FAQ for MotionKing Stepper Motor Drivers

Frequency asked questions

1.1 When the rotational direction of the stepper motor is opposite to the direction required by me, how can I adjust it?

Change the direction signal of the control system, or adjust the motor connection so as to change the rotational direction. The details are as follows:

For the motor with two-phase four wires, it is needed only to exchange one phase wire of the motor and then insert it into the driver. For instance: A+ and A- are exchanged each other.

1.2 If the motor is two-phase, four-phases, 6 wires and 8 wires, but the driver only needs 4 wires, how can I connect them?

Four-phase mixture motor is called also as two-phase mixture motor, with only difference that the outlet wires of four-phase motor have many connection methods. For two-phase 4 wires motor, the motor can be connected directly with the driver. For four-phase 6 wires motor, the tapped two wires are not used, other 4 wires are connected with the driver. For four-phase 8 wires motor, usually two coils are connected in parallel and then connected together with the driver.

1.3 How to calculate the pace angle of the motor after subdivide?

For two phases and four-phases motor, the pace angle after subdividing is equal to the complete pace angle of the motor divided by detail segment. For instance, the step number per rotation is set as 400 steps, use 0.9 kWh /1.8 kWh motor, the subdivide pace angle is 360o/400=0.9o. If the step number per rotation is set as 6000 steppers, use 0.9 kwh /1.8 kwh motor, the subdivide pace angle is 360o/6000=0.06o.

1.4 The noise of the motor is particularly high, the motor is weak and is vibrating?

If such thing occurs, the stepper motor works at the vibration region. In general, this problem can be solved by changing the input signal frequency CP.

1.5 The motor is normal at slow running, when the frequency is a little higher, the locked rotor phenomena occurs.

Under such a situation, it is usually that the supply voltage on the driver is not high enough. When the input voltage is adjusted to be larger, such problem can be solved. It shall be noticed that the voltage shall not be higher than the maximal voltage marked on the driver power end. Otherwise, the driver may be burnt. If the original supply voltage is AC 60V, the AC 110V power can be used.

1.6 After the driver is energized, the motor is vibrating and can not rotate.

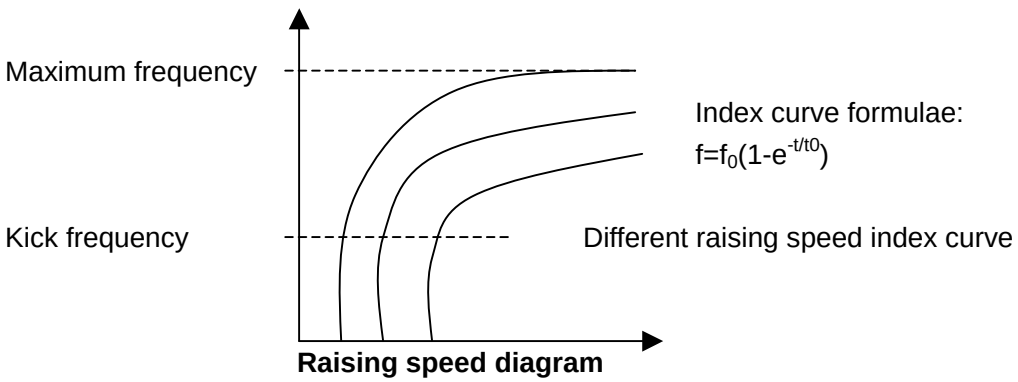
If such thing occurs, first of all, check the connection between the motor winding and the driver for mistake. If the connection is correct, check the input frequency if it is too high. Refer to 8.7. The brief introduction of motor speed adjusting can solve this problem. If the problem can not be solved, the driver may be burnt. Please contact our company.

1.7 Brief introduction of speed adjusting:

The speed of the stepper motor is adjusted by changing the input impulse signal. In theory, it is needed only to apply the pulse signal on the driver. When each pulse (CP) is applied on the driver, the stepper motor rotates one pace angle (One subdivide pace angle in subdivide). But in fact, if pulse CP signal changes too fast, due to the inertia, the stepper motor can not keep up with the signal change. The locked rotor and loss step phenomena may occur. As a result, when the stepper motor starts, the raising speed process must be needed. The speed reduction process must be needed when stopping. In general, the rule of raising speed and decelerating is same. It is introduced here with raising speed as the example:

The raising speed process is composed of kick frequency plus speed raising curve (Decelerating process in reverse). The kick frequency means the pulse starting frequency applied suddenly when the stepper motor is at stationary state. This frequency shall not be too large, otherwise, the locked rotor and loss step phenomena may occur also. The speed up and down curve is the index curve or the index curve adjusted in general. The straight curve or sine curve etc. may be adopted also. The user shall select suitable kick frequency and speed up and down curve according to the load. It is not easy to find an ideal curve. Several times of "test running" are needed in general. The index curve is comparatively complicated in actual software programming. In general, the time constant calculated in advance is stored in the computer storage and selected directly during operation.

The speed up and down design of the stepper motor is the major index of the control software. The design level will influence directly the operation stability of the motor, speed change velocity, motor operation noise, top speed, positioning accuracy (Under the condition that the product is used correctly, we can guarantee that the precision is100%). One special case is that: When the running speed of the stepper motor does not exceed the kick frequency, the speed up and down case will not exist.



Raising speed diagram