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Product Datasheet

www.Applied-Motion.com

SWM24QF-3AE

IP65 Rated NEMA 24 Integrated Drive+Motor

1pc. - 772.00
50pc. - 579.00



Product Features

- *Rated IP65 for wet and dusty environments*
- *M12 connectors*
- *Anti-resonance*
- *Torque ripple smoothing*
- *Microstep emulation*
- *NEMA 24 frame size*
- *Q programming mode for stand-alone control*
- *Modbus/RTU for easy PLC and HMI communication*
- *Capable of all “S” control modes*
- *RS-232 port for programming and communications*
- *Built-in incremental encoder*







Description

The SWM24QF-3AE integrated stepper is a drive+motor unit, fusing a NEMA 24 step motor and a sophisticated, 6.0 A/phase (peak-of-sine) step motor drive into a single IP65 rated 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 SWM24QF-3AE integrated stepper can operate in all of the same control modes as S models, plus 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 SWM24 integrated steppers 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 stepper 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. 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.

The SWM24QF-3AE comes with 4 digital I/O points, called Flex I/O points, because each point can be individually defined as an input or an output. As inputs, the Flex I/O points 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. When defined as digital outputs, the Flex I/O points can be connected to PLC inputs, counters, lights, relays, or other devices. The unit also comes with 1 analog input that accepts 0-5 VDC signals, which can be used for velocity and position control.

The SWM24QF-3AE comes with an RS-232 port for programming and serial communications.

Please note that a VL series gearhead purchased for this motor will require a special mounting adaptor and 2 weeks lead time. Please contact customer service for the price of this adaptor.

Specifications

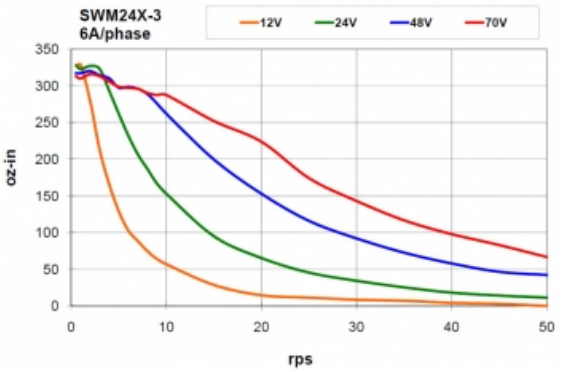
Part Number:	SWM24QF-3AE
Supply Voltage:	12-70 VDC
Supply Voltage Type:	DC
Control Modes:	Step & Direction Analog Torque / Velocity Velocity (Oscillator) Streaming Commands Analog Positioning Encoder Following Q Programming Modbus
Communication Ports:	RS-232
Encoder Feedback:	Yes
Step Resolution:	Full Half Microstepping Microstep Emulation
Idle Current Reduction:	0-90%
Setup Method:	Software setup
Digital Inputs:	4 Flex I/O (shared with outputs)
Digital Outputs:	4 Flex I/O (shared with inputs)
Analog Inputs:	1 single ended
Circuit Protection:	Short circuit Over-voltage Under-voltage Over-temp
Status LEDs:	1 red, 1 green
Frame Size:	NEMA 24
Holding Torque:	340 oz-in
Step Angle:	1.8 deg
Rotor Inertia:	1.27E-02 oz-in-sec^2
Length:	5.03 inches
Weight:	56 oz
Operating Temperature Range:	-20 to 50 °C
Ambient Temperature Range:	0 to 40 °C
Ambient Humidity:	90%
Insulation Class:	Class B (130 ºC)

Maximum Radial Load:	NA lbs
Maximum Thrust Load:	NA lbs
Shaft Run Out:	0.0012 inch T.I.R. max
Radial Play:	0.0008 inch max w/ 1.1lb load
End Play:	0.003 inch max w/ 1.1lb load
Perpendicularity:	0.004 inches inch
Concentricity:	0.002 inches inch

Downloads

Speed-Torque Curves:	SWM24-3 torque curve.pdf
Manuals:	SWM24 Hardware Manual_920-0068B.pdf ModbusManual_920-0072E.pdf SWM24_FlexIO_QuickSetup_920-0069C.pdf
Datasheet:	http://s3.amazonaws.com/applied-motion-pdf/SWM24QF-3AE.pdf
2D Drawing:	SWM24_Simple_3Dpdf.pdf SWM24x-3Ax_RevC.pdf
3D Drawing:	SWM24_Simple_10-31-13.igs
Application Notes:	APPN0027A ModbusRTU from Automation Direct PLC.zip APPN0029 ModbusRTU from Proface HMI.zip APPN0030-ModbusRTU from Beijer Electronics HMI.zip APPN0032-ModbusRTU_from_Panasonic_PLC_1.zip APPN0033_ModbusRTU_from_Automation_Direct_HMI_0.zip APPN0034 ModbusRTU from Proface HMI with Q_4.zip

Torque Curves



Software

Software:	DSP Firmware Downloader Q Programmer™ SCL Utility ST Configurator™
Sample Code:	APPN0027A ModbusRTU from Automation Direct PLC.zip APPN0029 ModbusRTU from Proface HMI.zip APPN0030-ModbusRTU from Beijer Electronics HMI.zip APPN0032-ModbusRTU_from_Panasonic_PLC_0.zip APPN0033_ModbusRTU_from_Automation_Direct_HMI.zip APPN0034 ModbusRTU from Proface HMI with Q_3.zip

Pricing

	SWM24QF-3AE Part No. SWM24QF-3AE
1pc.	$772.00
25pc.	$663.92
50pc.	$579.00
100pc.	Contact us for 100+ piece pricing.

Products in the Series *Modbus Products*

Part Number	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1pc./50pc.
5000-128	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 / $350.25
5000-130	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 / $405.00
5000-132	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 / $427.50
5000-134	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 / $468.75
5000-138	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 / $386.25
5000-140	NA	24-80 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands, Analog Positioning, Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	NA	RS-232	Yes	$580.00 / $435.00
5000-142	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 / $472.50
5000-144	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 / $517.50
STM17Q-1AE	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	31	RS-232	Yes	$347.00 / $260.25
STM17Q-1AN	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	31	RS-232	No	$272.00 / $204.00
STM17Q-1RE	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	31	RS-485	Yes	$353.00 / $264.75
STM17Q-2AE	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-232	Yes	$350.00 / $262.50
STM17Q-2AN	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-232	No	$275.00 / $206.25
STM17Q-2RE	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-485	Yes	$356.00 / $267.00
STM17Q-2RN	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	54	RS-485	No	$281.00 / $210.75
STM17Q-3AE	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-232	Yes	$353.00 / $264.75
STM17Q-3AN	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-232	No	$288.00 / $216.00
STM17Q-3RE	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-485	Yes	$360.00 / $270.00
STM17Q-3RN	NEMA 17	12-48 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	68	RS-485	No	$295.00 / $221.25
			Streaming Commands, Analog Positioning,				$440.00 /

STM23Q-2AE	NEMA 23	12-70 VDC	Encoder Following, Q Programming, SiNet Hub Compatible, Modbus	125	RS-232	Yes	$330.00
STM23Q-2AN	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
STM23Q-2RE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	125	RS-485	Yes	$447.00 / $335.25
STM23Q-2RN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	125	RS-485	No	$372.00 / $279.00
STM23Q-3AE	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
STM23Q-3AN	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
STM23Q-3RE	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	210	RS-485	Yes	$463.00 / $347.25
STM23Q-3RN	NEMA 23	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	210	RS-485	No	$388.00 / $291.00
STM24QF-3AE	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-232	Yes	$564.00 / $423.00
STM24QF-3AN	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-232	No	$489.00 / $366.75
STM24QF-3RE	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-485	Yes	$572.00 / $429.00
STM24QF-3RN	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Modbus	340	RS-485	No	$497.00 / $372.75
SWM24QF-3AE	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 / $579.00
TSM17C-1CG	NEMA 17	12-48 VDC	Q Programming, CANopen	40	CANopen	Yes	$547.00 / $410.25
TSM17C-2CG	NEMA 17	12-48 VDC	Q Programming, CANopen	59	CANopen	Yes	$551.00 / $413.25
TSM17C-3CG	NEMA 17	12-48 VDC	Q Programming, CANopen	73	CANopen	Yes	$554.00 / $415.50
TSM17P-1AG	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	40	RS-232	Yes	$378.00 / $283.50
TSM17P-2AG	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	59	RS-232	Yes	$380.00 / $285.00
TSM17P-3AG	NEMA 17	12-48 VDC	Step & Direction, Encoder Following	73	RS-232	Yes	$383.00 / $287.25
TSM17Q-1AG	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 / $309.00
TSM17Q-1RG	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 / $313.50
TSM17Q-2AG	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 / $311.25
TSM17Q-2RG	NEMA 17	12-48 VDC	Analog Torque / Velocity, Streaming Commands, Analog Positioning, Encoder Following, Q Programming, Velocity Control, Modbus	59	RS-485	Yes	$391.00 / $293.25
TSM17Q-3AG	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 / $313.50
TSM17Q-3RG	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 / $318.00
TSM23C-2CG	NEMA 23	12-70 VDC	Q Programming, CANopen	142	CANopen	Yes	$562.00 /

							$421.50
TSM23C-3CG	NEMA 23	12-70 VDC	Q Programming, CANopen	212	CANopen	Yes	$576.00 / $432.00
TSM23C-4CG	NEMA 23	12-70 VDC	Q Programming, CANopen	340	CANopen	Yes	$631.00 / $473.25
TSM23P-2AG	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	142	RS-232	Yes	$392.00 / $294.00
TSM23P-3AG	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	212	RS-232	Yes	$403.00 / $302.25
TSM23P-4AG	NEMA 23	12-70 VDC	Step & Direction, Encoder Following	340	RS-232	Yes	$445.00 / $333.75
TSM23Q-2AG	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 / $380.25
TSM23Q-2RG	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 / $385.50
TSM23Q-3AG	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 / $390.75
TSM23Q-3RG	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 / $396.75
TSM23Q-4AG	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 / $432.00
TSM23Q-4RG	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 / $438.00

Products in the Series *SWM24 Integrated Steppers*

Part Number	Frame Size	Supply Voltage	Control Modes	Holding Torque	Communication Ports	Encoder Feedback	1pc./50pc.
SWM24IP-3EE	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming, EtherNet/IP	340	Ethernet	Yes	$857.00 / $642.75
SWM24Q-3EE	NEMA 24	12-70 VDC	Streaming Commands, Analog Positioning, Encoder Following, Q Programming	340	Ethernet	Yes	$794.00 / $595.50
SWM24QF-3AE	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 / $579.00
SWM24S-3EE	NEMA 24	12-70 VDC	Step & Direction, Analog Torque / Velocity, Velocity (Oscillator), Streaming Commands	340	Ethernet	Yes	$659.00 / $494.25
SWM24SF-3AE	NEMA 24	12-70 VDC	Step & Direction, Velocity (Oscillator), Streaming Commands	340	RS-232	Yes	$637.00 / $477.75