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D42 Micro-stepping Driver

Introduction

The D42 is a high performance micro-stepping drive based on pure-sinusoidal current control technology. Owing to the above technology and the self-adjustment technology (self-adjust current control parameters) according to different motors, the driven motors can run with smaller noise, lower heating, smoother movement and have better performances at higher speed than most of the drives in the markets. It is suitable for driving 2-phase and 4-phase hybrid stepping motors.

Features

- High performance, cost-effective
- Supply voltage up to +50 VDC
- Output current up to 4.2A
- Self-adjustment technology
- Pure-sinusoidal current control technology
- Pulse input frequency up to 300 KHz
- TTL compatible and optically isolated input
- Automatic idle-current reduction
- 15 selectable resolutions in decimal and binary, up to 25,600 steps/rev
- Suitable for 2-phase and 4-phase motors
- Support PUL/DIR and CW/CCW modes
- Short-voltage, over-voltage, over-current protections

Applications

Suitable for a wide range of stepping motors, from NEMA size 17 to 42
Applications XYZ tables, labeling machines, laser cutters, engraving machines, pick-place devices

Specifications

Output current	1.0 ~ 4.2 AMP
Supply voltage (DC)	Min 20, Typical 36 , max 50 VDC
Pulse input frequency	0 ~ 300 KHz
Isolation resistance	Min 500 MΩ
Cooling	Natural Cooling or Forced cooling
Operating Environment	Environment Avoid dust, oil fog and corrosive gases Ambient Temperature 0 ℃ — 50℃ Humidity 40%RH — 90%RH Operating Temperature 70 Max ℃ Vibration 5.9m/s2 Max
Storage Temperature	20 ℃ — 65℃
Weight	Approximate weight 280 g (9.9 oz)

Control Signal Connector P1 pins

Pin Function	Details
PUL+ (+5V)	Pulse signal: In single pulse (pulse/direction) mode, this input represents pulse signal, each rising or falling edge active (set by inside jumper J1); 4-5V when PUL-HIGH, 0-0.5V when PUL-LOW. In double pulse mode (pulse/pulse), this input represents clockwise (CW) pulse, active at high level or low level (set by inside jumper J1, J2). For reliable response, pulse width should be longer than 1.5μs. Series connect resistors for current-limiting when +12V or +24V used. The same as DIR and ENA signals
PUL- (PUL)	
DIR+ (+5V)	DIR signal: In single-pulse mode, this signal has low/high voltage levels, representing two directions of motor rotation; in double-pulse mode (set by inside jumper J3), this signal is counter-clock (CCW) pulse, active at high level or low level (set by inside jumper J1, J2). For reliable motion response, DIR signal should be ahead of PUL signal by 5μs at least. 4-5V when DIR-HIGH, 0-0.5V when DIR-LOW. Please note that rotation direction is also related to motor-drive wiring match. Exchanging the connection of two wires for a coil to the drive will reverse motion direction.
DIR- (DIR)	
ENA+ (+5V)	Enable signal: This signal is used for enabling/disabling the drive. High level (NPN control signal, PNP and Differential control signals are on the contrary, namely Low level for enabling.) for enabling the drive and low level for disabling the drive. Usually left UNCONNECTED (ENABLED).
ENA- (ENA)	

Power connector P2 pins

Pin Funtion	Description
Gnd	DC power ground
+V	DC power supply, +20VDC － +50VDC, Including voltage fluctuation and EMF voltage.
Phase A	Motor coil A (leads A+ and A-)
Phase B	Motor coil B (leads B+ and B-)

Micro-step Division/Resolution Selection

Micro-step resolution set by SW5, SW6, SW7 & SW8 of the DIP switch

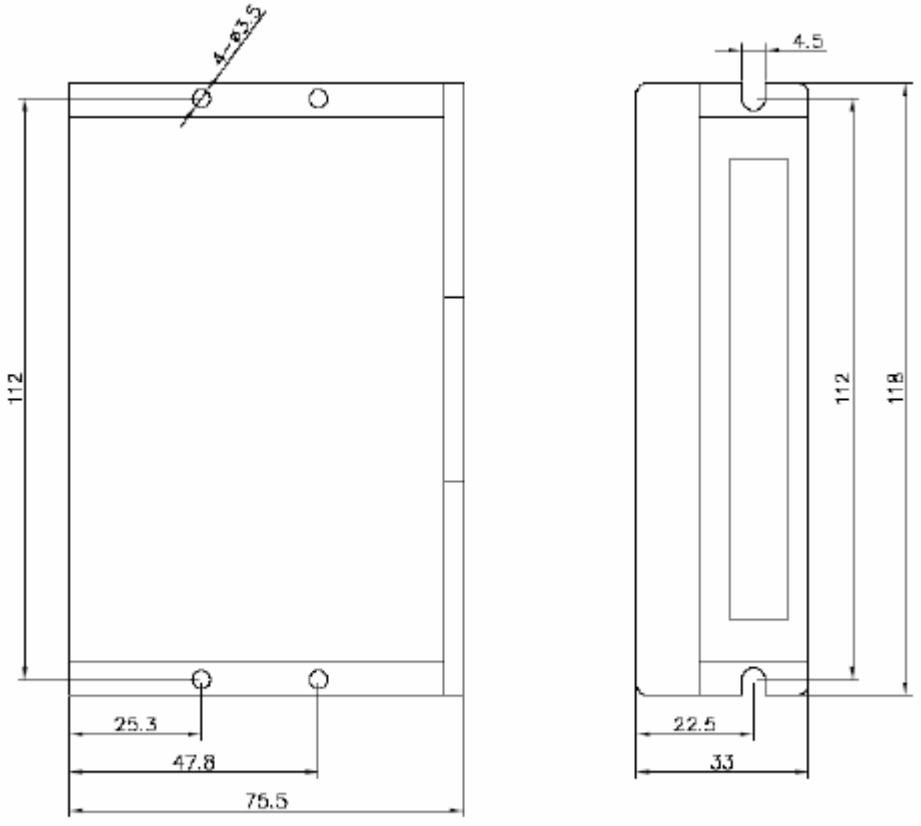
Micro-step	step/rev (1.8°/rev)	SW5	SW6	SW7	SW8
2	**400**	OFF	ON	ON	ON
4	**800**	ON	OFF	ON	ON
8	**1600**	OFF	OFF	ON	ON
16	**3200**	ON	ON	OFF	ON
32	**6400**	OFF	ON	OFF	ON
64	**12800**	ON	OFF	OFF	ON
128	**25600**	OFF	OFF	OFF	ON
5	**1000**	ON	ON	ON	OFF
10	**2000**	OFF	ON	ON	OFF
20	**4000**	ON	OFF	ON	OFF
25	**5000**	OFF	OFF	ON	OFF
40	**8000**	ON	ON	OFF	OFF
50	**10000**	OFF	ON	OFF	OFF
100	**20000**	ON	OFF	OFF	OFF
125	**25000**	OFF	OFF	OFF	OFF

Current selection

SW4 Standstill current set off to half current
Current set by SW1, SW2 & SW3 of the DIP switch

Peak Current (A)	RMS (A)	SW1	SW2	SW3
1.0	**0.71**	ON	ON	ON
1.46	**1.04**	OFF	ON	ON
1.91	**1.36**	ON	OFF	ON
2.37	**1.69**	OFF	OFF	ON
2.84	**2.03**	ON	ON	OFF
3.31	**2.36**	OFF	ON	OFF
3.76	**2.69**	ON	OFF	OFF
4.20	**3.00**	OFF	OFF	OFF

Mechanical Dimension



Front View

Side View

Connection diagram