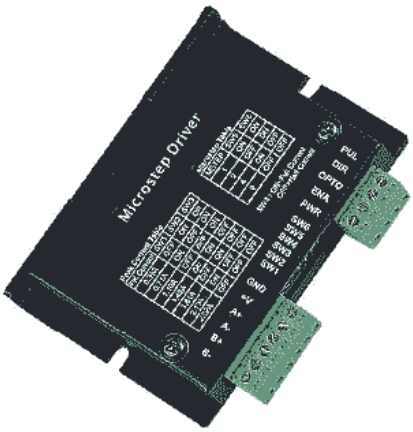
MOTION CONTROL PRODUCTS LTD

Microstepping Driver

MSD325 Datasheet



Features

- Low cost
- Supply voltage up to +32VDC, current output up to 2.5A peak
- Optically isolated input signals, pulse frequency up to 100 KHz
- Automatic idle-current reduction
- 3-state current control for less motor heating
- Selectable resolutions in 1, 2, 4, 8
- Suitable for 4,6,8 lead motors
- DIP switch current setting with 7 different value
- CW/CCW mode available (optional)
- Small size (86x55x20.5mm)

1. Introduction

MSD325 is a very small size microstepping driver based on most advanced technology in the world today. It is suitable for driving any 2-phase and 4-phase hybrid step motors(current 2.5A). By using advanced bipolar constant-current chopping technique, it can output more speed and power from the same motor, compared with traditional technologies such as L/R drivers. Its 3-state current control technology allows coil currents to be well controlled, with relatively small current ripple and therefore less motor heating.

2. Applications

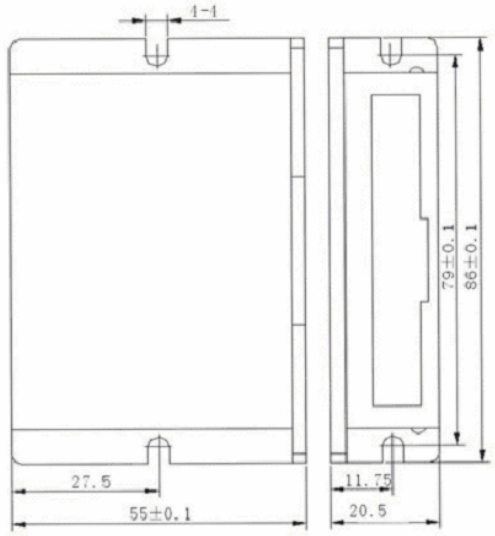
Suitable for a wide range of stepping motors of NEMA 17 and 23, and usable for various kinds of machines, such as X-Y tables, labeling machines, laser cutters, engraving machines, and pick-place devices. Particularly useful in applications with low vibration, high speed and high precision are desired.

3. Electrical and Mechanical Specifications

3.1 Electric Specifications (Tj = 25)

	MSD325			
Parameters	Min	Typical	Max	Unit
Output Current	0.39	-	2.5	Amps
Supply voltage (DC)	12	24	32	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	100	Khz
Isolation resistance	500MΩ			

3.2 Mechanical Dimensions (unit = mm, 1 inch = 25.4 mm)



4. Connection Configuration

4.1 Connector P1 configuration

Signal	Functions
PUL	Pulse signal: in single pulse mode, this input represents pulse signal, effective for each upward – rising edge; in double pulse mode this input represents clockwise(CW)pulse.
DIR	Direction signal: in single-pulse mode, this input represents pulse signal, driving by TTL, used to change motor direction; in double pulse mode, this input represents CCW pulse, effective for each upward-rising edge.
OPTO	Photo-coupler driving power supply
ENA	Enable signal: this signal is used for enable/disable, high level for enabling driver and low level for disabling driver. Usually left unconnected(enabled).

Remark 1: PUL/DIR is the default mode, under-cover jumper JMP1 can be used to switch to CW/CCW double-pulse mode.

Remark 2: Please note motion direction is also related to motor-driver wiring match. Exchanging the connection of two wires for a coil to the driver will reverse motion direction. (for example, reconnecting motor A+ to driver A- and motor A- to driver A+ will invert motion direction).

4.2 Connector P2 configuration

Signal	Functions
Gnd	DC power ground
+V	DC power supply, +12VDC - +32VDC, recommended to use +24VDC.
A	Motor coil A (leads A+ and A-)
B	Motor coil B (leads B+ and B-)

5. Setting Driver Output Current and Microstep Resolution

5.1 Current Setting

The first three bits (SW1, 2, 3) of the DIP switch are used to set the current during motion (dynamic current). Select a setting closest to your motor's required current.

DIP Setting for current during motion:

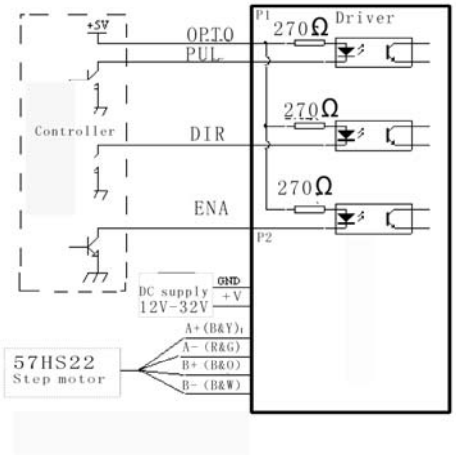
Peak current	SW1	SW2	SW3
0.39A	OFF	ON	ON
0.71A	ON	OFF	ON
1.10A	OFF	OFF	ON
1.42A	ON	ON	OFF
1.81A	OFF	ON	OFF
2.13A	ON	OFF	OFF
2.52A	OFF	OFF	OFF

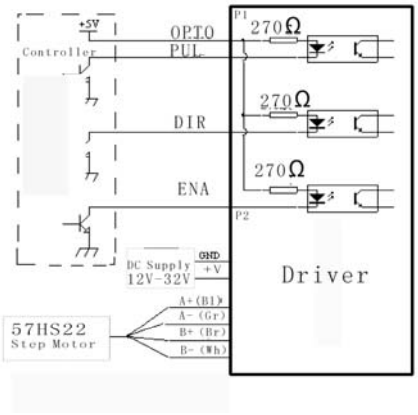
5.2 Microstep Resolution Selection

Microstep resolution is set by SW5, 6 of the DIP switch as shown in the following table:

Microstep	ustep/rev.(for 1.8°motor)	SW5	SW6
1	200	ON	ON
2	400	OFF	ON
4	800	ON	OFF
8	1600	OFF	OFF

6. Typical Wiring Diagram





Remark: in series connection,
connect red and yellow then NC,
connect black and orange then NC.

PARALLEL CONNECTION TO MOTOR SERIES CONNECTION TO MOTOR

Remark: B (blue) Y (yellow) R (red) G (green) B (brown) O (orange) B (black) W (white)