Precision Motion Controls

VS Series Microstepping Drive

PMC's "VS" series drives use a proprietary design that reduces EMI, motor heating and compensates for various motor types automatically. The "VS" series pulsewidth modulated microstepping drive incorporates a rugged bipolar MOSFET H bridge construction. The drive switches at 20 kHz, which is above the audible range while still at a rate that is efficient for motors.

The standard system has switch selectable resolutions from 51200 to 400 steps per revolution; yielding the resolution and smoothness required for critical applications. Motor current is programmable to 6 amps in 64 increments from a user accessible dip switch. Wave shape correction for 3rd harmonic distortion provides compensation for a wide range of motors.

Optically-isolated inputs/outputs eliminate ground loops from connecting equipment. The drive has industry-standard Step and Direction signals, as well as additional remote disable and error output signals to add extra user flexibility to the drive. A built-in power supply makes the drive ready and easy to use.

Features

- **Step and Direction interface**
- **Steps/rev selectable from 400 to 51200**
- **Optically-isolated I/O**
- **Reduced EMI and motor heat**
- **Convection cooled enclosure**
- **0 to 6 amp drive in 64 selectable ranges**
- **Over-temperature protection**
- **Short circuit protection**
- **Indicators for error conditions**
- **Input pulse rate to 2 MHz**

Drive Specifications

Performance (unloaded motor)

Repeatability: ±5 arc-seconds (unidirectional)
Accuracy: ±5 arc-minutes (bidirectional)
Step-to-Step Accuracy: ±20 arc-seconds (unidirectional)
Hysteresis: ±3 arc-minutes

Inputs, Output (optically isolated)

Step: Negative-going pulse, 250 nanosecond minimum pulsewidth, 10 ma.
Direction: 3.5 to 6.0 VDC, 10 ma.
Shutdown: 3.5 to 6.0 VDC, 10 ma.
Fault: 35 V, 5 ma. maximum.

Power 90 to 130 VAC, 50/60 Hz, 5 A

Environmental – Operating

Driver: 0 to 60 °C measured at the heat sink
Motor: 110 °C measured at the motor case
Ambient: 10 to 40 °C, 0 to 95% humidity, non-condensing

Environmental – Storage

Motor + Driver: -40 to +80 °C, 0 to 95% humidity, non-condensing

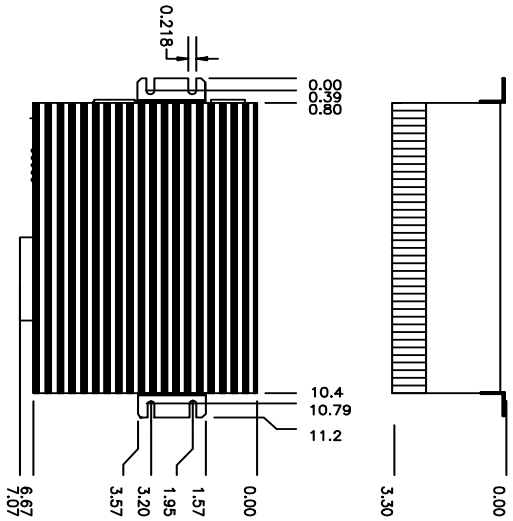
Weight 8.5 pounds

Motor Specifications

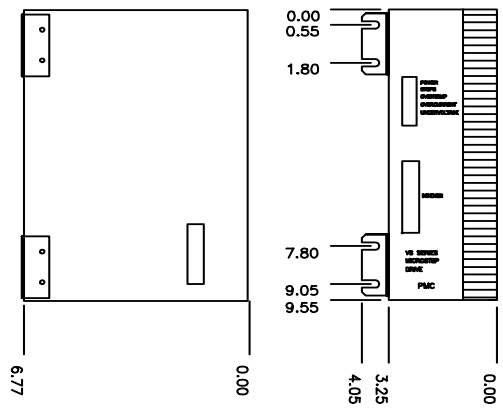
	NEMA 23			NEMA 34			NEMA 42	
Model	**VS-60**	**VS-90**	**VS-120**	**VS-140**	**VS-260**	**VS-380**	**VS-600**	**VS-1200**
Static Torque (oz-in):	60	90	120	140	260	380	450	1200
Rotor Inertia (oz-in^2):	0.48	1.28	1.75	3.50	6.70	10.24	21.5	44.0
Bearing Thrust Load (lb):	25	25	25	50	50	50	50	50
Bearing Radial Load (lb):	15	15	15	25	25	25	25	25
End Play for 1 lb Load (in):	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Radial Play for 0.5 lb Load (in):	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008

Mounting Dimensions

Bottom Mounting



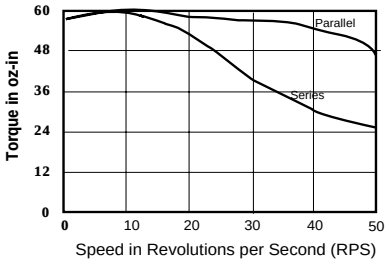
Side mounting



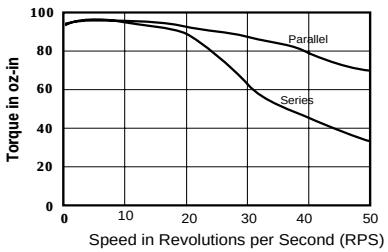
Speed versus Torque Curves

NEMA 23 Series Motors

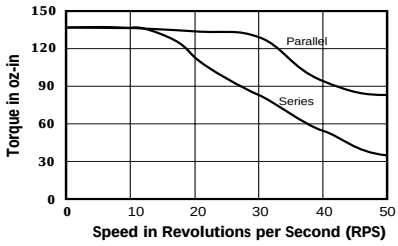
VS-60 Motor + Driver



VS-90 Motor + Driver

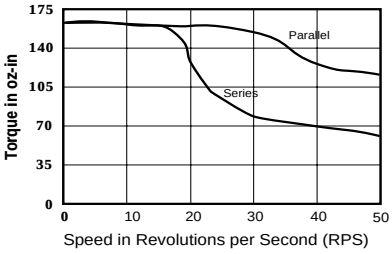


VS-120 Motor + Driver

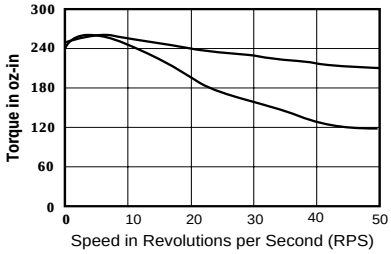


NEMA 34 Series Motors

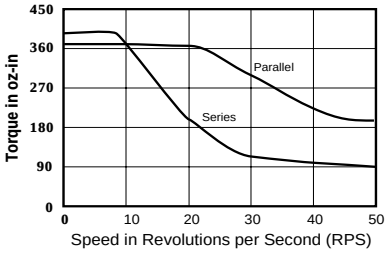
VS-140 Motor + Driver



VS-260 Motor + Driver

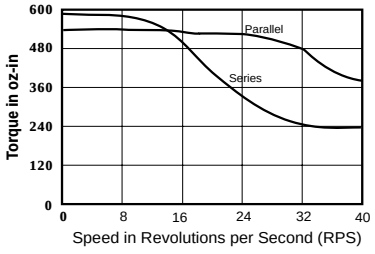


VS-380 Motor + Driver

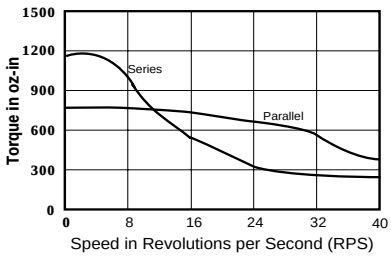


NEMA 42 Series Motors

VS-450 Motor + Driver



VS-1200 Motor + Driver



Ordering Information:

VS-XXXX-X-X

- Single or double shaft
- Series or parallel winding
- Torque Of motor

Example: VS-60-S-D

For a VS drive with a 60 oz-in, double shaft and series winding connection's motor.

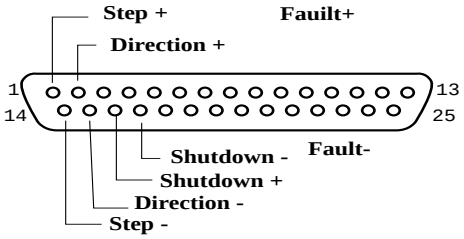
Dip switch Function

Switch 1	
1-3	Step size selection. Steps/rev are 51200, 25600, 6400, 400, 50000, 25000, 10000, 2000.
4-6	0%, +- 2%, +-4%, 3rd Harmonic waveform selection and the test mode.
7	Auto shut down. Current cut half after the motor stops for two seconds.
8	Motor selection.
Switch 2	
1-2	Motor selection.
3-8	Current setting 94 ma. per bit maximum 6 amp.

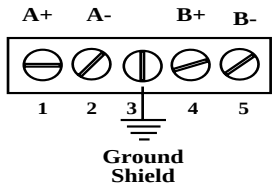
LED status

Power	The drive receives power.
Step	The drive receives the steps' signal.
Overtemp	Internal temperature exceeds 60 degree C.
Overcurrent	The current of the drive exceeds 10 A.
Undervotage	The AC voltage is below 90 volt.

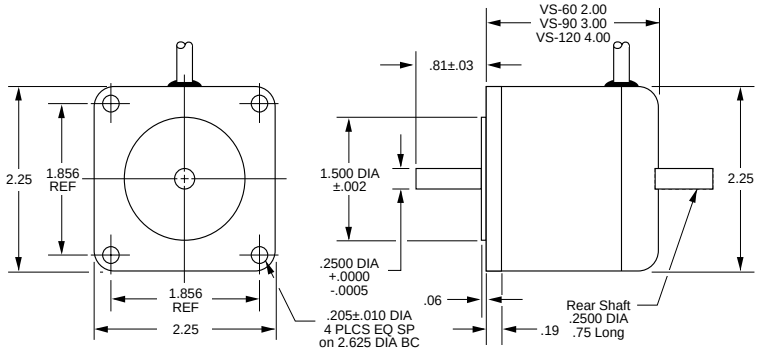
Indexer Connector



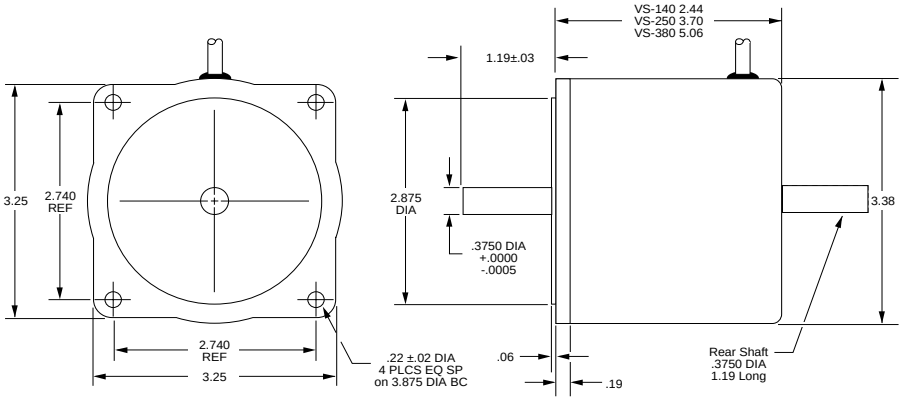
Motor Connector



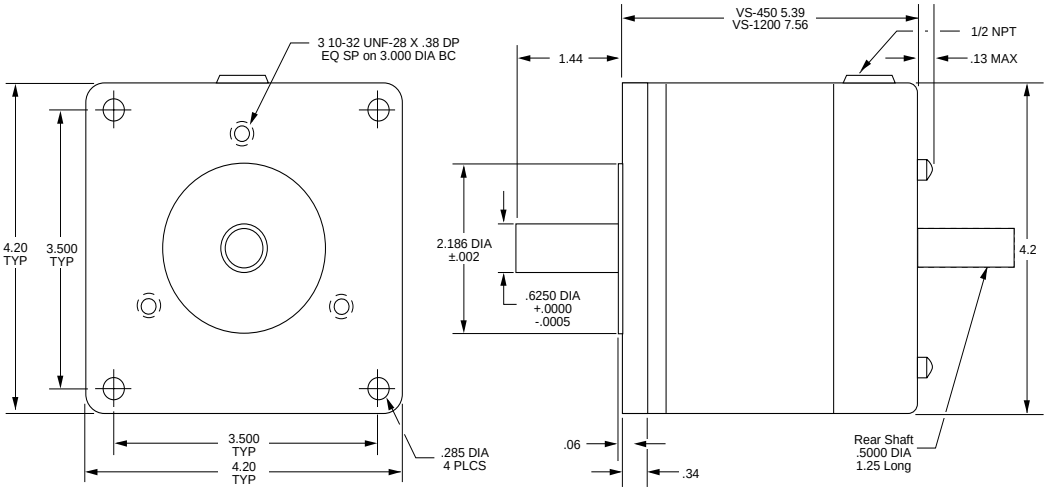
NEMA 23 Series Motors



NEMA 34 Series Motors



NEMA 42 Series Motors



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2530 Berryessa Rd. #209 • San Jose, CA 95132 (408)298-0898 Fax: (408)298-0899

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