ORION ELECTRONICS

Operation Manual

for

Stepper motor drive: BPD-2A-36

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STEPPER MOTOR DRIVE

1. Introduction

MODEL NO. BPD-2A-36

Stepper motor drive has now become a commonly used device, for various motion control applications. Stepper motors, along with good drives; present many unique abilities and features. For example-

- Good stopping accuracy.
- Instant start / stop and direction reversal at least up to 60 rpm.
- Constant speed even if supply voltage changes.
- Good power efficiency.

Compact, economic and reliable stepper drives is the need of many automation products.

This model **BPD-2A-36**, presents all the above advantages. A convenient Chassis (default), or din rail mounting, which is ideal for control panels, can be opted for.

2. Specifications

1. **Control Supply**: 24 to 36 VDC

2. **Inputs:** Opto-coupled
   By default 5V signal levels
   (Higher voltage, on request)

3. **Current setting:** Up to 2A Amp per phase, by on-board request

4. **Type:** Bipolar

5. **Outermost size**: 56*56*40 mm(L*B*H)

3. **Installation and Settings**

The drive module should be mounted in a well -ventilated place in the control panel. The output devices heat up. For continuous duty cycle it may be necessary to provide a cooling fan, depending on ambient conditions.

The unit cannot work without proper interfacing of signals. The attached diagrams indicate how sinking or sourcing signals of various voltages can be connected. Ensure that the signals are connected properly and the power supply polarity is correct, before putting the power on.

- **Power supply and clock signal** is minimum requisite of the drive to run.

- You may choose to keep **the start signal** active permanently.

- **The direction signal** may be left open if unidirectional motion is sufficient. In such case, initial setting of direction may be affected by exchanging the connections A1 and A2 of the motor.

- Stepper motors when stopped may remain energized or completely de-energized, as desired by the user. Pins 3 & 4 from left, decide which. If **the enable signal** is active, it is the "Enable" i.e. energized mode.

BPD-2A-36 has a fixed resistor (and not an adjustable preset) hence the current is not settable. The drive will always work at the constant 2A current setting.

4. Check points and trouble shooting

Refer the pin numbers on the diagram page.

Voltage measured between

1 & 2 : 0 VDC

3 & 4 : 24 VDC

Both these DC voltages may be unregulated but they should be well-filtered.
By default the inputs are designed for 5 V signals. If you are using
12V or 24 V signal level, appropriate resistor should be connected in series. This is illustrated in the diagram attached.

Resistance measured between (Power must be off)

- A1 & A2 (J2) Winding-A resistance
  (Generally, it will be a few ohms only)
- B1 & B2 (J3) Winding-B resistance
  (Generally, it will be a few ohms only)

Both the above readings should be equal.

Check this if motor is vibrating or unwarranted direction change is taking place.

Remember....

"EN" input active means "Enable" mode.

"RN" input active means the motor will move if clock is present.

"DR" input active will reverse the direction of motion.

5. **A few points worth noting**

- Generally, the stepper motors get heated up, to about 75°C. It is a good practice to provide heat sinking by way of a well-machined mounting plate, made of good conducting material. Providing good air flow with a cooling fan is necessary for machine with long working cycles.
- The cables running from the drive to the motor should be of proper size. Unnecessary lengths of this cable should be avoided. While designing the panel cabling layout, make it a point, not to bunch the signal and motor cables together.
- Use shielded cable for signals, especially when you are using higher lengths.
- It is critically important that the stepper motor shafts are not machined at customer's end. The motor may get permanently damaged. Similarly, in case there is some problem with the motor, **do not try to open the motor and do not put oil.** Instead, the manufacturer should be informed and motor should be sent for repairs.
- Do not attempt component level servicing on drive or other PCB's without instructions from ORION.