

INSTALLATION

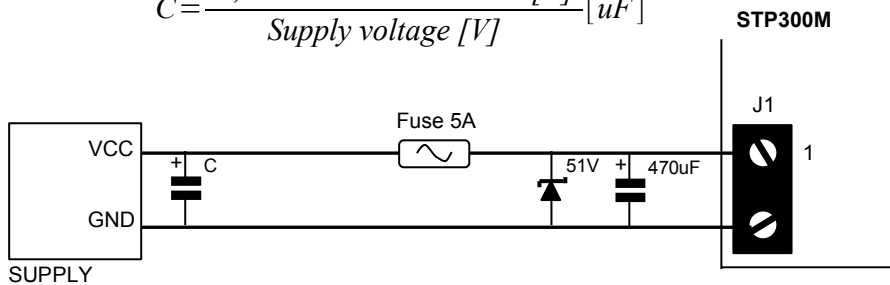
The power supply terminals should be connected with a capacitor of at least 470uF. The capacitor pins must be as close as possible to the driver screw terminals.

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 51V 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:

$$C = \frac{80,000 * \text{Nominal current [A]}}{\text{Supply voltage [V]}} [\mu\text{F}]$$



Wiring diagram

PRECAUTIONS FOR ELECTROMAGNETIC COMPATIBILITY

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



STP300M MICROSTEPPING DRIVER 3A - 42V

STP300M is a compact, high performances PWM bipolar microstepping driver suitable for medium power motors. STP300M adopts an innovative control algorithm which optimizes the performances of the driver up to 1/256 step resolution.

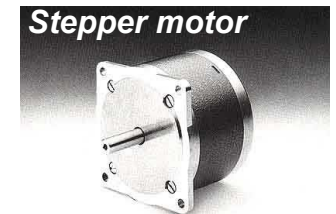
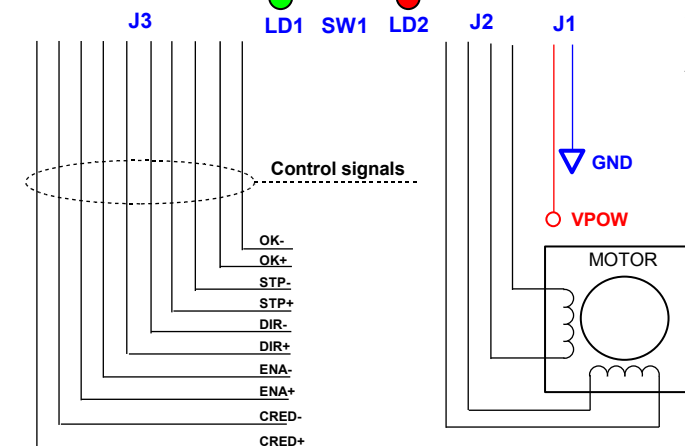
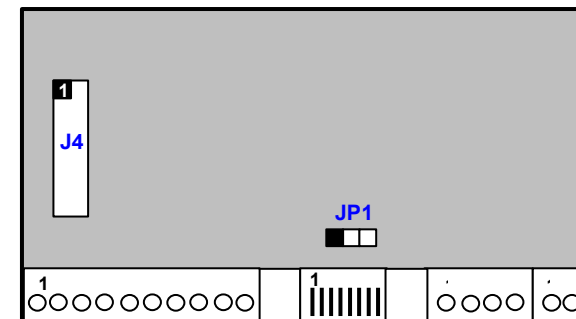
A wide range of accessories is available for your custom application.

CHARACTERISTICS

- Microstepping up to 51,200 steps/rev
- 14 decimal and binary resolution selectable "on the fly" without loss of shaft position
- 8 preset current levels up to 3A rms
- Optocoupled inputs
- Automatic stand-still current reduction
- Automatic optimized current recirculation
- Small size
- Dip-switches for settings
- Short-circuit, over temperature and overvoltage built-in protection

Vdc min	12V
Vdc nom	42 V
Vdc max	48 V
Irms min	0.4 A (rms)
Irms max	3 A (rms)
Ipeak max	4.2A (peak)
Chopping frequency	20KHz
Operating temperature	0° - 50° C
Motor inductance	> 0.5mH
Dimensions (mm)	140 x 75 x 40mm

STP300M



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 -42V)
2	GND	Ground -

J2. MOTOR CONNECTIONS

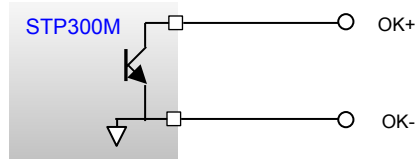
PIN	SIGNAL	I/O	DESCRIPTION
1	A1	O	Motor winding A, pin 1
2	A2	O	Motor winding A, pin 2
3	B1	O	Motor winding B, pin 1
4	B2	O	Motor winding B, pin 2

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

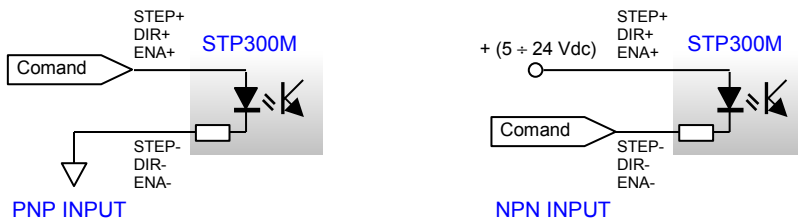
PIN	SIGNAL	I/O	DESCRIPTION
1	CRED+	I	Current reduction -When this signal is active the driver reduces the winding current at about the 70% of set current after 1.5s from the last step
2	CRED-		
3	ENA +	I	Enable – If this signal is active, the driver is enabled. If ENA is not connected or inactive the driver is disabled
4	ENA -	I	
5	DIR +	I	Direction – This level input controls the direction of the motor shaft rotation. The clockwise or counterclockwise rotation depends on motor connections. The motor can runs, even if DIR command is inactive or not connected
6	DIR -	I	
7	STEP +	O	Step -The motor advances in the given direction, when this signal change from ACTIVE level to INACTIVE Suggested duty-cycle : 50%.
8	STEP -	O	

J3. DRIVER SIGNAL STATE

PIN	SIGNAL	I/O	DESCRIPTION
9	OK+	O	Drive-OK – this output is a transistor signal (npn). Which turns off in the event of a fault (the driver will de-energize).
10	OK-	O	



NOTE 1: Control signals wiring examples (optocoupled signals):



NOTE2: J4 connector is used only with plug-in boards

SETTINGS

RESOLUTION

1	2	3	4	microsteps	steps/rev
BINARY (1.8° MOTOR)					
ON	ON	ON	ON	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	256	51200
DECIMAL (1.8° MOTOR)					
ON	ON	ON	OFF	5	1000
OFF	ON	ON	OFF	10	2000
ON	OFF	ON	OFF	25	5000
OFF	OFF	ON	OFF	50	10000
ON	ON	OFF	OFF	125	25000
OFF	ON	OFF	OFF	250	50000
ON	OFF	OFF	OFF	Not permitted	
OFF	OFF	OFF	OFF	Not permitted	

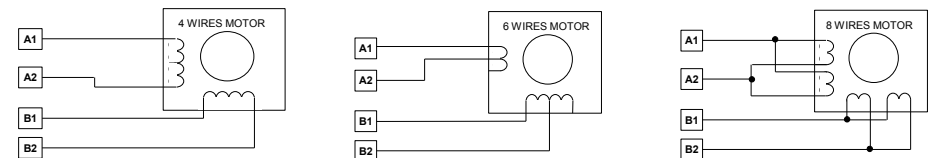
CURRENT SELECTION

6	7	8	corrente nominale
OFF	OFF	OFF	0.4 A
ON	OFF	OFF	0.8 A
OFF	ON	OFF	1.2 A
ON	ON	OFF	1.6 A
OFF	OFF	ON	2.0 A
ON	OFF	ON	2.4 A
OFF	ON	ON	2.8 A
ON	ON	ON	3.0 A

DIAGNOSTIC

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

NOTE3: MOTOR. Depending on motor type, connect the windings (4, 6 or 8 wires) as follow:



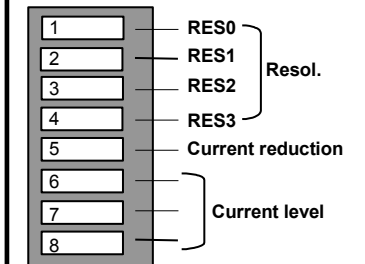
NOTE4. POWER BRIDGE RECIRCULATION MODE

STP300M adopts an innovative power bridge current recirculation technique which optimizes the performances of the driver (less power dissipation, best torque uniformity control, less shaft vibrations and motor noise).

AUTOMATIC CURRENT REDUCTION

When the switch (5) is ON, the driver reduces the winding current at about the 70% of set current after 1.5s from the last step

DIP-SWITCH SETTINGS



NOTE: When a plug-in expansion board is connected to J4 connector, resolution dip switches (1, 2, 3, 4) must be set to OFF