34MD Series
Motor/Driver Combination

User's Guide
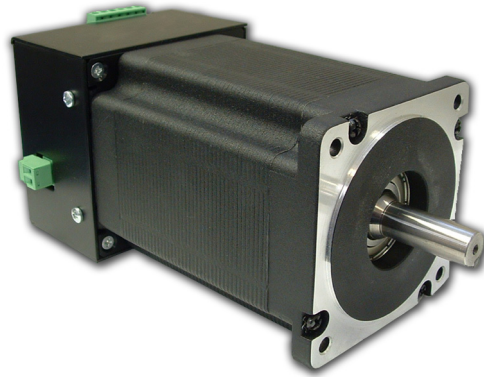
ANAHEIM AUTOMATION

34MD Motor/Driver Combination Features

- Stepper Motor/Microstep Driver Combination
- Up to 1,700 oz-in
- Eliminates Motor Wires
- Compact Package
- 20-80V Power Requirement
- Optically Isolated Inputs
- Ideal for Precise Positioning
- 0.180° Resolution per Step
- Efficient and Durable
- Long Life Expectancy
- RoHS Compliant

General Description

The 34MD Series is a compact construction that implements a microstepping driver and a stepper motor in one streamline package. With the two parts combined into one casing, the need to include motor wires has been eliminated. The 34MD Series has an output current capability of 1.5 Amps minimum to 10.0 Amps maximum (Peak Rating). The microstepping driver will operate off 20VDC minimum to 80VDC maximum. The inputs are optically isolated with a minimum sourcing of 1.0 mA per input (+3.5VDC minimum to +8.6VDC maximum). The clock input is set to receive either positive or negative edge clocks with maximum frequency of 100KHz. The microstepping driver features a resolution of 2000 steps/revolution, providing smooth rotary operation. The 34MD series comes in motor stack lengths of 1, 2 or 3 allowing for varying amounts of start-up torque and inertia. The 34MD series features include built in over current and short circuit shut down, automatic 50% reduction in current after clock pulses stop being received, and status LED's to indicate power on (green LED) and clocks being received (yellow LED). A power supply is required (purchase separately).

34Y112S-LW8 w/34MD, 24VDC

34MD214, 7A, 24V vs. 48V

34Y314S-LW8 w/34MD, 24VDC


34Y314S-LW8 w/34MD, 48VDC
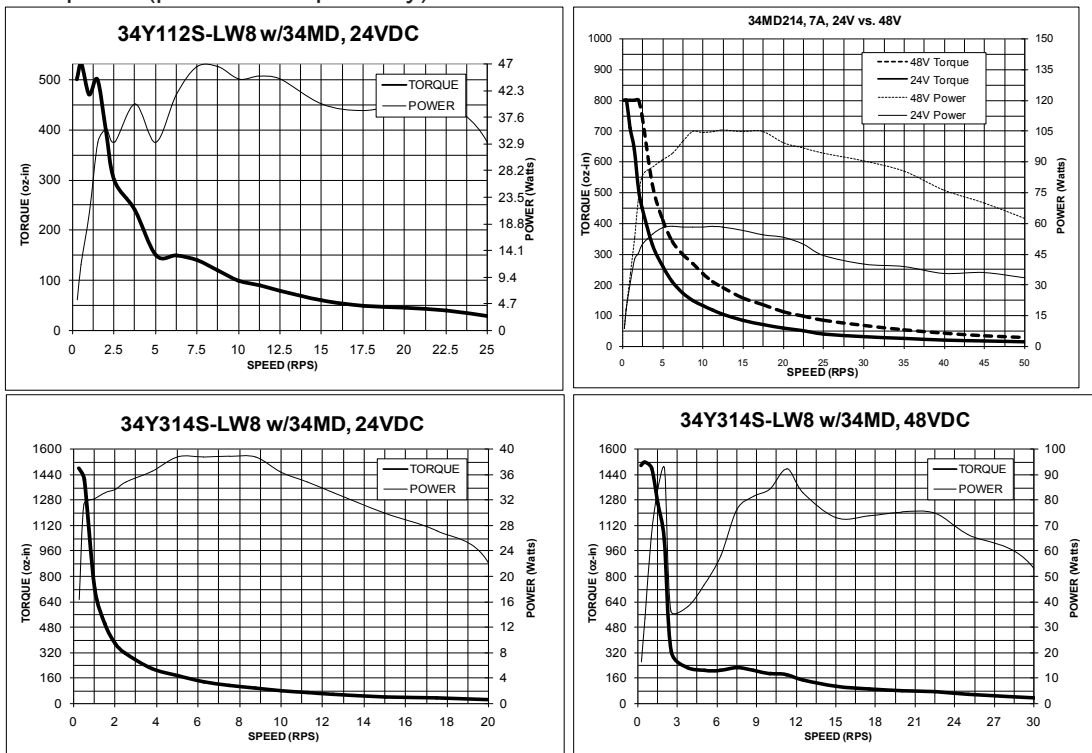
Optically Isolated Input Pin Descriptions

The inputs of the 34MD Series are optically isolated with the anode (+) and cathode (-) both brought out to the user. With no current going through the opto-diode the input is considered high. To enable the input a minimum of 1.0 mA needs to be sourced or sinked through the opto-diode. This is done simply by placing a voltage of +3.5 to +8.6 VDC across the two inputs of the opto-diode. If sourcing current into the inputs, then all three cathodes (-) should be tied together and grounded as shown in Figure 3. If sinking current, then all three anodes (+) should be tied together to the +voltage as shown in Figure 4.

To enable an input, apply a DC voltage source of +5VDC to +8.6VDC across the inputs. The Anodes (+) are pins 1, 3 and 5 the cathodes (-) are pins 2, 4 and 6.

Wiring Diagrams
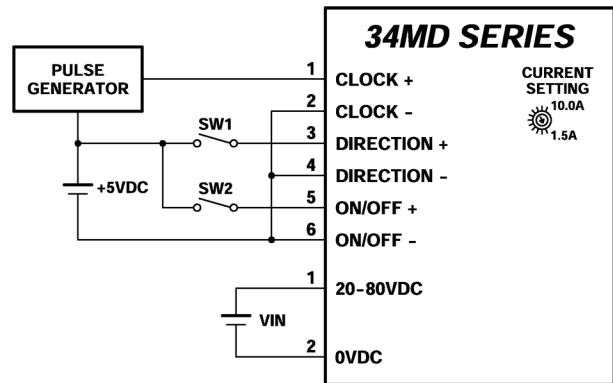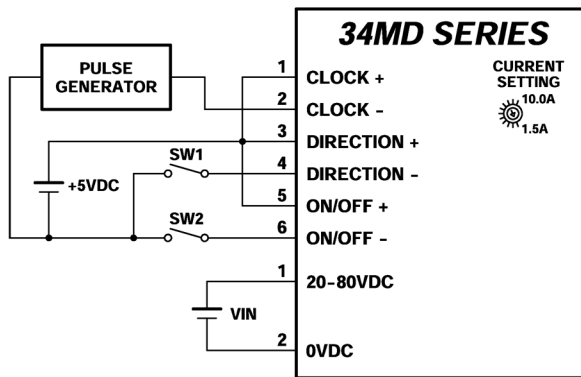
Input Pin Descriptions	
Pin #	Description
1	Clock anode (+)
2	Clock cathode (-)
3	Direction anode (+)
4	Direction cathode (-)
5	On/Off anode (+)
6	On/Off cathode (-)

Table 1: 34MD Input Connector

Power Pin Descriptions	
Pin #	Description
1	20 - 80VDC (Vin)
2	0VDC (Gnd)

Table 2: 34MD Power Connector

Electrical Specifications

Item	Min	Typ	Max	Units
Input Voltage (Power)	20		80	VDC
Phase Output Current	1.1		7.1	A (RMS)
Phase Output Current	1.5		10.0	A (PEAK)
Input Voltage (Inputs)	3.5		8.6	VDC
Clock Frequency	0		100	kHz
Chopping Frequency	27	30	33	kHz
Operation Temperature	0		70	C

Table 3: Electrical Specifications

Direction: Active - CW
   Inactive - CCW
Clock: Active - 1 Step
   Inactive (open) - Reduce Current mode
On/Off: Active - Off
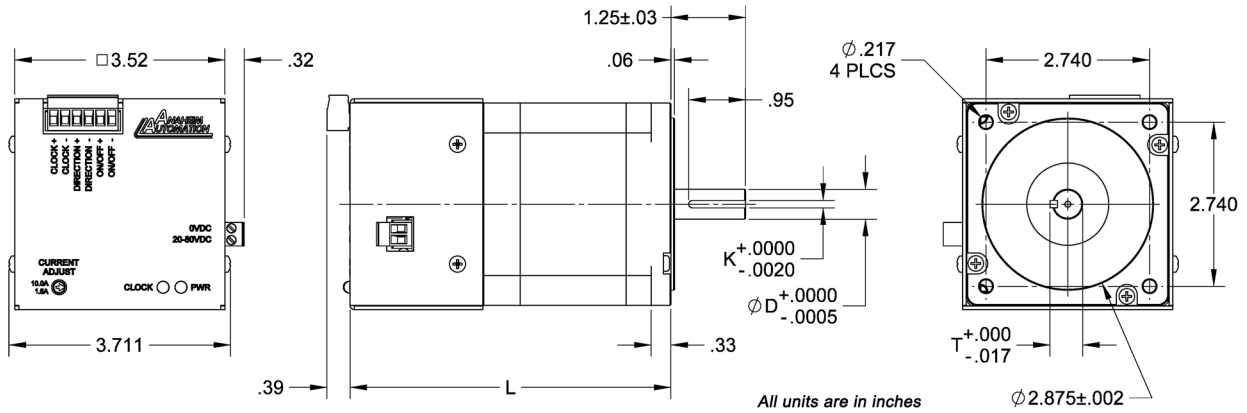   Inactive (open) - On

Absolute Maximum Ratings

Input Voltage: 80 VDC
Output Current: 10.0 AMPS PEAK
Max Plate Temperature: 80°C
Storage Temperature: 0° to +50°C

Dimensions

Model	L	D	K	T
34MD112S	5.37"	0.5"	0.1250"	0.555"
34MD214S	6.87"	0.5"	0.1250"	0.555"
34MD314S	8.37"	0.625"	0.1875"	0.705"

Table 4: 34MD Stack Lengths and Diameters

Power Supply Requirements

It is recommended that the 34MD series be powered by the PSA80V4A or the PSAM48V3.2A. The PSA80V4A is 80 Volt, 4 Amp power supply that will take either 110VAC or 220VAC inputs and deliver 320 Watts. The PSAM48V3.2A is a 48 Volt, 3.2 Amp power supply with a universal input to accept input voltages in the range of 95 - 265VAC and deliver 150Watts.

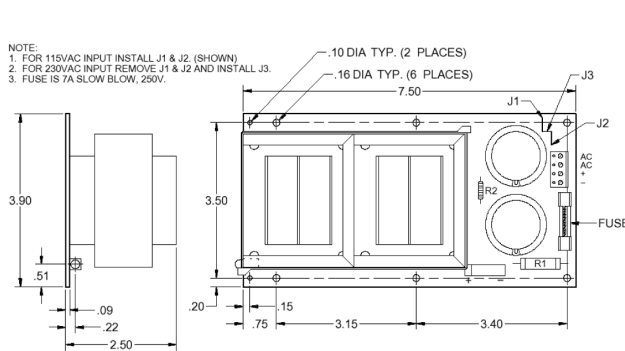## Power Supply Drawings for PSA80V4A and PSAM48V3.2A
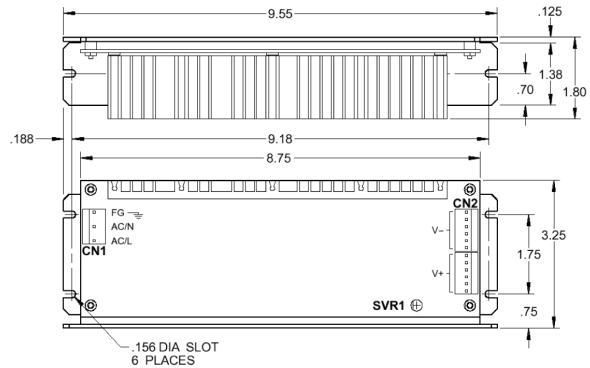

Figure 5: Dimensions for PSA80V4A

Figure 6: Dimensions for PSAM48V3.2A

Setting the Output Current

WARNING: When using a higher current setting into a motor, the motor will overheat and burn up. Should this occur, the driver will be damaged. Use additional airflow and heatsinks to keep the motor and driver temperature under 80°C.

The output current on the 34MD Series is set by an onboard potentiometer. This potentiometer determines the per phase peak output current of the driver. The relationship between the output current and the potentiometer value is as follows.

Peak Current	Potentiometer Setting	Peak Current	Potentiometer Setting
1.5A	0%	7.0A	60%
2.3A	10%	7.9A	70%
3.1A	20%	8.7A	80%
4.0A	30%	9.6A	90%
5.0A	40%	10A	100%
6.0A	50%	--	--

Table 5: Potentiometer values with respect to the output current

Reducing Output Current

Reducing the output current occurs approximately 1 second after the last positive going edge of the step clock input. The amount of current per phase in the reduction mode is approximately 50% of the set current. Reducing the output current is accomplished when no current flows through the opto-diode at the CLOCK (+) and CLOCK (-) pins after the last step has occurred. The clock LED should be off at this time.

Determining Output Current

The output current for the stepper motor being used when microstepping is determined differently from that of a full/half step unipolar driver. In the 34MD Series, a sine/cosine output function is used in rotating the motor. The output current for a given motor is determined by the motors current rating and the wiring configuration of the motor. There is a current adjustment potentiometer used to set the output current of the 34MD Series. This sets the peak output current of the sine/cosine waves. The specified motor current (which is the unipolar value) is multiplied by a factor of 1.0 due to the motor configuration in series.
WARNING: When using a higher current setting into a motor, the motor will overheat and burn up. Should this occur, the driver will also be damaged. Use additional airflow and heatsink to keep motor and driver temperature under 80°C.

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TECHNICAL SUPPORT

If you should require technical support or if you have problems using any of the equipment covered by this manual, please read the manual completely to see if it will answer the questions you have. If you need assistance beyond what this manual can provide, contact your Local Distributor where you purchased the

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