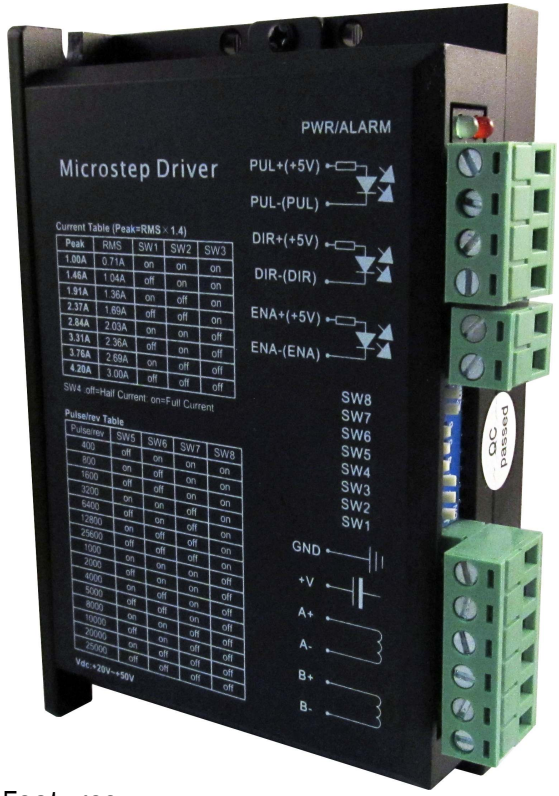
MondoStep 4.2

Bi-polar Stepper Motor Driver



- Features:
- High performance, cost-effective
- Supply voltage up to +50VDC
- Output current up to 4.2A
- Pure-sinusoidal current control
- Pulse input frequency up to 300 kHz
- TTL compatible optically isolated inputs
- Automatic idle-current reduction
- 15 selectable microstep resolutions, up to 25600 steps/rev
- Supports Step/Direction and CW/CCW modes
- Short-circuit, over-voltage, over-current and over-temperature protection

Introduction:

The MondoStep 4.2 drivers are high performance microstepping drivers based on the most advanced stepper motor driver technologies in the world today. They are suitable for driving any 2-phase hybrid stepper motors. By using advanced bipolar constant-current chopping technique, the MondoStep can output more speed and power from the same motor. With 3-state current control technology, coil current is maintained with relatively small current ripple which results in greater positioning accuracy and less motor heating.

Applications:

Suitable for a wide range of stepping motors of size Nema23 and NEMA 34, and usable for various kinds of machines, such as X-Y tables, labeling machines, laser cutters, engraving machines, and pick-place devices. Extremely suitable for applications expected to be low vibration, high speed and high precision.

Electric Specifications (Tj=25°C)

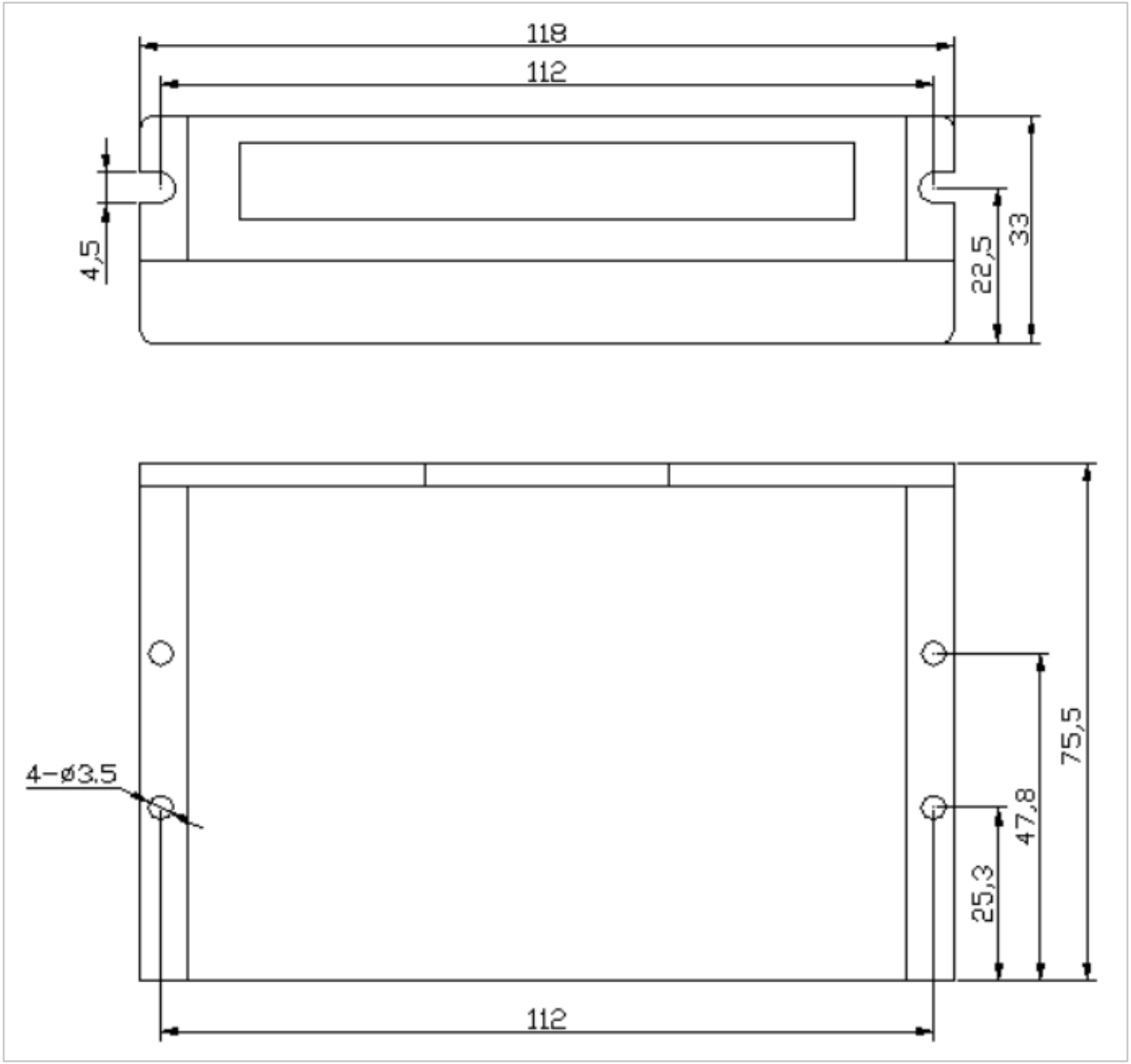
Parameters	Min	Typical	Max	Units
Output Current	1.0	-	4.2	Amps
Supply Voltage	+20	+36	+50	VDC
Logic Signal Current	7	10	16	mA
Step Frequency	0	-	300	Khz
Isolation Resistance	500	-	-	Mohm
Step Pulse Width	1.2			uS
Direction Setup	5			uS
Input High	4	-	5	VDC
Input Low	0	-	0.5	VDC

Operating Environment and Other Specifications

Cooling	Natural Cooling or Forced Air Cooling
Operating Environment	Avoid dust, oil, mist, and corrosive gases
Ambient Temperature	0°C - 50°C (32°F - 122°F)
Humidity	40%RH - 90%RH
Operating Temperature	70°C (158°F) Max
Vibration	5.9m/s^2
Storage Temperature	-20°C - 65°C (-4°F 149°F)
Weight	280g (10oz)

Mechanical Specifications:

Unit: mm



Pin Assignment and Description

Control Signal Connector P1 pins

Pin Function	Details
PUL+ (+5VDC)	Step Signal: In Step/Direction mode, this input is the step signal. In Up/Down mode, this signal is the clockwise (CW) step signal. Internal jumper JP1 determines whether the indexer steps on the rising or falling edge of the step pulse.
PUL- (GND)	
DIR + (+5VDC)	Direction Signal: In Step/Direction mode, this input is the direction signal. The motor will spin in one direction when this input is high, and the other direction when low. In Up/Down mode, this input is the counter-clockwise (CCW) step signal.
DIR - (GND)	
ENA+ (+5VDC)	Enable Signal: This signal will disable the driver when pulled low. Left unconnected, the driver will be enabled.
ENA- (GND)	

Power connector P2 pins

Pin Function	Details
GND	DC Power Ground
+V	DC Power Supply, 24-80VDC. Allow for voltage fluctuations and back EMF.
A+, A-	Motor Phase A
B+, B-	Motor Phase B

Current Setting

Peak Current	SW1	SW2	SW3
1.0 A	ON	ON	ON
1.46 A	OFF	ON	ON
1.91 A	ON	OFF	ON
2.84 A	OFF	OFF	ON
3.31 A	ON	ON	OFF
3.76 A	OFF	ON	OFF
4.2 A	ON	OFF	OFF

Idle Current Reduction

SW4 is used to enable or disable idle current reduction. When switched OFF, the motor current is reduced to half after one second of receiving the last step pulse. If switched ON the current will remain at the full current.

Microstep Resolution Selection

Microsteps	Steps/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	OFFN
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	OFF	ON	OFF	OFF
125	25000	OFF	OFF	OFF	OFF

Typical Connections