DR-38M MICROSTEP DRIVER

OVERVIEW

The **DR-38M** is a low cost, bipolar step motor driver designed to meet O.E.M. requirements for reliable, cost effective operation. The DR-38M operates in full, half or microstep mode at speeds up to 40k SPS. It uses a single power supply input voltage, between 24 and 40 Vdc, to generate a drive current output of 4.0 amps per phase. The DR-38M also implements a serial interface and non-volatile memory for configuration storage.

Features:

· *Low cost - small size*
· *Heat sinkable case*
· *Direction sensitive limit inputs*
· *Speed sensing slow and fast decay*
· *24 to 40 Vdc power supply input*
· *4.0 amp output current (Peak)*
· *Output disable input*
· *Gentle power-up to reduce surge current*
· *Full, 1/2, 1/4, 1/8 step resolution*
· *Multi-speed jog inputs*
· *Auto current setback*
· *Serial interface for data entry*
· *"NV" memory configuration storage*
· *Optional "shuttle control" mode*
· *Mating connectors included*

JOG INPUTS

The DR-38M has dual speed "jog" inputs. Both speeds are programmable via the serial "B" command. These speeds are stored in the NV memory until modified. When changing jog speeds, acceleration and deceleration can be controlled to help prevent stalling. Jog 1 and 2 initiate motion in opposite directions, while "Jog Speed" selects between the two preprogrammed velocities.

"SHUTTLE CONTROL"

Optional encoder circuitry can be specified with the DR-38M (E). With this option the step input pins become quadrature A and B inputs. The quadrature clocks, when applied to the A and B inputs, are converted to step and direction signals. The number of steps per encoder revolution are equal to four times the number of "slots" on the encoder. The motor will follow exactly any changes in the encoder position.
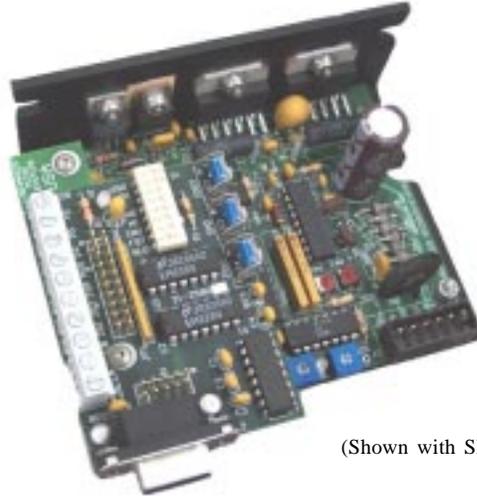
(Shown with SIN-20 Adapter)

SERIAL COMMANDS

A limited set of commands permit the programming of parameters and storage in NV memory. Two contacts (RXD and TXD) are provided for serial communication.

Available commands include:

B   (Jog Speeds)
b   (Decay Threshold)
C   (Clear / Initialize)
D   (Divider)
I   (Initial Velocity for Jog Spped)
K   (Acceleration / Deceleration)
M   (Motion Test)
S   (Store)
X   (Examine Parameters)

BLOCK DIAGRAM

SIN-20 SERIAL ADAPTER

For convenience, AMS offers a SIN-20 serial adapter that plugs directly into the DR-38M.

The SIN-20 features:
· Seven protected inputs
· 5mm terminal blocks
· Jog push buttons
· Motion indicator
· Limit switch input buffers
· Jog switch input buffers
· Input threshold 2.5 or 5-volts

Once programmed, the SIN-20 can be removed and the programmed values will be retained.
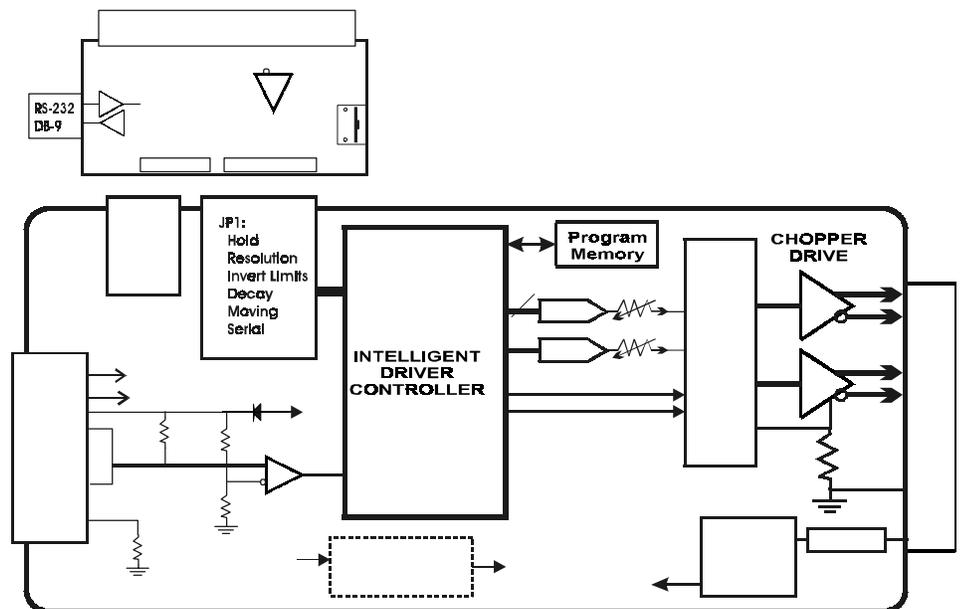
FAST AND SLOW DECAY

The DR-38M has a unique feature that automatically senses and selects fast or slow decay based on shaft speed. Slow decay provides smoother operation at slow speeds, reducing mechanical resonance, while fast decay enhances torque at higher speeds.

RUN AND HOLD CURRENT

Potentiometers are used to set the Run current. On power up the driver defaults to the Hold current setting. Current in the motor windings will automatically increase to the Run current value on receipt of a step pulse. After the last positive edge of the step clock input the current will decrease to the Hold current value which can be set at 0, 15, 50 or 100 percent of the Run current.

(J1) SPECIAL INPUTS

Special inputs are 5 Vdc logic, TTL/CMOS compatible, inputs.

Pin	Signal	Description
1	VCC	+5 Vdc (user) output
2	Lim A	Motion inhibited in CCW direction
3	Lim B	Motion inhibited in CW direction
4	Jog Sp	Select jog speed
5	Jog 2	Jog CW
6	Jog 1	Jog CCW
7	Res	Reserved input
8	GND	Power common
9	Res	Reserved input
10	Res	Reserved input

(J2) CONTROL INPUT

Control input signals include, VIO, step pulse, direction and disable.

Pin #	Description
1	VIO: +5 to + 28 Vdc (user) input
2	Step (In): Step clock input
3	Direction (In): Set direction for step input
4, 5, 6	Reserved
7	Disable: Low input shuts off power drivers
8	Ground: Connect to common of controller

(J3) MOTOR AND POWER SUPPLY

The DR-38M operates from a single unregulated DC power supply.

Pin	Description
1	Power supply, GND
2	Power supply, Vmm
3, 4	Step motor connection, phase 2
5, 6	Step motor connection, phase 1

(JP1) RESOLUTION, HOLD CURRENT AND DECAY

Pin	Description	Data Range	Unit
u0 / u2	Resolution Select	1, 1/2, 1/4, 1/8	Step Resolution
h0 / h1	Hold Current Select	0, 15, 50, 100	% of Run Current
s1 / s2	Decay Select	Slow, Fast	RPM

SPECIFICATIONS
Electrical

Parameter	Min	Typ	Max	Unit
Supply Voltage (Vmm)	12	24	40	Vdc
Current Per Phase (Peak)	0		4	Amps
Input Step Rate			40,000	Steps/Sec
Step Pulse Width	12			Microseconds
Steps / Revolution	200		1600	1.8° Motor

Supply Current	Vmm= 24V	Vmm= 40V	Unit
No Load	0.05	0.06	Amps (Imm)
2.0 Amp- both phases on	1.0	0.7	Amps (Imm)
4.0 Amp- both phases on	3.3	2.0	Amps (Imm)

Thermal/Physical

Operating Temperature…………………..0 to +50°C

Storage Temperature…………………..-40 to +125°C

Size (inches)…………………………………....................................4.13 x 3.25 x 1.56

Weight………………………………………...12.8 oz.
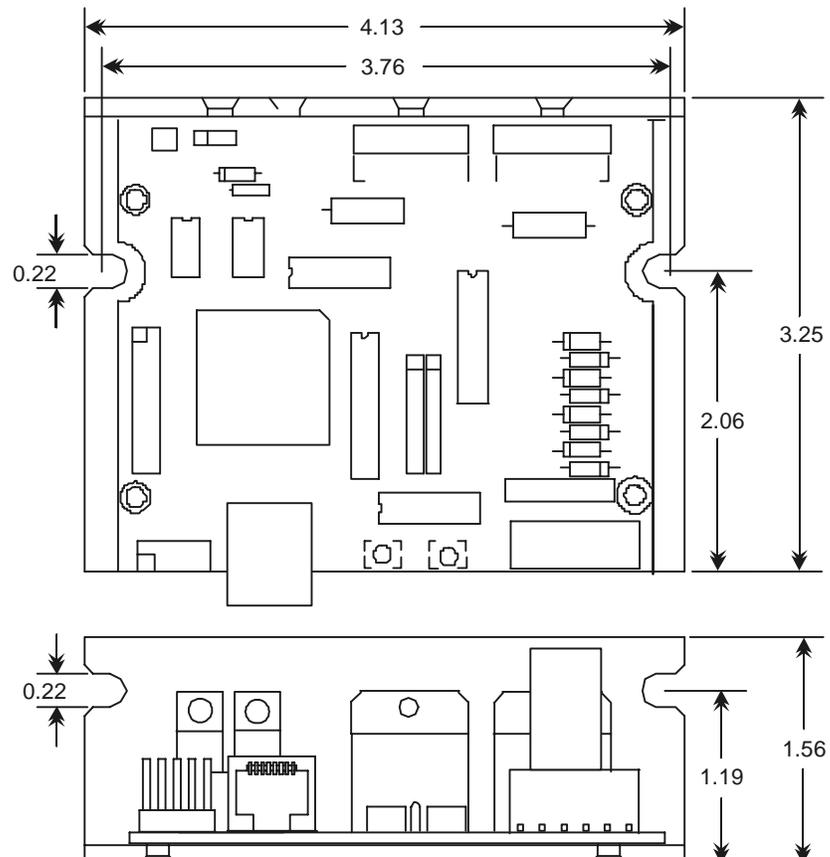
Control input cable assembly (#BLC-15) included.