



## Digital Stepper Drive SEA422

### 1. Introduction



### Descriptions

The SEA422 is a new generation digital 2-phase stepper motor driver, based on a 32-bit DSP processor, combination of the anti-resonance, low noise, micro-step and low temperature rise technology significantly improve the performance of the stepper motor, has low noise, small vibration, low temperature rise and high-speed torque. The driver use online adaptive PID technology, without manual adjustment can be automatically generated optimal parameters for different motors, and achieve the best performance.

Supply voltage range from 18VDC to 40VDC, suitable for driving various 2-phase hybrid stepping motors which phase current below 2.2A. The microstep can be set from full step to 6400steps/rev and the output current can be set form 0.5A to 2.2A; with automatic idle-current reduction, self-test, overvoltage, under-voltage and over-current protection.

### Features

- High-performance, low price.
- Micro-step.
- Automatic idle-current reduction.
- Optical isolating signals I/O.
- Max response frequency up to 75Kpps.
- Low temperature rise, smooth motion.
- Online adaptive PID technology.

## Applications

Suitable for a variety of large-scale automation equipments and instruments. For example: labeling machine, cutting machine, packaging machine, plotter, engraving machine, CNC machine tools and so on. It always performs well when applied for equipment which requires for low-vibration, low-noise, high-precision and high-velocity.

## Electrical Specifications

| Parameter              | Min | Typical | Max | Unit |
|------------------------|-----|---------|-----|------|
| Input Voltage(DC)      | 18  | 24      | 40  | VDC  |
| Output current         | 0   | -       | 2.2 | A    |
| Pulse Signal Frequency | 0   | -       | 75  | KHZ  |
| Logic Signal Current   | 7   | 10      | 16  | MA   |

## 2. Current and Microstep Setting

### Current setting

| Peak    | SW1 | SW2 | SW3 |
|---------|-----|-----|-----|
| Default | on  | on  | on  |
| 0.5A    | off | on  | on  |
| 0.7A    | on  | off | on  |
| 1.0A    | off | off | on  |
| 1.3A    | on  | on  | off |
| 1.6A    | off | on  | off |
| 1.9A    | on  | off | off |
| 2.2A    | off | off | off |

### Standstill Current Setting

SW4 is used for standstill current setting. OFF meaning that the standstill current is half of the dynamic current; and ON meaning that standstill current is the same as the selected dynamic current. Usually the SW4 is set to OFF, in order to reduce the heat of the motor and driver.

## Microstep Setting

| Step/Rev | SW5 | SW6 |
|----------|-----|-----|
| Default  | on  | on  |
| 1600     | off | on  |
| 3200     | on  | off |
| 6400     | off | off |

## 3. Connectors and Pin Assignment

### Control signal Connector

| Control Signal connector |  |
|--------------------------|--|
| Name                     | Description  |
| PUL+                     | Pulse signal positive                                    |
| PUL-                     | Pulse signal negative                                    |
| DIR+                     | Direction signal positive                                |
| DIR-                     | Direction signal negative                                |
| ENA+                     | Enable signal positive, usually left unconnected(enable) |
| ENA-                     | Enable signal negative, usually left unconnected(enable) |

### Power and Motor Connector

|      |                           |
|------|---------------------------|
| GND  | Power                     |
| +VDC | Power Supply, +18~+40 VDC |
| A+   | Motor phase<br>A          |
| A-   |                           |
| B+   | Motor phase<br>B          |
| B-   |                           |

## Control Signal Connector Interface

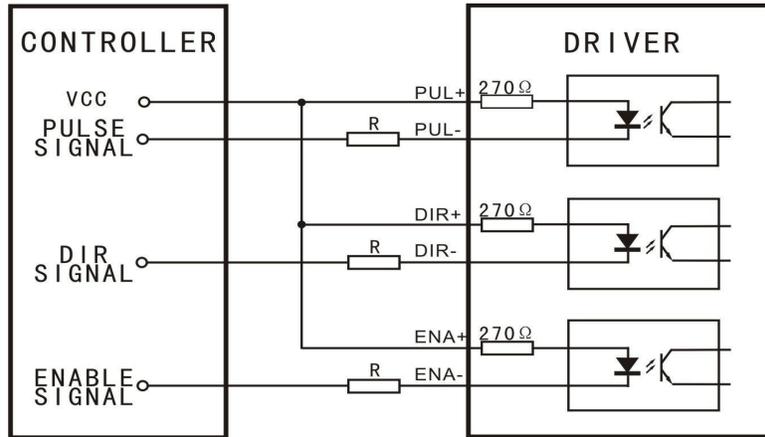


Figure1: Common-Anode

| VC  | R     |
|-----|-------|
| 5V  | 0     |
| 12V | 680Ω  |
| 24V | 1.8KΩ |

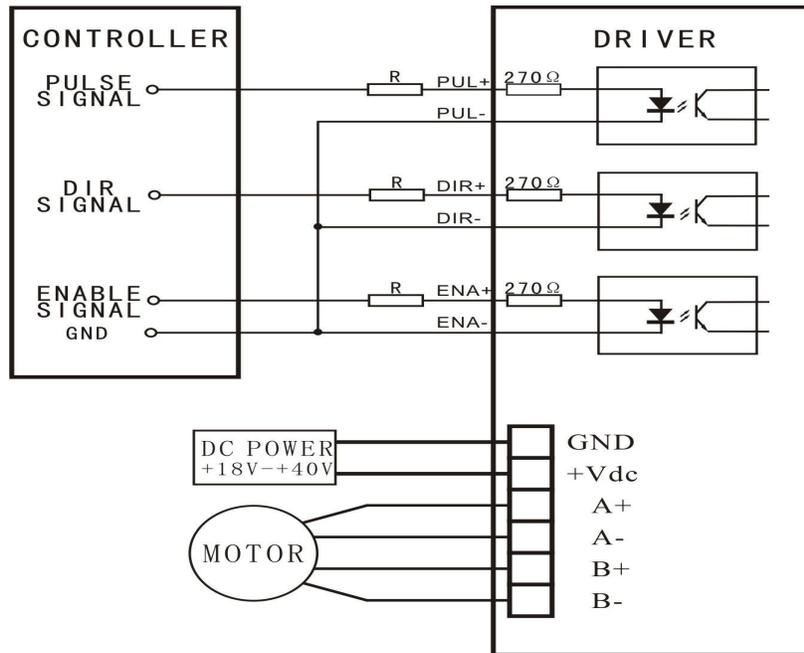


Figure 2: Typical connection

## 4. Problems and Solutions

| <b>problems</b>                             | <b>Possible cause</b>         | <b>solutions</b>                  |
|---|-------------------------------|-----------------------------------|
| <b>Motor is not rotating</b>                | No power supply               | Check the power supply            |
|   | No control signal             | Check the control signal          |
|   | The driver is disabled        | Don't connected the enable signal |
| <b>ALM lights</b>                           | Supply voltage is too high or | Check the supply voltage          |
|   | Motor line short-circuit      | Check motor lines eliminate the   |
|   | Motor line wrong connect      | Check the motor wiring            |
|   | Motor or drive failure        | Replace the motor or drive        |
| <b>Motor rotates in the wrong direction</b> | Motor phases connected in     | Reverse the phases line           |
|   | Motor line break              | Change the phases are             |
| <b>Inaccurate Position</b>                  | The Micro steps set           | Set the correct segments          |
|   | The motor load is too         | Increasing the current            |
|   | Control signal is interfered  | Eliminate interference            |
| <b>Motor Stalled</b>                        | Power supply voltage too      | Increasing the supply voltage     |
|   | Accelerating time is too      | Extend the acceleration time      |
|   | Current setting is too small  | Increasing the current            |
|   | Motor torque is too small     | Replace the motor                 |

## 5. Mechanical Specifications (unit: mm (inch), 1 inch = 25.4mm)

