

Power Step PSD78AC-3P



Key Features:

- AC80 to 220V Supply Voltage
- H-Bridge, 3 Phase Bi-polar Micro-stepping Drive
- Suitable for 3-phase, step motors, with Nema size 23 to 42
- Output current selectable from 1.8 ~ 7.8A peak
- Current reduction by 50% automatically, when motor standstill mode is enabled
- Pulse Input frequency up to 200 kHz
- Optically isolated differential TTL inputs for Pulse, Direction and Enable signal inputs
- Selectable resolutions up to 12800 steps
- Over Voltage, Coil to Coil and Coil to Ground short circuit protection.

Introduction

The PSD78AC-3P is one of the few Direct-On-Line Step Motor Drive, available in the industry, which can be simply power up from the AC power source without the need of a Power Supply. This makes it cost effective and space efficient.

PSD78AC-3P is a bi-polar three phase micro-stepping drive applying pure-sinusoidal current control technique. It had the potential of delivering more torque with smoother stepping motion with a three phase motor. This results in lower vibration and higher performance as compared to the two phase type. It is best suited for applications that desire extreme low speed smooth motion, especially in multi-axes linear and circular interpolated application, or application that is sensitive to vibration, at extreme slow speed.

The higher voltage input of the PSD78AC-3P make it possible to excite a three phase bi-polar hybrid step motor, with size from Nema 23 up to Nema 42. With precise current control technique and optimization in speed control, this three phase PowerStep drive is well suited for three phase hybrid step motor, producing a performance close to a brushless DC servo operation.

Specifications

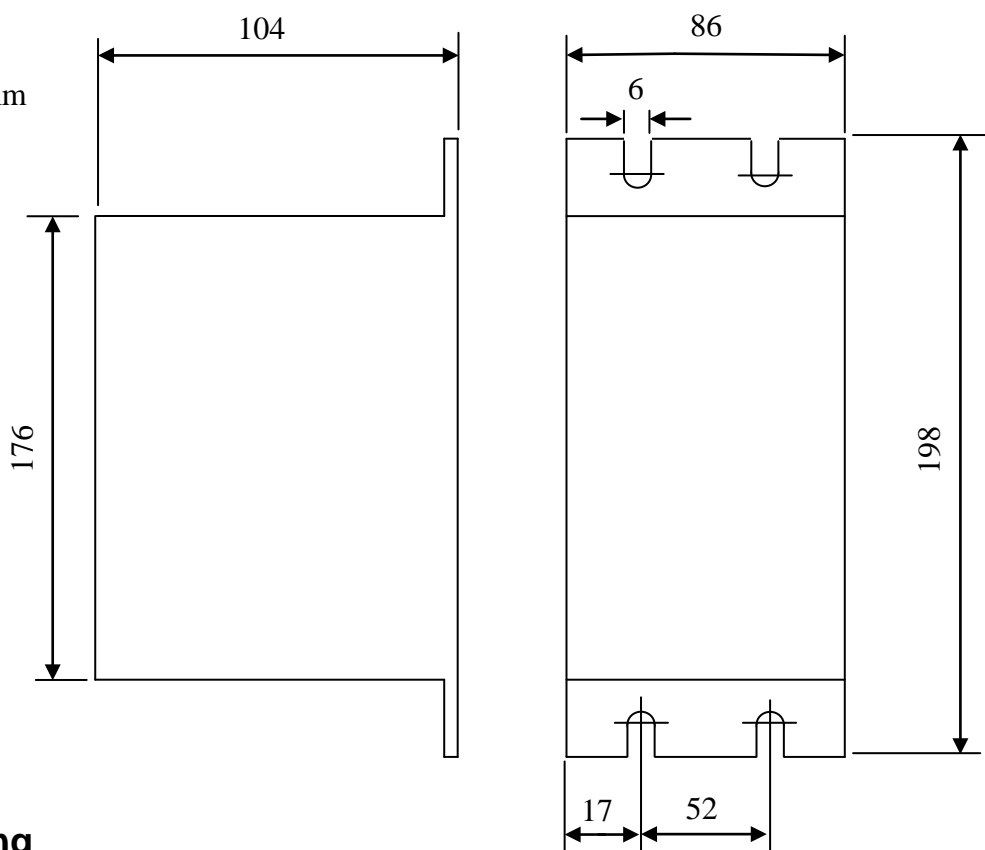
| Parameters | Min | Typical | Max | Unit |
|------------------------------|-----|---------|-----|------|
| Output Current (Peak) | 1.8 | - | 7.9 | Amps |
| Supply voltage | 80 | 110 | 220 | VAC |
| Logic Input Current | 7 | 10 | 16 | mA |
| Pulse input frequency | 0 | - | 200 | KHz |
| Low Level Time | 2.5 | | | μsec |

| | |
|----------------|--------------------------------------|
| Cooling | Natural Cooling or Forced Convection |
|----------------|--------------------------------------|

| | | |
|----------------------|---------------------|---|
| Environment | Space | Avoid dust, oil frost and corrosive gases |
| | Ambient Temperature | 0°C – 50°C |
| | Humidity | 40 – 80%RH |
| | Vibration | 5.9m/s ² Max |
| Storage Temp. | -10°C – 80°C | |
| Weight | Approx. 1.5 Kg | |

Dimensions

Dimensions in mm



Current Setting

| Current Setting (A) | SW1 | SW2 | SW3 |
|---------------------|-----|-----|-----|
| 1.8 | OFF | OFF | OFF |
| 2.5 | ON | OFF | OFF |
| 3.5 | OFF | ON | OFF |
| 4.3 | ON | ON | OFF |
| 5.2 | OFF | OFF | ON |
| 6.0 | ON | OFF | ON |
| 7.0 | OFF | ON | ON |
| 7.9 | ON | ON | ON |

Microstep Setting

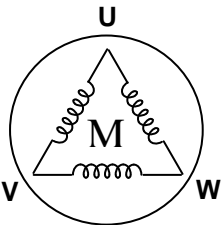
| Step / Rev | SW5 | SW6 | SW7 | SW8 |
|------------|-----|-----|-----|-----|
| 200 | OFF | OFF | OFF | OFF |
| 400 | ON | OFF | OFF | OFF |
| 500 | OFF | ON | OFF | OFF |
| 800 | ON | ON | OFF | OFF |
| 1000 | OFF | OFF | ON | OFF |
| 1250 | ON | OFF | ON | OFF |
| 1600 | OFF | ON | ON | OFF |
| 2000 | 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 |

* SW4: ON=Full current, SW4 : OFF=Half current

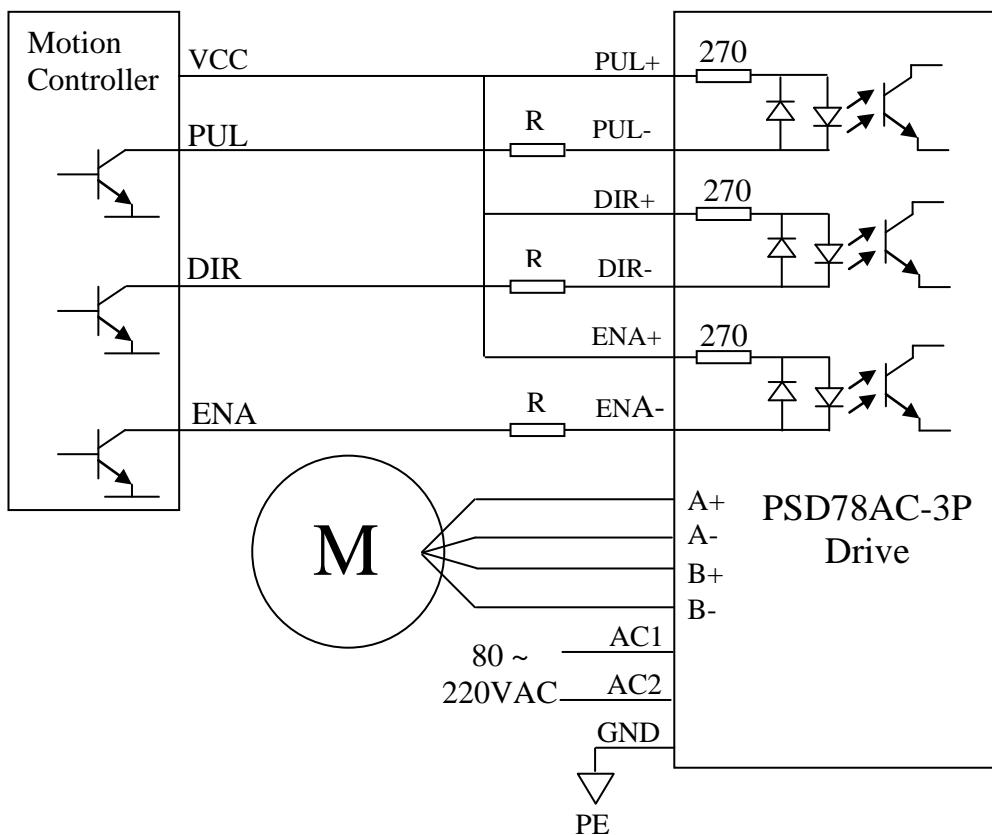
P1 Pin Assignment

| Signal | Function and Descriptions |
|-------------|---|
| PUL+ | <u>Pulse or Step Input</u> TTL differential input with high-going pulse, 1 μ s min width. For +12V or +24V operation, a current limiting resistor had to be pull up or connected in series from the PUL+ to the VCC. |
| PUL- | |
| DIR+ | <u>Direction Input</u> Logic High = positive (CW) rotation—4.0 ~ 5.0V Logic Low = negative (CCW) rotation—0 ~ 0.5V The DIR signal must be stable for at least 5ms before the drive receives the first pulse. |
| DIR- | |
| ENA+ | <u>Enable Input</u> Logic High = Drive Enabled Logic Low = Drive Disabled This input, if left unconnected, is recognised as Logic High by the drive, and it will be enabled. |
| ENA- | |

P2 Pin Assignment

| P2 Signal | Function and Descriptions |
|-------------|---|
| GND | DC Power Ground |
| AC1, AC2 | AC Power Supply, 80 ~ 220VAC |
| U V W |  <p style="text-align: center;">3 Phase Motor</p> |

Wiring



R=0 if VCC=5V

R=1K(Power>0.125W) if VCC=12V;

R=2K(Power>0.125W) if VCC=24V;

R must be connected to control signal terminal.