



Leadshine

3-Axis Stepper Drive *Datasheet*

MX3660



3-Axis Stepper Drive + Breakout Board, 20-60VDC, 6A Peak

Version 0.0.1

<http://www.Leadshine.com>

Features

- I Three individual stepper drive boards
- I Suitable for NEMA17 to NEMA23 stepper motor
- I Input voltage 20-60VDC
- I MAX peak current 6.0Amp
- I Extra smoothness and good high speed performance
- I 8 selectable current and 8 selectable micro step resolution
- I Interface to PC's parallel port and MACH3
- I Interface to CNC machine peripheral equipment like inverter, end limit
- I Isolated 0-10V^{Note1} output for spindle speed control
- I 4 isolated GP digital outputs for the spindle I/O or other equipment
- I Built-in short circuit, over-current and over-voltage protection for each drive board
- I Power and fault indicator for each drive board
- I Charge pump indicator in the breakout board
- I One switch to disable/enable the charge pump
- I Built-in digital smoother of each drive board

Descriptions

Leadshine's MX3660 is 3-axis stepper drive which integrates 3 stepper drive boards and one break out board into one drive case. As the drive board adopts the latest DSP control technology, the driven motor can run with extra smoothness and lower heating. Each drive board has 8 currents and 8 micro step resolutions selected by a 6-bit DIP switch. A parallel break out board which provides 0-10V^{Note1} analog output, ESTOP input, 4 general purpose digital inputs and 4 general digital outputs has been built into the MX2660 so it nulls any additional equipment when connecting to PC's parallel port and controlling by Mach3. However, users can also take it as traditional stepper drives and control them by step/direction signals via the DB25 port.

Applications

Leadshine's MX3660 are specially designed for those applications which adopt PC and MACH3 or similar software as the control platform. However it can be used in various applications such as laser cutters, laser markers, high precision X-Y tables, labeling machines, CNC router, etc. Its unique features and compact size make the MX3660 an ideal choice for applications that require both low-speed smoothness and small mounting space.

Note1: The actual analog output is 0.1-8.9V when the input is 10V.

Specifications

Electrical Specifications

Stepper Drive

Parameter	Min	Typical	Max	Unit
Input Voltage	20	48	60	VDC
Continuous Current	0	-	6.0(Peak)	A
Pulse Input Frequency	0	-	200	kHz
Pulse Voltage	0	5	5	V
Logic Signal Current	7	10	16	mA
Isolation Resistance	100	-	-	MΩ

Break out Board

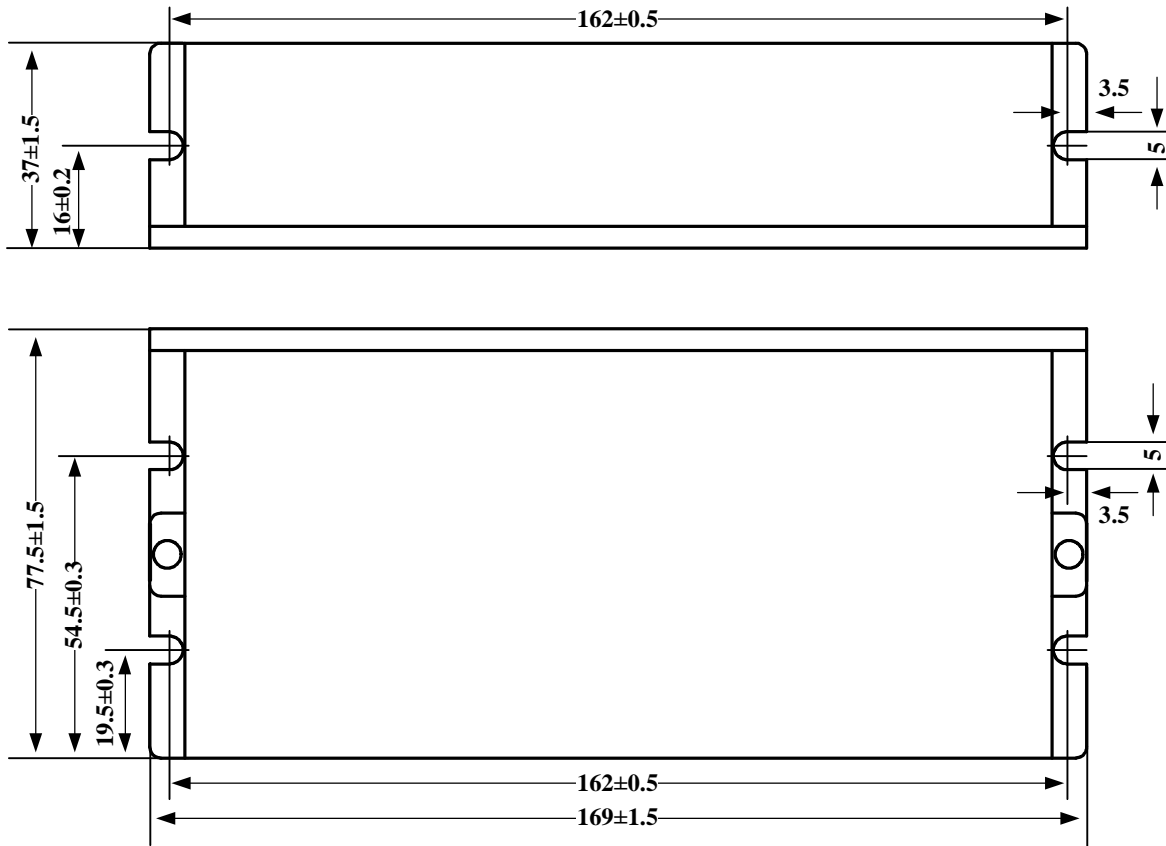
Input Voltage	20-60VDC
ESTOP, Input1, Input2, Input 3, Input 4	Optical Isolation, 12V Source, 10mA MAX
Output 1, Output 2, Output 3, Output 4	Optical Isolation, 24V, 70mA MAX
0-10V Analog Output	0.1 to 8.9V, 20mA MAX

Operating Environment

Cooling	Natural Cooling or Forced cooling	
Operating Environment	Environment	Avoid dust, oil fog and corrosive gases
	Ambient Temperature	0°C — 40°C (32°F — 104°F)
	Humidity	40%RH — 90%RH
	Operating Temperature (Heat Sink)	70°C (158°F) Max
Storage Temperature	-20°C — 65°C (-4°F — 149°F)	

Mechanical Specifications

Unit: mm



Connectors and Pin Assignment

Parallel Port (DB25)	
Pin	Signal
1	OUTPUT 2
2	X STEP
3	X DIR
4	Y STEP
5	Y DIR
6	Z STEP
7	Z DIR
8	OUTPUT 3
9	OUTPUT 4
10	INPUT 1 / X Limit
11	INPUT 2 / Y Limit
12	INPUT 3 / Y Limit
13	INPUT 4 / (Reserved for 4 th axis Limit)
14	VFD PWM
15	FAULT
16	CHARGE PUMP
17	OUTPUT 1
18	PC GND
19	PC GND
20	PC GND
21	PC GND
22	PC GND
23	PC GND
24	PC GND
25	PC GND



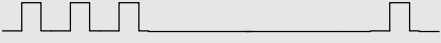
Power	
Pin	Description
1	20-60 VDC Supply
2	Power Ground

Motor	
Pin	Description
1	Motor Phase A+
2	Motor Phase A-
3	Motor Phase B+
4	Motor Phase B-

CNC Machine Interface	
Pin	Description
1	Input 1 / X Axis Limit (Pin10)
2	INPUT GND
3	Input 2 / Y Axis Limit (Pin11)
4	INPUT GND
5	Input 3 / Z Axis Limit (Pin12)
6	INPUT GND
7	Input 4 / 4 th Axis Limit (Pin13)
8	INPUT GND
9	ESTOP Input (Pin 15)
10	INPUT GND
11	VFD +10V Input
12	0-10V Output (Pin14)
13	VFD +10V GND
14	Output1 +(Pin 17)
15	Output 1-
16	Output2 + (Pin 1)
17	Output 2-
18	Output3 + (Pin 8)
19	Output 3-
20	Output4 + (Pin 9)
21	Output 4-

Protection Indications

The green light turns on when the drive board is powered on and functions normally. In any case that drive protection is activated, the red LED blinks periodically (in every 4 seconds) to indicate the error type. In each blink, red light is on for 0.2 second and then off for 0.3 second.

Priority	Time(s) of Blink	Sequence wave of red LED	Description
1st	1		Over-current protection activated
2nd	2		Over-voltage protection activated
3rd	3		Emergency stop activated

DIP Switch Settings

Current Setting (SW1-SW3)

Peak	RMS	SW1	SW2	SW3
1.45A	1.04A	on	on	on
2.08A	1.48A	off	on	on
2.72A	1.94A	on	off	on
3.37A	2.41A	off	off	on
4.05A	2.89A	on	on	off
4.72A	3.37A	off	on	off
5.35A	3.82A	on	off	off
6.00A	4.29A	off	off	off

Micro Step Resolution Setting (SW4-SW6)

Steps/Rev	SW1	SW2	SW3
200	On	On	On
400	Off	On	On
800	On	Off	On
1600	Off	Off	On
2000	On	On	Off
3200	Off	On	Off
6400	On	Off	Off
12800	Off	Off	Off

Typical Connections

