

INSTALLATION

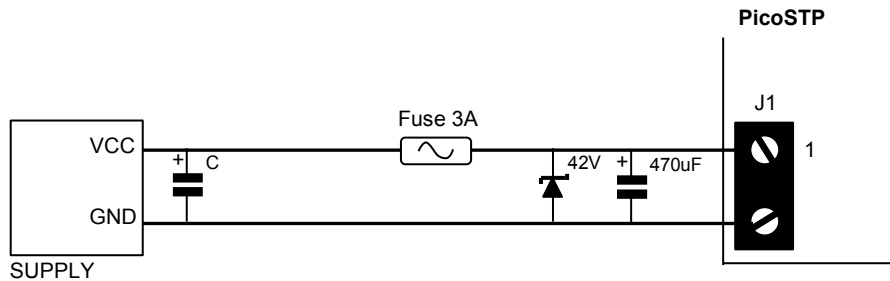
The power supply terminals should be connected with a capacitor of at least 470uF. The capacitor pins must be as close as possible to the driver screw terminals.

In case of a rapid deceleration or during the braking time, especially with large inertial loads, the motor could become a generator of a consistent electrical power: this energy must be conveniently resented to the power supply. If the power supply unit is not able to absorb this energy, the supply voltage could raise over the maximum allowed level, with the risk of damaging the driver or the generator. To prevent this problem, we suggest to connect a 42V zener diode between the positive pin and the ground. This zener should have a power dissipation capability of more than 5W. A suitable fuse must be connected between the zener diode and the power supply.

As a general rule of thumb, the supply current is about 2/3 of the driver set current.

We suggest to connect an additional capacitor between the general power supply conductors (the value can be determined using the following formula:

$$C = \frac{80,000 * I_{a \text{ lim}}}{V_{a \text{ lim}}} [uF]$$



Wiring diagram

PRECAUTIONS FOR ELECTROMAGNETIC COMPATIBILITY

1. Separate the phases and the power supply wires from the signal cables
2. Keep the connections as short as possible and use shielded cables for control signals
3. Do not insert capacitors, inductors or any electronic component on the motor wiring
4. Connect only one side of the cable shields
5. Connect the motor case to an efficient ground point
6. Use an appropriate size for power wires

SAFETY

It is the responsibility of the user to be sure this unit is used in compliance with the safety requirements. For further information, please call our technical department.



PicoStp_QM_EN_1_7_0

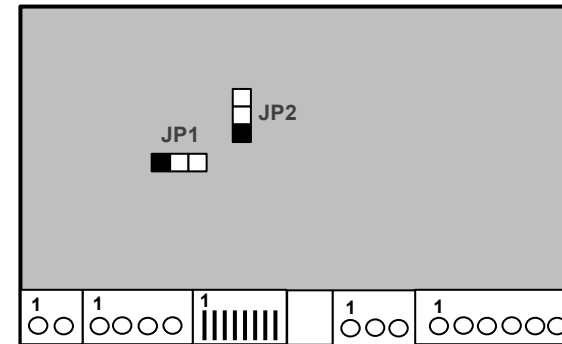
PicoSTP STEPPER MOTOR DRIVER 1.6A - 40V

PicoSTP is a compact stepper driver board suitable for low power motors, easy to use. One of the main advantages is a very convenient price to performance ratio.

CHARACTERISTICS

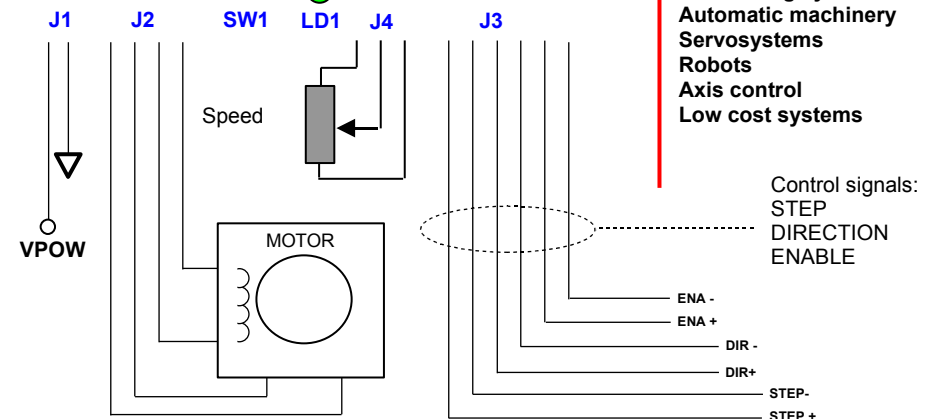
- Microprocessor controlled
- 8 preset current levels up to 1.6A
- Optocoupled inputs
- Automatic stand still current reduction
- Built-in step generator
- Dip-switches for settings
- Short circuit protected
- Two recirculation modes (regenerative or not)
- Highly customizable: built-in motion cycles – synchronization of more PicoSTP

Vdc min	12 V	
Vdc nom	24 V	
Vdc max	40 V	
VCO range (±20%)	10-500 Hz	0.1-5 V
	0.2-4 KHz	
Irms min	0.2 A (rms)	
Irms max	1.6 A (rms)	
Step resolution	1/1, 1/2 step	
Chopping frequency	25KHz	
Operating temperature	0° to 50 °C	
Motor inductance	> 0.5 mH	
Dimensions	125 x 60 x 50 mm	



APPLICATIONS:

Positioning systems
Automatic machinery
Servosystems
Robots
Axis control
Low cost systems



CONNECTIONS:

J1. POWER SUPPLY

PIN	SIGNAL	DESCRIPTION
1	VPOW	Power supply Positive terminal (12 - 40V)
2	GND	Ground -

J2. MOTOR CONNECTIONS

PIN	SIGNAL	I/O	DESCRIPTION
1	A1	O	Motor winding A, pin 1
2	A2	O	Motor winding A, pin 2
3	B1	O	Motor winding B, pin 1
4	B2	O	Motor winding B, pin 2

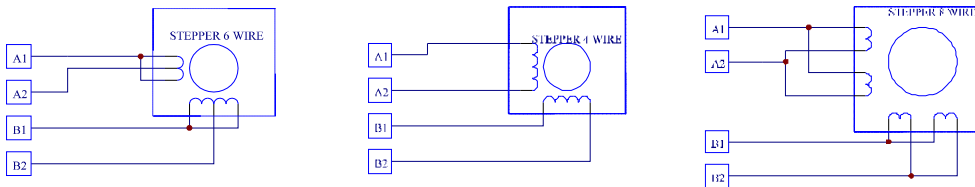
J3. OPTOCOUPLED INPUT SIGNALS (input voltage: 5 +24 Vdc)

PIN	SIGNAL	I/O	DESCRIPTION
1	STEP +	I	Step -The motor advances in the given direction, when this signal change from ACTIVE level to INACTIVE (see NOTE 2) Suggested duty-cycle : 50%.
2	STEP -	I	
3	DIR +	I	Direction - The level of this signal determines the rotation direction. (see NOTE2). This signal shall be valid at least 20us before changing the STEP and must remain stable more than 20us after the last step pulse. The clockwise or counterclockwise rotation depends on motor connections. The motor can runs, even if DIR command is inactive or not connected
4	DIR -	I	
5	ENA +	I	Enable - If this signal is active, the driver is enabled. If ENA is not connected or inactive the driver is disabled. (see NOTE2)
6	ENA -	I	

J4. STEP GENERATOR (VCO)

PIN	SIGNAL	I/O	DESCRIPTION
1	RIF+	I	VCO positive terminal
2	CTRL	I	VCO control input (see "OSCILLATOR")
3	RIF-	I	VCO negative terminal

NOTE1: Depending on motor type, connect the windings (4, 6 or 8 wires) as follow:



NOTE 2: Control signals wiring examples (optocoupled signals):



SETTINGS

RESOLUTION

1	STEP RESOLUTION
OFF	Full step (typ. 200 step/rev)
ON	Half step (typ. 400 step/rev)

Step generator: frequency range

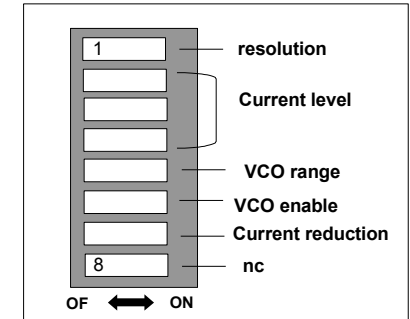
5	VCO RANGE
ON	10 Hz / 500 Hz
OFF	200 Hz / 4000 Hz

CURRENT SELECTION

4	3	2	Nominal current
OFF	OFF	OFF	0.2 A
ON	OFF	OFF	0.4 A
OFF	ON	OFF	0.6 A
ON	ON	OFF	0.8 A
OFF	OFF	ON	1.0 A
ON	OFF	ON	1.2 A
OFF	ON	ON	1.4 A
ON	ON	ON	1.6 A

AUTOMATIC CURRENT REDUCTION

When the switch (7) is OFF, the driver reduces the winding current at about the 70% of set current after 100ms from the last step

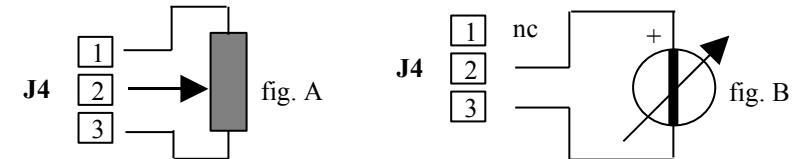


DIAGNOSTIC

LD1	FUNCTION
ON	OK: correct behaviour
OFF	Driver disabled or power off (ENA+, ENA- inactive)
SLOW BLINKING	Error: driver fault
FAST BLINKING	Initialization sequence

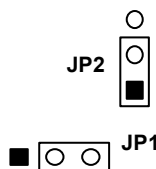
STEP GENERATOR (VCO)

When this switch (6) is in the ON position, the step signal is internally generated. The generator should be disabled when an external step is used. The generator frequency can be modified connecting to J4 an external potentiometer (R > 1kΩ fig.A) or supplying an external voltage on pins 2-3 (fig. B). This external voltage should be between 0V (min. Freq.) and 5Vcc (max freq.)

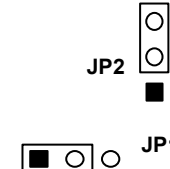


POWER BRIDGE RECIRCULATION MODE

REGENERATIVE



NOT REGENERATIVE



The recirculation mode of the power bridge can be set modifying the position of **JP1** e **JP2** jumpers, as shown.

NOT REGENERATIVE: the winding current flows in the lower side of the power bridge. This mode is fit for low inductance motors. The dissipation is lower than regenerative mode.

REGENERATIVE: the winding current flows through the power supply; this mode is fit for high speed applications, for half step resolution and for high inductance motors.