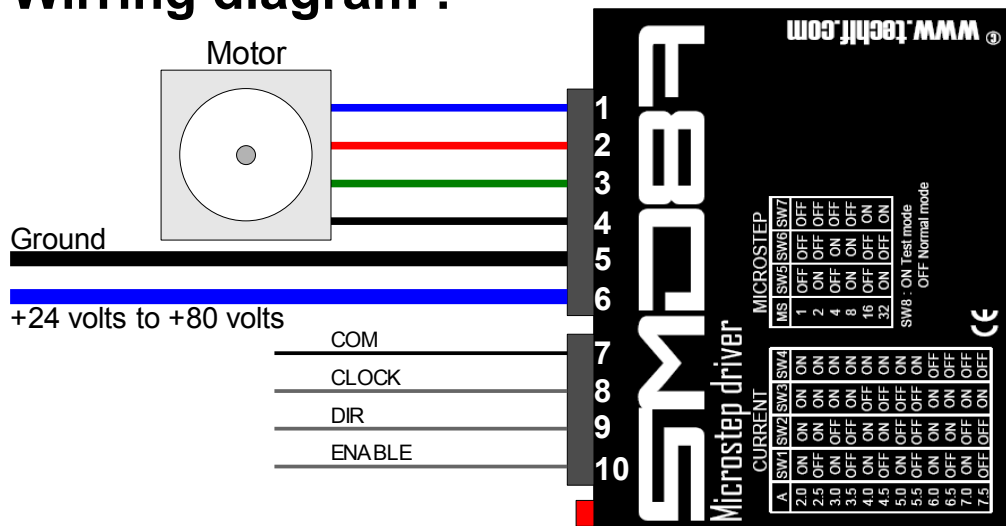


Features :

- power supply 24 to 80 Volts DC
- 2 to 7,5 amps per phase current
- 1 to 32 microsteps per steps
- short-circuit protection
- overtemperature protection
- reverse polarity protection
- anti-resonance algorithm
- dip-switch selectable
- optocoupled Clock, Dir and Enable inputs
- 4 leds errors indocator
- auto current reduction to 50%
- embedded motor test



Wirring diagram :



Power supply :

The power supply is connected on pins **5** and **6**. Use stabilised single power supply entre 24 volts to 80 volts DC.

Pin 6 : +24 to +80 volts

Pin 5 : Ground

- LED 4 (over temperature)
- LED 3 (short circuit)
- LED 2 (Pow er ON)
- LED 1 (current reduction)

The driver include the reverse polarity protection in case of bad connection. After power on the **LED 2** (green) must be lit, the **LED 3** (red) is lit during 0,5 seconds and the **LED 1** (yellow) must be lit after 1 seconde.

Motors :

Motor phases are connected on terminal blocks 1,2,3 and 4.

terminal block 1 : Phase A

terminal block 2 : Phase /A

terminal block 3 : Phase B

terminal block 4 : Phase /B

Here a summary table for the connection of steppers motors 23H056-4, 23H076 and 34H098-8.

	23H056-4	23H076-4	34H098-8
Term. 1	blue	blue	red+blue
Term. 2	red	red	yellow+black
Term. 3	green	green	white+maroon
Term. 4	black	black	orange+green

Phase inputs terminals are protected against short circuit. When shorts circuits occurs, the driver goes in protected mode, lit the LED 3, then goes back in normal mode after 1 second and goes in protected mode again if problem persists.

Do not connect or disconnect motor when the driver in ON !

If your stepper motor turns in the wrong direction, reverse wire between terminal 1 and 2 or terminal 3 and 4.

Do not connect two motors on the same driver !

Control :

COM, CLOCK, DIR and ENABLE signals are conected on terminals 7,8,9 and 10.

Term. 7 : COM

Term. 8 : CLOCK

Term. 9 : DIR

Term. 10 : ENABLE

All inputs (CLOCK, DIR et ENABLE) are optoisolated, 5V and 3V3 tolerance with low current input, 3mA (internal resistor 820 ohms). For higher voltage connect in

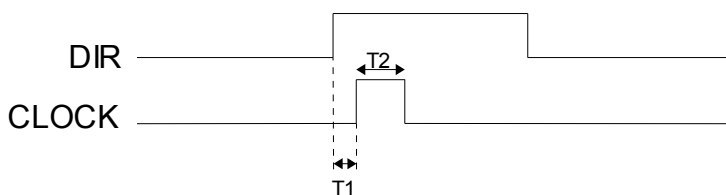
serie a resistor to limit to current to 5 mA.

Terminal 7 COM must tied to controller ground (CPU4BU, CNC4AU, microCN, tinyCN ou megaCN).

Terminal 8 CLOCK, step input with maximal frequency of 250 Khz.

Terminal 9 DIR, direction input, must be active 250ns before the clock signal.

Terminal 10 ENABLE, enable input, if active the power stage is off. When not in use, do not connect this terminal.



Symbole	Description	Min	Typ.	Max	Unités
T1	CLOCK setup time after DIR	250	500	-	ns
T2	CLOCK pulse width	1	5	-	us

Errors Leds :

LED 3 : short circuit on any motor output.

LED 4 : over temperature. When the temperature exceeds 70°C the led 4 is lit. The led automatically reset when temperature drops under 70°C.

■	LED 4 (over temperature)
■	LED 3 (short-circuit)
■	LED 2 (power ON)
■	LED 1 (current reduction)

Microsteps resolution :

The 3 dip switches are used to select one of 6 microstepping resolutions from 1 to 32 microsteps per step.

Step	Configuration
1	
1/2	
1/4	
1/8	
1/16	
1/32	

OFF switch down

ON switch up

Not used

Current configuration :

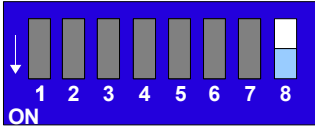
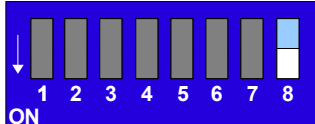
The 4 dip switch select the desired motor current.

Current (A)	Configuration
2	

2.5	
3	
3.5	
4	
4.5	
5	
5.5	
6	
6.5	
7	
7.5	

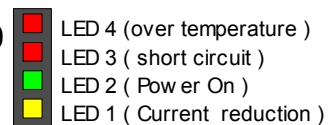
Auto-test :

You can test the driver without CLOCK and DIR signals connected to the external terminals. Switch on the dip switch 8 and the motor will turn with a frequency of 1000 Hz (pulse/sec).

Mode	Configuration
Normal	 ON
Auto-test	 ON

Current reduction :

If no pulses activity, the driver goes in standby mode (50 % current reduction) after 1 second. The LED 1 lit to indicate the current reduction is ON.



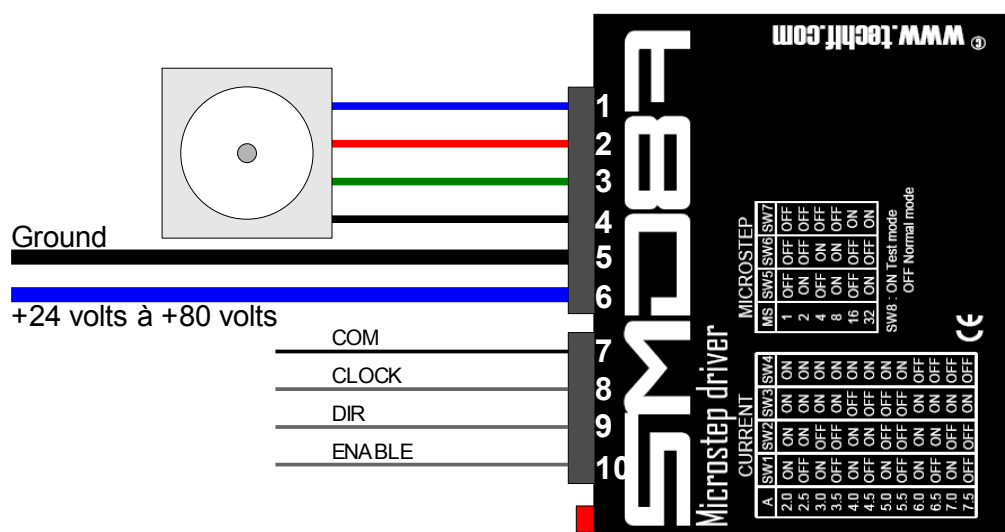
Heatsinking :

The SMD8A need heatsinking for current settings greater than 4 amps.

Recommanded operation conditions :

Symbol	Parameter	Min	Typ.	Max	Unit
VCC	Supply voltage	24	60	80	V
ICC	Short circuit current	-	10	-	A
I _p	Current per phase	2	-	7,5	A
V _i	Digital input voltage	3	3,3	5	V
F _i	Input frequency	-	-	250	KHz
T _i	Pulse width CLOCK	1	5	-	us
R _i	Input impedance	-	820	-	ohms
T _{icc}	Short circuit test every	-	1	-	s
T _r	50 % current reduction after	-	1	-	s
F _{test}	Internal frequency pulse geneator	-	1000	-	Hz
F _s	Half brifge frequency		20		KHz
T	Ambiant temperature	0	-	80	°C

Motion controller connexion :



CPU4BU / TINY-CN:

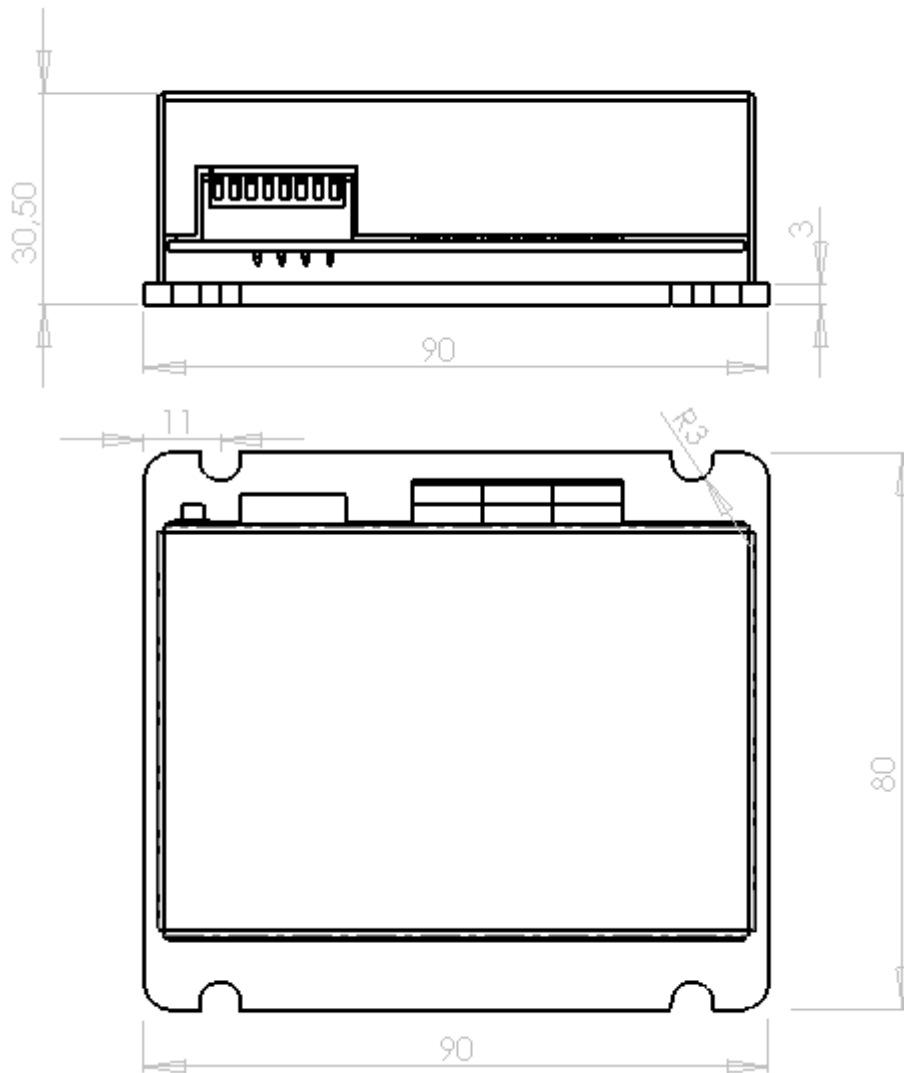
CPU4BU Connector	Designation	SMD8A – 1	SMD8A – 2	SMD8A – 3	SMD8A - 4
K5-9	Direction X	9			
K5-8	Clock X	8			
K5-7	Direction Y		9		
K5-6	Clock Y		8		
K5-5	Direction Z			9	
K5-4	Clock Z			8	
K5-3	Direction A				9
K5-2	Clock A				8
K5-1	Ground	7	7	7	7

CNC4AU:

CPU4BU Connector	Designation	SMD8A – 1	SMD8A – 2	SMD8A – 3	SMD8A - 4
K11-3	Direction X	9			
K11-5	Clock X	8			
K11-7	Direction Y		9		
K11-9	Clock Y		8		
K11-11	Direction Z			9	
K11-13	Clock Z			8	
K11-15	Direction A				9
K11-17	Clock A				8
K11-4	Ground	7			
K11-6	Ground		7		
K11-8	Ground			7	
K11-10	Ground				7

Put jumper K12, pin 2-3 (see CNC4AU doc).

Mecanical drawing :



SMD8A

Microstep driver 28/07/07 V1.1