

DR-38 FULL/HALF STEP DRIVER



OVERVIEW

The **DR-38** is a low cost, bipolar step motor driver designed to meet O.E.M. requirements for reliable, cost effective operation. The DR-38 operates in full and half step mode at speeds up to 20k 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.

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 and half, step resolution*
- *Optional "shuttle control" mode*
- *Mating connectors included*

"SHUTTLE CONTROL"

Optional encoder circuitry can be specified with the DR-38 (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.

FAST AND SLOW DECAY

The DR-38 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.

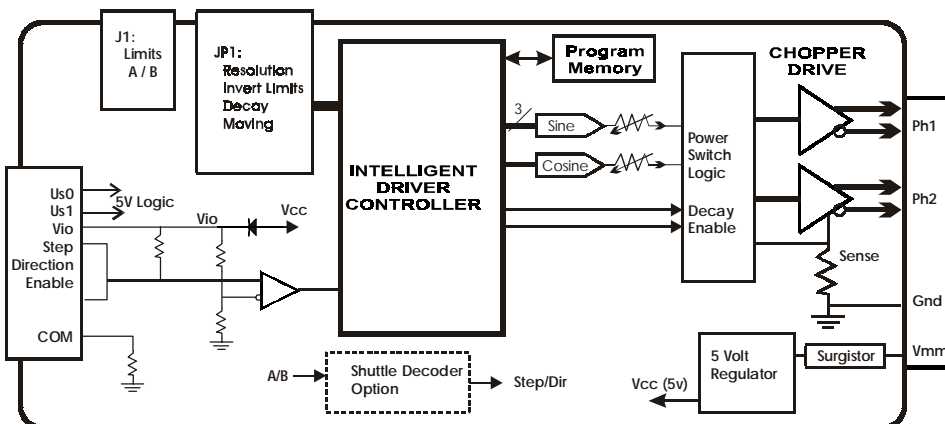
CURRENT ADJUSTMENT

Two independent potentiometers are provided to adjust the amperage in the motor windings. The potentiometer labeled "COS" controls winding 1A and 1B. The potentiometer labeled "SIN" sets winding 2A and 2B. Current adjustment is accomplished by first setting both SIN and COS voltages equal and at the maximum (peak) value, then adjusting each individually to produce the desired amperage in both windings. When both SIN and COS voltages are the same, an LED will change Off/On or On/Off.

POWER SUPPLY INPUT

The DR-38 uses a single unregulated DC (or linear regulated) power supply between 24 and 36-volts. The 5-volt logic supply is derived from an internal 5-volt regulator.

BLOCK DIAGRAM



(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	Res	Reserved input
5	Res	Reserved input
6	Res	Reserved input
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) POWER SUPPLY AND MOTOR

The DR-38 is a bi-polar, chopper driver that works with both bi-polar and uni-polar motors. It operates from a single unregulated DC power supply.

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

JP1 SPECIAL SELECT

JP1 is a 20-pin header that implements automatic motor current disable (when the motor is stopped) and fast/slow decay mode of operation. All inputs are 5 Vdc logic input; TTL/CMOS compatible.

Pin	Signal	Description	Pin	Signal	Description
1			2	Gnd	
3			4	Gnd	
5			6	Gnd	
7	H0	Auto Off	8	Gnd	
9			10	Gnd	
11			12	Gnd	
13	S1	Fast Decay	14	Gnd	
15	S2	Slow Decay	16	Gnd	
17			18	Gnd	
19			20	Gnd	

SPECIFICATIONS

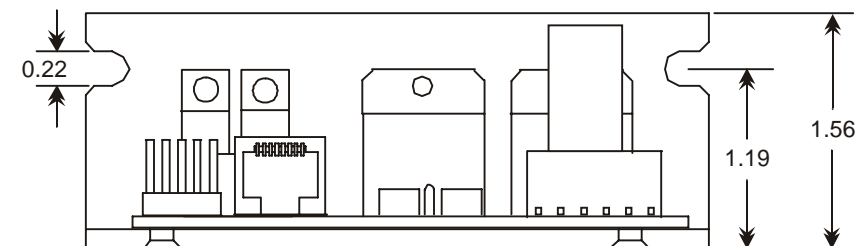
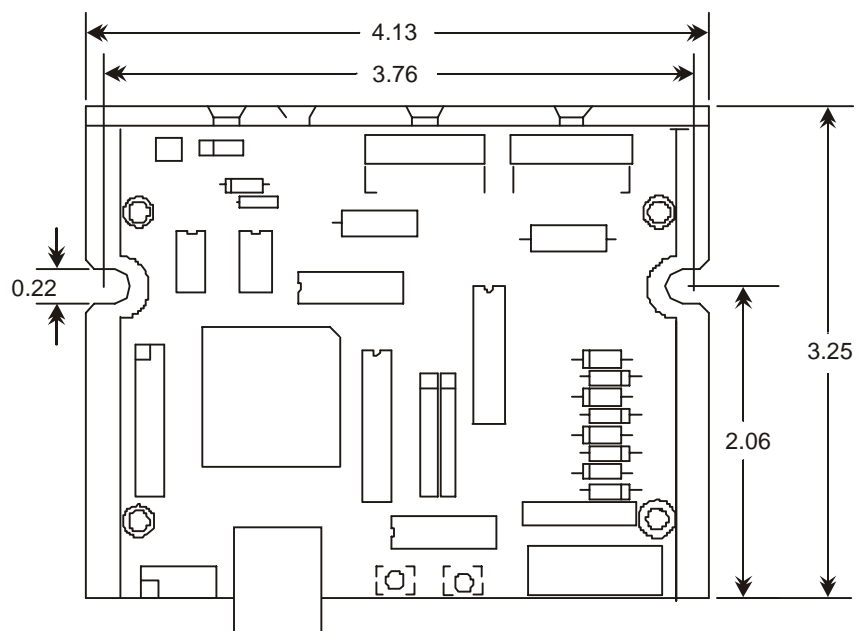
Electrical

Parameter	Min	Typ	Max	Unit
Supply Voltage	12	24	40	Vdc
Current Per Phase (Peak)	0		4	Amp
Input Step Rate			20,000	Steps/Sec
Step Pulse Width	12			Microseconds
Steps / Revolution	200		400	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.



(J2)- control input cable, #BLC-15, included)