# Microstepping steppermotordriver

# MSD-80-7.8

- 24-80V DC power supply
- H bridge bi-polar constant current microstepmotor driver
- 2-64 Microstep resolution with 16 different micro steps
- Over-current, over-voltage, over-temperature and short-circuit protected

## 1. Introduction

MSD-80-7.8 is a constant current microstep steppermotordriver, with a voltage range between 24 up to 80 Vdc. With the build-in the constant current chopping circuit, the motor runs with low vibration and noise. Wenn enabled, the drivers autocurrent reduction reduces the current to 50% of the nominal current 100 mS after receiving the last step puls, reducing the heat dissipation in both the steppermotor and steppermotor driver.

## 2. Electrical Specifications

| Description | Min. | Typical | Max. | Unit |
|---|---|---|---|---|
| Output Current | 1.8 | - | 7.8 | A |
| Supply voltage | +24 | - | +80 | Vdc |
| Logic signal current | - | 10 | - | mA |
| Pulse input frequency | 0 | - | 200 | Khz |
| Pulse low level time | 2.4 | - | - | ʋs |

## 3. Environmental conditions

| Cooling | | Natural or forced |
|---|---|---|
| Environment | Space | Clean ( no water, dust, oil, etc ) |
| | Storage temperature | -10℃ - +80℃ |
| | Work temperature | 65℃ Max |
| | Humidity | < 80% RH |
| Vibration | | 5.9m/s2 Max |
| Weight | | 0.54 kgs |

## 4. Current setting ( SW1, SW2 and SW3 )

| Current | SW1 | SW2 | SW3 |
|---|---|---|---|
| 1.8A | OFF | OFF | OFF |
| 2.5A | ON | OFF | OFF |
| 3.5A | OFF | ON | OFF |
| 4.3A | ON | ON | OFF |
| 5.2A | OFF | OFF | ON |
| 6.0A | ON | OFF | ON |
| 7.0A | OFF | ON | ON |
| 7.8A | ON | ON | ON |

## 5. Auto current reduction ( SW4 )

Full ( SW4 = ON ) and half current ( SW4= OFF )

## 6. Microstep setting ( SW5, SW6, SW7 and SW8 )

| Step/rev.(for 1.8°/motor) | SW5 | SW6 | SW7 | SW8 |
|---|---|---|---|---|
| 200 | OFF | OFF | OFF | OFF |
| 400 | ON | OFF | OFF | OFF |
| 500 | OFF | ON | OFF | OFF |
| 800 | ON | ON | OFF | OFF |
| 1000 | OFF | OFF | ON | OFF |
| 1200 | ON | OFF | ON | OFF |
| 1600 | OFF | ON | ON | OFF |
| 2000 | ON | ON | ON | OFF |
| 2500 | OFF | OFF | OFF | ON |
| 3200 | ON | OFF | OFF | ON |
| 4000 | OFF | ON | OFF | ON |
| 5000 | ON | ON | OFF | ON |
| 6400 | OFF | OFF | ON | ON |
| 8000 | ON | OFF | ON | ON |
| 10000 | OFF | ON | ON | ON |
| 12800 | ON | ON | ON | ON |

## 7. Pin Assignment and Description

### Input signals ( connector P1 )

| Signal | Function | Description |
|---|---|---|
| STEP+ | Step pulse input + | Usually connected to +5 Vdc. |
| STEP- | Step pulse input – | Makes steppermotor take one step. Rising edge triggered. |
| DIR+ | Direction input + | Usually connected to +5Vdc. |
| DIR- | Direction input - | Makes the steppermotor turn left or right with every steppulse input. |
| ENA+ | input Opto-isolated positive | Usually connected to +5Vdc |
| ENA- | Motor release signal | Wenn enabled ( low ) the driver cuts off the steppermotor current, thus releasing the steppermotor. |

### Output signals ( connector P2 )

| Signal | Function | Description |
|---|---|---|
| A+<br>A-<br>B+<br>B- | Steppermotor Connections |  |

### Power input ( connector P2 )

| Signal | Function | Description |
|---|---|---|
| V+ | Power | Powersupply 24 Vdc up to 80 Vdc |
| GND- | Ground | Powersupply ground |

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## 8. Mechanical Size ( mm)
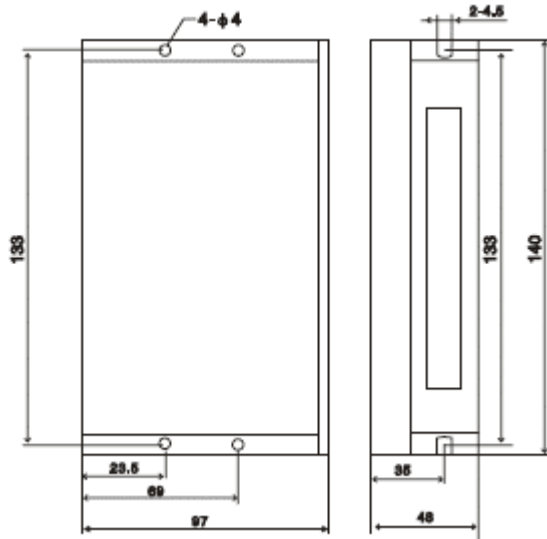
## 9. Examples of typical cnc connections

### a) Connection to a PC for most common used cnc application

```
                                    ┌──────────────────────────────────────┐
                                    │    Power supply ( 24 – 80 Vdc )       │
                           ────────▶│  Vac in ( 230 Vac )                   │
                           ────────▶│  Vac in ( 230 Vac )                   │
                                    │        V+              GND            │
                                    └──────────────────────────────────────┘
```

**Power supply ( 24 – 80 Vdc )**

Vac in ( 230 Vac )

Vac in ( 230 Vac )

V+    GND

**PC**

( USB or PSU )

LPT pin 2

LPT pin 3

V+    GND

Step+

Dir+

**MSD-80-7.8**

Step-

Dir-

A+    A-    B-    B+

M
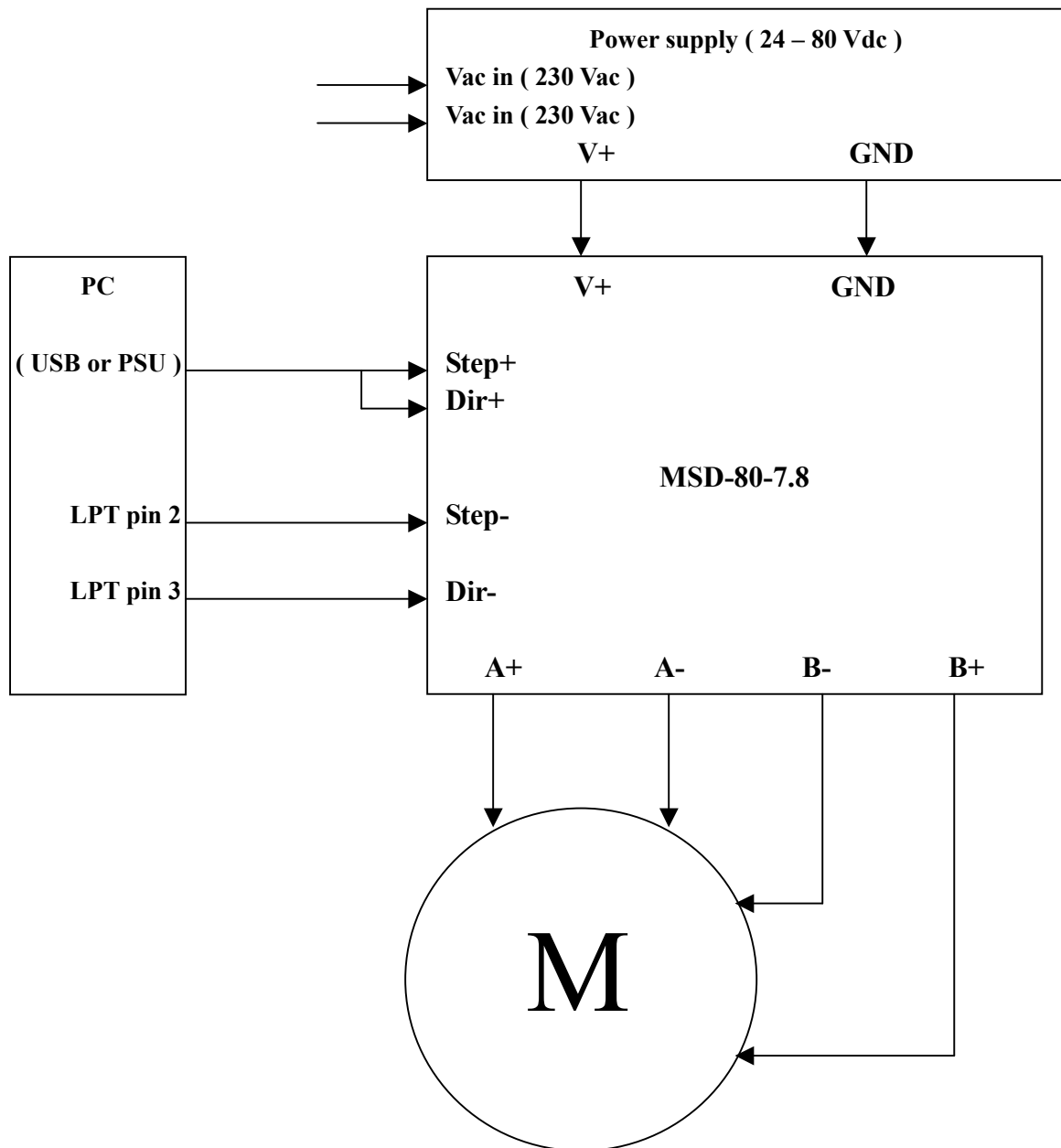
**b) Connection to a 24 Vdc PLC as an industrial cnc application**

| Power supply ( 24 – 80 Vdc ) |
| Vac in ( 230 Vac ) |
| Vac in ( 230 Vac ) |
| V+    GND |

PLC

( +24 V )

Step output    2K2

Dir output    2K2

V+    GND

Step+
Dir+

MSD-80-7.8

Step-

Dir-

A+    A-    B-    B+

M
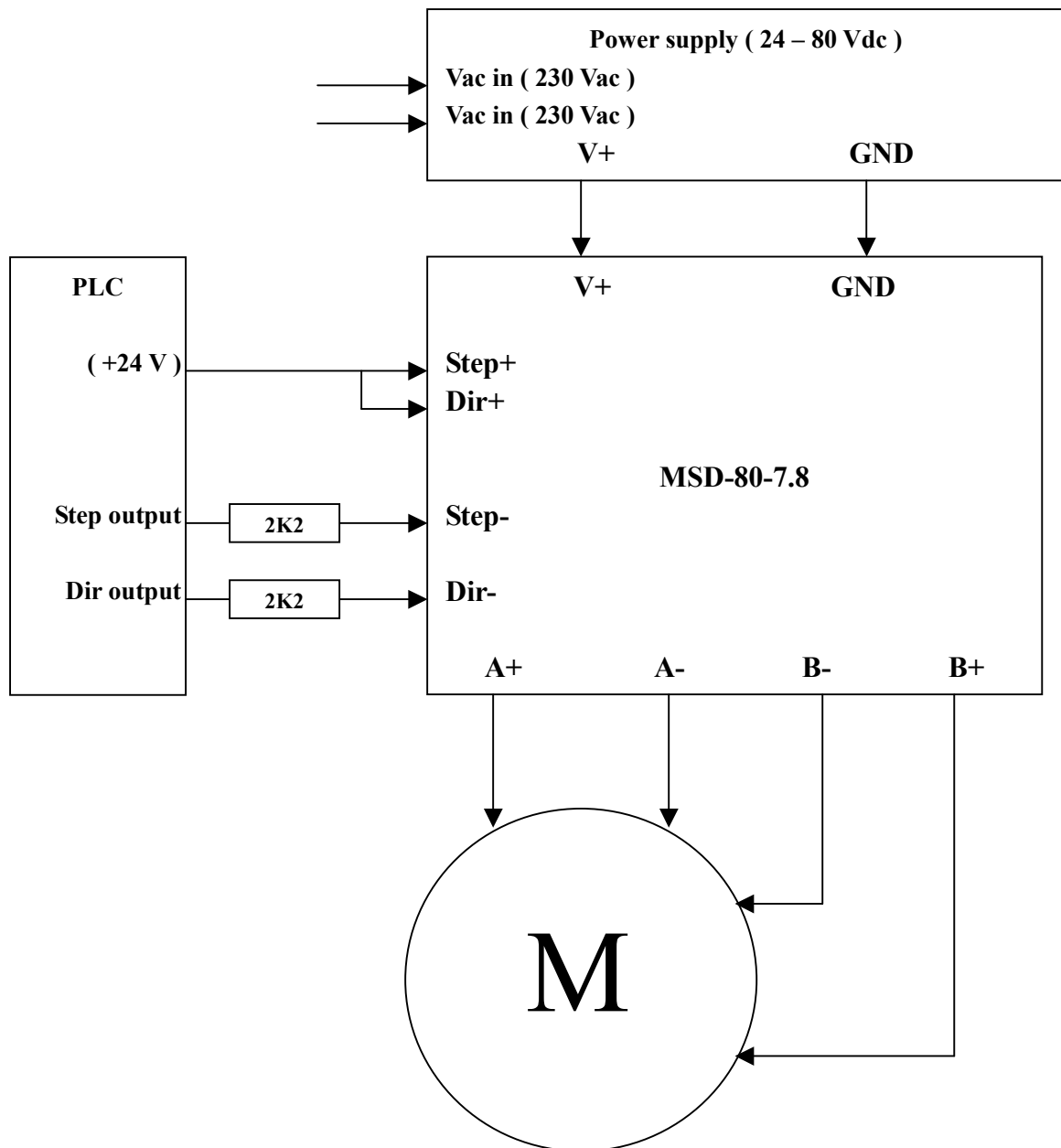
For a 12 Vdc PLC, the resistors need to be 1K types.