Microstepping Driver
KL5056

Feature

- **Low cost ,high performance**
- **Low noise ,high stability**
- **15 selectable resolutions(decimal and binary)**
- **Bi-polar constant chopping technology provides high speed and power**
- **Opto-isolated input/output signals ,pulse frequency 400Khz**
- **Automatic idle-current reduction**
- **DIP switch current setting with 8 different value ,up to 5.6A peak**
- **Input voltage from 20VDC to 50VDC**
- **Short-circuit and over-voltage protection ,LED turn to RED when voltage high than 52VDC**
- **Compact ,size is just 118×75.5×33mm**

Introduction

KL5056 is a low cost high performance micro stepping driver, it is suitable for driving any 2-phase and 4-phase hybrid step motors of NEMA17.23.and 34 with up to 5.6A per phase current capability.
Based on the build-in bi-polar constant chopping technology, the stepper motor can work with more speed and power .the input voltage ranges from 20VDC -50VDC.The driver reduces the current through the coils automatically to 50% after 1 second of receiving the last step pulse, this reduces the heating of both the driver and motor by 75%.g.

Applications

KL5056 can be used for 2-phase hybrid stepping motors of NEMA17.23 and 34 with a phase current of up to 5.6A,it's suitable for a wide range of machines, such as X-Y tables labeling machines, laser cutters, engraving machines, and pick-place devices.

Electric Specifications (T_j=25℃)

Parameters	KL5056			
	Min	Typical	Max	Unit
Output current	1.4	-	5. 6	Amps
Supply voltage	+20	+36	+50	VDC
Logic signal current	7	10	16	mA
Pulse input frequency	0	-	300	KHz
Isolation resistance	500			MΩ

Mechanical Specifications (Unit: mm, 1 inch=25.4 mm)

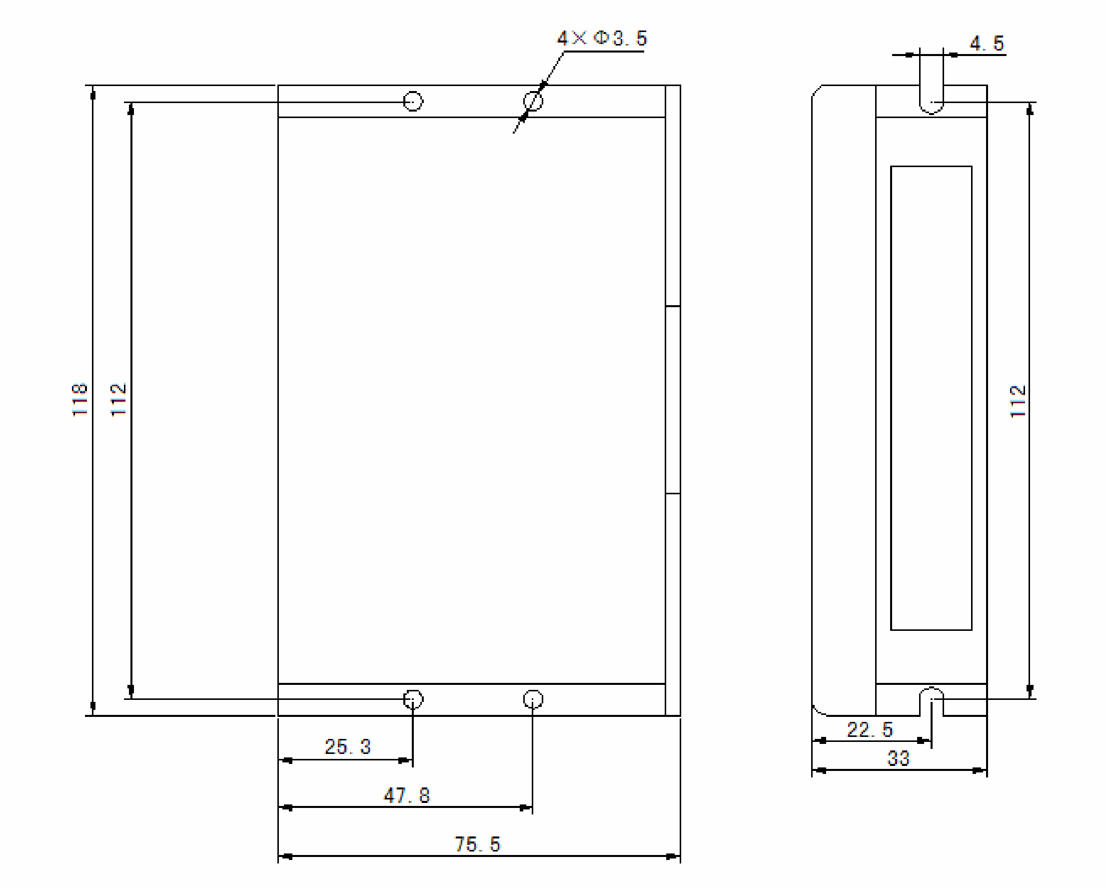

Figure 1: Mechanical Specifications

Pin Assignment and Description

Control Signal Connector P1 pins

Pin Function	Details
PUL+(+5V)	Pulse signal: In single pulse (pulse/direction) mode, this input represents pulse signal, effective for each rising or falling edge (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, effective for high level or low level (set by inside jumper J1). For reliable response, pulse width should be longer than 1.2μs. Series connect resistors for current-limiting when +12V or +24V used.
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 J2), this signal is counter-clock (CCW) pulse, effective for high level or low level (set by inside jumper J1). 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 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.
DIR-(DIR)	
ENA+(+5V)	Enable signal: This signal is used for enabling/disabling the driver. High level (NPN control signal, PNP and Differential control signals are on the contrary, namely Low level for enabling.) for enabling the driver and low level for disabling the driver. Usually left **UNCONNECTED (ENABLED)**.
ENA-(ENA)	

Power connector P2 pins

Pin Function	Details
GND	DC power ground
+V	DC power supply, 20~50VDC, Including voltage fluctuation and EMF voltage.
A+, A-	Motor Phase A
B+, B-	Motor Phase B

Microstep Resolution Selection

Microstep resolution is specified by 5, 6, 7,8 DIP switches as shown in the following table:

Microstep	SW5	SW6	SW7	SW8
2	1	0	0	0
4	0	1	0	0
8	1	1	0	0
16	0	0	1	0
32	1	0	1	0
64	0	1	1	0
128	1	1	1	0
5	0	0	0	1
10	1	0	0	1
20	0	1	0	1
25	1	1	0	1
40	0	0	1	1
50	1	0	1	1
100	0	1	1	1
125	1	1	1	1

Current Setting

Current	SW1	SW2	SW3
1.4A	1	1	1
2.1A	0	1	1
2.7A	1	0	1
3.2A	0	0	1
3.8A	1	1	0
4.3A	0	1	0
4.9A	1	0	0
5.6A	0	0	0

Notes: Due to motor inductance, the actual current in the coil may be smaller than the dynamic current settings, particularly under high speed condition.

Typical Connections

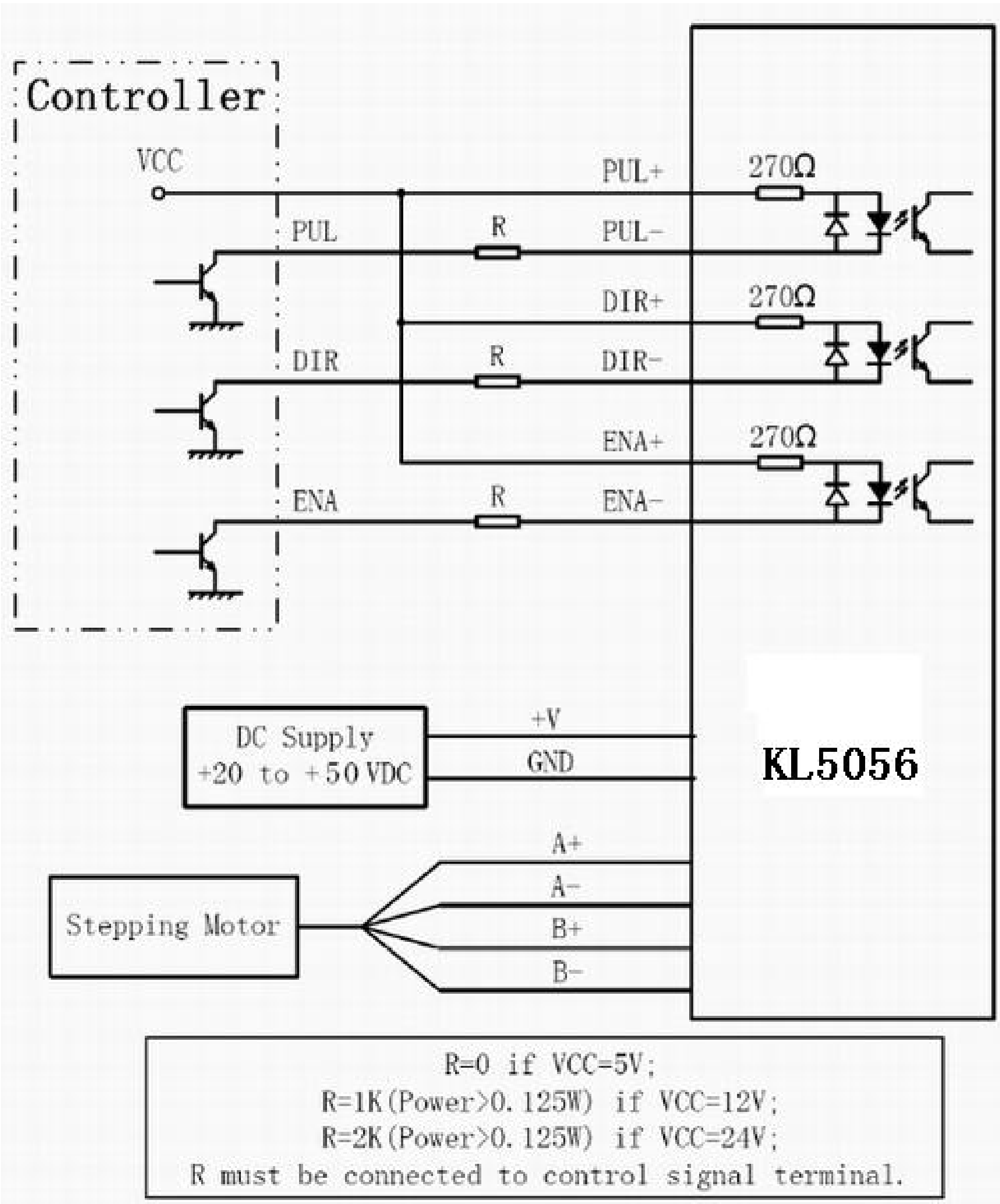

Figure 2: Typical Connections