RS-485	Yes	\$463.00
<a href="#">Q-3RN</a>	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	210	RS-485	No	\$388.00
<a href="#">QF-3AE</a>	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-232	Yes	\$564.00
<a href="#">QF-3AN</a>	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-232	No	\$489.00
<a href="#">QF-3RE</a>	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-485	Yes	\$572.00
<a href="#">QF-3RN</a>	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-485	No	\$497.00
<a href="#">QF-3AE</a>	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-232	Yes	\$772.00
<a href="#">C-1CG</a>	NEMA 17	12-48 VDC	Q Programming, CANopen	40	CANopen	Yes	\$547.00
<a href="#">C-2CG</a>	NEMA 17	12-48 VDC	Q Programming, CANopen	59	CANopen	Yes	\$551.00
<a href="#">C-3CG</a>	NEMA 17	12-48 VDC	Q Programming, CANopen	73	CANopen	Yes	\$554.00
<a href="#">P-1AG</a>	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	40	RS-232	Yes	\$378.00
<a href="#">P-2AG</a>	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	59	RS-232	Yes	\$380.00
<a href="#">P-3AG</a>	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	73	RS-232	Yes	\$383.00
<a href="#">Q-1AG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	40	RS-232	Yes	\$412.00
<a href="#">Q-1RG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	40	RS-485	Yes	\$418.00
<a href="#">Q-2AG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	59	RS-232	Yes	\$415.00
<a href="#">Q-2RG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	59	RS-485	Yes	\$421.00
<a href="#">Q-3AG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	73	RS-232	Yes	\$418.00
<a href="#">Q-3RG</a>	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	73	RS-485	Yes	\$424.00

Model	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	Price
<a href="#">Q-2CG</a>	NEMA 23	12-70 VDC	Q Programming, CANopen	212	CANopen	Yes	\$562.00
<a href="#">Q-4CG</a>	NEMA 23	12-70 VDC	Q Programming, CANopen	340	CANopen	Yes	\$631.00
<a href="#">IP-2AG</a>	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	142	RS-232	Yes	\$392.00
<a href="#">IP-3AG</a>	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	212	RS-232	Yes	\$403.00
<a href="#">IP-4AG</a>	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	340	RS-232	Yes	\$445.00
<a href="#">IQ-2AG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	142	RS-232	Yes	\$507.00
<a href="#">IQ-2RG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	142	RS-485	Yes	\$514.00
<a href="#">IQ-3AG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	212	RS-232	Yes	\$521.00
<a href="#">IQ-3RG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	212	RS-485	Yes	\$529.00
<a href="#">IQ-4AG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	340	RS-232	Yes	\$576.00
<a href="#">IQ-4RG</a>	NEMA 23	12-70 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	340	RS-485	Yes	\$584.00