

OWNER'S GUIDE

2P800 HYBRID STEPPER MOTOR DRIVER

2P800
STEPPER MOTOR DRIVER



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TECHNICAL DOCUMENT

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Note:if you have any problems,please
email sales@ichmo.com to to contact us.



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1. Introduction

The 2P800 that I.CH designs and Manufactures are a high performance 2 phase micro-stepping motor driver, which uses average current control, two phases sinusoidal current output drive.

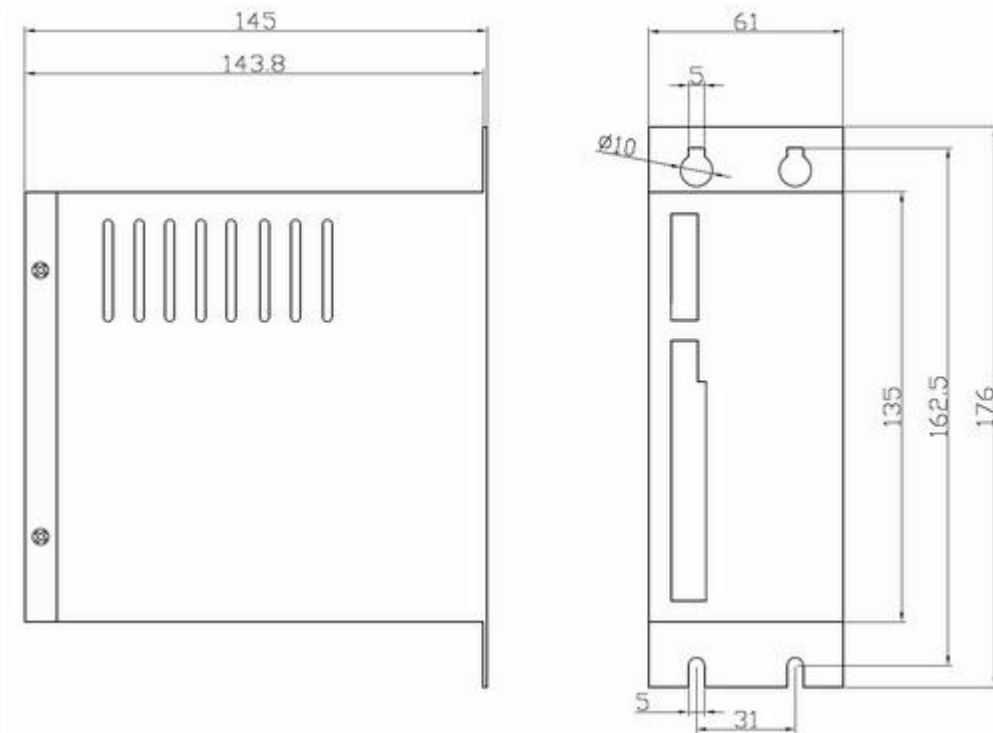
2. Feature

- High performance, cost-effective
- Output current, up to 80-220 VAC
- Over-current protection function
- Pulse input frequency up to 400 KHz
- Support PUL/DIR and CW/CCW modes
- TTL compatible and optically isolated input
- Protection function against short circuit between phases
- Photoelectric isolation signal input/output
- 8 level subdivision and automatic semi-flow feature
- 8 level output phase current setting
- Offline function
- 16 selectable resolutions in decimal and binary

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3. Specification

| Parameters | 2P205 | | | |
|-----------------------|-------|---------|-----|------|
| | Min | Typical | Max | Unit |
| Output current | 0.45 | - | 7.8 | Amps |
| Supply voltage | 80 | 180 | 220 | VAC |
| Logic signal current | 7 | 10 | 16 | mA |
| Pulse input frequency | 0 | - | 400 | kHz |
| Isolation resistance | 500 | - | - | MΩ |



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4. Definition of Pin Signal

The 2P800 has two connectors, connector P1 for control signals connections, and connector P2 for power and motor connections. The following tables are brief descriptions of the two connectors.

Connector P1 Configurations

| Pin Function | Details |
|--------------|---|
| PUL+(+5V) | Pulse signal: in single pulse(pulse/direction) mode, this input represents pulse signal, effective for each upward-rising edge; in double pulse mode (pulse/pulse) this input represents clockwise(CW)pulse. For reliable response,pulse width should be longer than 1.2us. |
| PUL-(PUL) | |
| DIR+(+5V) | DIR signal: in single-pulse mode, this signal has low/high voltage levels, representing two directions of motor rotation; in double-pulse mode (set by SW5), this signal is counter-clock (CCW) pulse, effective on each rising edge. For reliable motion response, direction signal should be sent to driver 5us before the first pulse in the reverse motion direction. |
| DIR-(DIR) | |
| ENA+(+5V) | Enable signal: this signal is used for enabling/disabling the driver. High level for enabling the driver and low level for disabling the driver. Usually left unconnected(enabled). |
| ENA- | |
| READY+ | Output alarm signal positive: READY is a photocouper output from open-collector circuit, effectively output when driver operate normally, maximum permitted input voltage 30VDC; maximum output current 20mA, generally can be serial connected to PLC input terminal. |
| READY- | Output alarm signal negative. |

Remark 1: SW5 ON means CW/CCW (pulse/pulse), OFF means PUL/DIR mode.

Remark 2: Please note motion direction is also related to motor-driver wiring match.

Exchanging the connection of two wires for a coil to the driver will reverse motion direction.

(for example, reconnecting motor A+ to driver A- and motor A- to driver A+ will invert motion direction).

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Connector P2 Configurations

| Pin Function | Details |
|--------------|--|
| AC | AC input, varies from 80V to 220V, recommended to use 180V. (Pls use a transformer as a power, but not directly connect to condition AC.). |
| Phase A | Motor coil A (leads A+ and A-) |
| Phase B | Motor coil B (leads B+ and B-) |
| PE | Connect ground terminal |

5. Setting Driver Output Current and Microstep Resolution

Current Setting

| Peak Current (A) | RMS (A) | SW6 | SW7 | SW8 | SW9 |
|------------------|---------|-----|-----|-----|-----|
| 0.45 | 0.32 | OFF | OFF | OFF | OFF |
| 0.63 | 0.45 | OFF | OFF | OFF | ON |
| 1.41 | 1.00 | OFF | OFF | ON | OFF |
| 1.88 | 1.34 | OFF | OFF | ON | ON |
| 2.33 | 1.66 | OFF | ON | OFF | OFF |
| 2.85 | 2.04 | OFF | ON | OFF | ON |
| 3.23 | 2.31 | OFF | ON | ON | OFF |
| 3.75 | 2.68 | OFF | ON | ON | ON |
| 4.26 | 3.04 | ON | OFF | OFF | OFF |
| 4.65 | 3.32 | ON | OFF | OFF | ON |
| 5.18 | 3.70 | ON | OFF | ON | OFF |
| 5.55 | ON | OFF | OFF | ON | ON |
| 6.15 | ON | ON | ON | OFF | OFF |
| 6.60 | ON | ON | ON | OFF | ON |
| 7.20 | ON | ON | ON | ON | OFF |
| 7.80 | ON | ON | ON | ON | ON |

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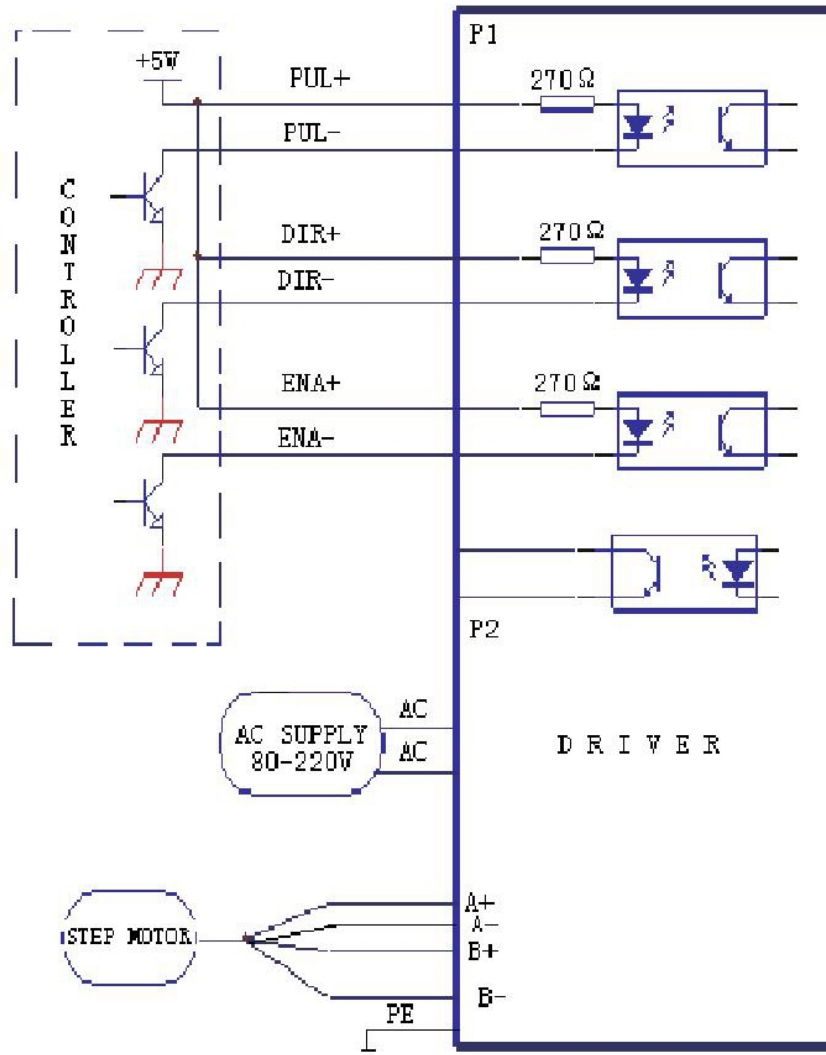
Microstep Resolution Selection

Microstep resolution is specified by 1, 2, 3, 4 DIP switches as shown in the following table:

| usteps/rev.(1.8°/rev) | SW1 | SW2 | SW3 | SW4 |
|------------------------|-----|-----|-----|-----|
| 400 | ON | ON | ON | ON |
| 500 | OFF | ON | ON | ON |
| 600 | ON | OFF | ON | ON |
| 800 | OFF | OFF | ON | ON |
| 1000 | ON | ON | OFF | ON |
| 1200 | OFF | ON | OFF | ON |
| 1600 | ON | OFF | OFF | ON |
| 2000 | OFF | OFF | OFF | ON |
| 2400 | ON | ON | ON | OFF |
| 3200 | OFF | ON | ON | OFF |
| 4000 | ON | OFF | ON | OFF |
| 5000 | OFF | OFF | ON | OFF |
| 6000 | ON | ON | OFF | OFF |
| 6400 | OFF | ON | OFF | OFF |
| 8000 | ON | OFF | OFF | OFF |
| 10000 | OFF | OFF | OFF | OFF |

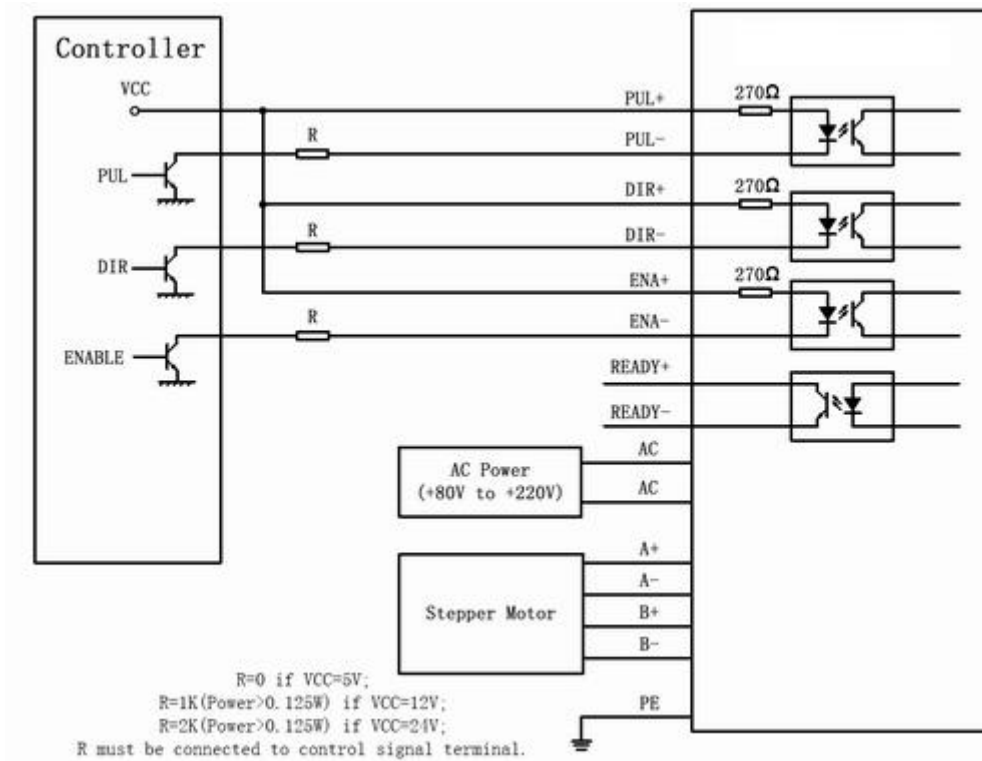
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6. Typical Wiring Diagram



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7. Typical Connections



8. Frequently Asked Questions

In the event that your driver doesn't operate properly, the first step is to identify whether the problem is electrical or mechanical in nature. The next step is to isolate the system component that is causing the problem. As part of this process you may have to disconnect the individual components that make up your system and verify that they operate independently. It is important to document each step in the troubleshooting process. You may need this documentation to refer back to at a later date, and these details will greatly assist our Technical Support staff in determining the problem should you need assistance.

Many of the problems that affect motion control systems can be traced to electrical noise, controller software errors, or mistake in wiring.

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Problem Symptoms and Possible Causes

| Symptoms | Possible Problems |
|--------------------------------------|---|
| Motor is not rotating | No power |
| | Microstep resolution setting is wrong |
| | DIP switch current setting is wrong |
| | Fault condition exists |
| Motor rotates in the wrong direction | The driver is disabled |
| | Motor phases may be connected in reverse |
| The driver in fault | DIP switch current setting is wrong |
| | Something wrong with motor coil |
| Erratic motor motion | Control signal is too weak |
| | Control signal is interfered |
| | Wrong motor connection |
| | Something wrong with motor coil |
| Motor stalls during acceleration | Current setting is too small, losing steps |
| | Motor stalls during acceleration |
| | Motor is undersized for the application |
| | Acceleration is set too high |
| | Powersupply voltage too low |
| Excessive motor and driver heating | Inadequate heat sinking/cooling |
| | Automatic current reduction function not being utilized |
| | Current is set too high |

9. Application

They are suitable for driving any 2-phase and 4-phase hybrid step motors (current 7.8A/3.9A). Applicable for automated machinery and equipment, for instance, air-driven inscription machines, labeling machines, cutting machines, laser engraving, plotter, medical instruments, and pick-place devices.