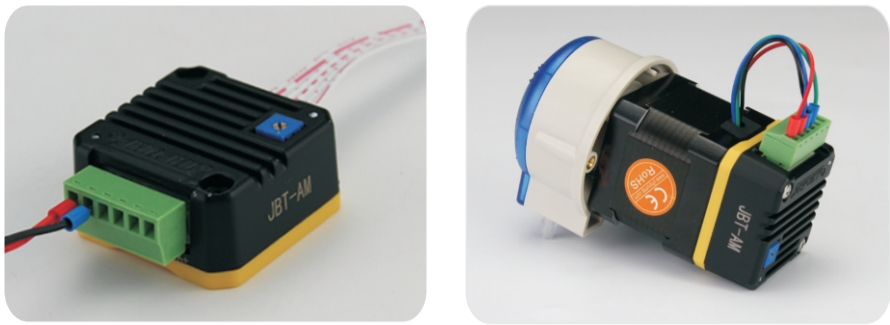


I. Picture (on peristaltic pump 104KA/BT)

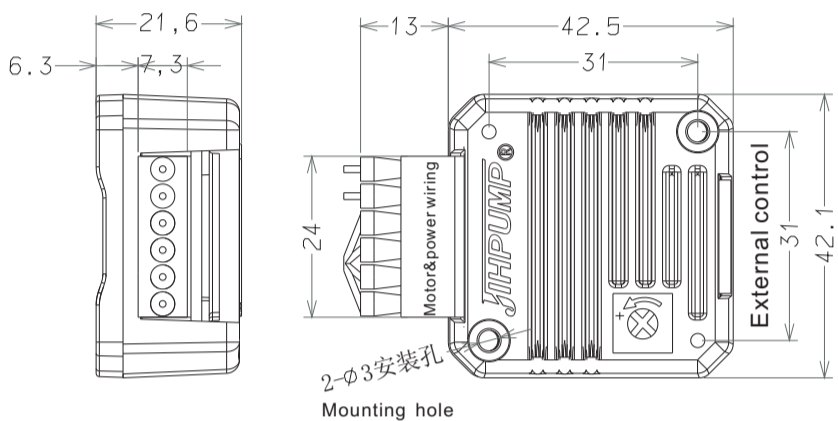


II. Introduction

The control driver is suitable for driving type 42 stepper motors, mounted to the rear of stepper motors and powered by 24V DC.

The control driver includes four models: JBT-AM, QBT-M2, JBT-AP and JBT-AT.

III. Dimension



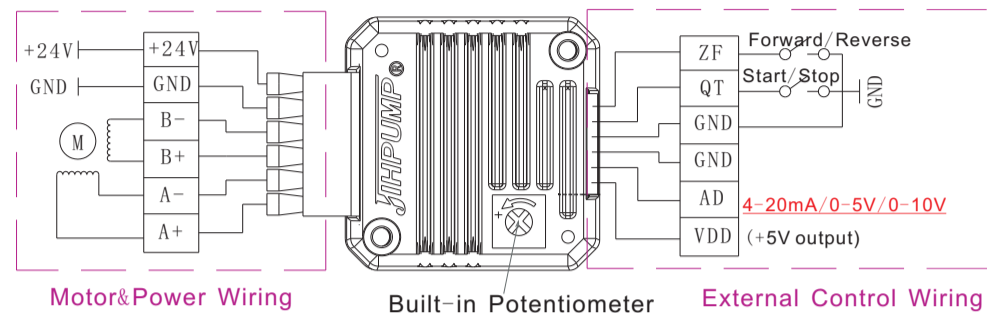
Please use this controller in a dry, ventilated, temperature-friendly environment, and do not use it in a humid and high temperature environment!

IV. Specification (outside of the housing is marked with model no.)

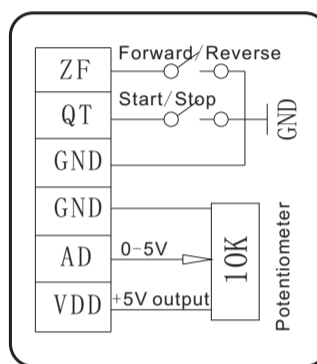
1. Model JBT-AM



Controller JBT-AM provides a constant drive current of 1.6A and starts up to 2A. The controller can adjust the speed of the motor through the internal and external voltage or current signal in the range of 0~300rpm. Start/stop and forward/reverse of the motor can be controlled through the external control.



External Control Wiring for AD signal 0-5V



JBT-AM Function

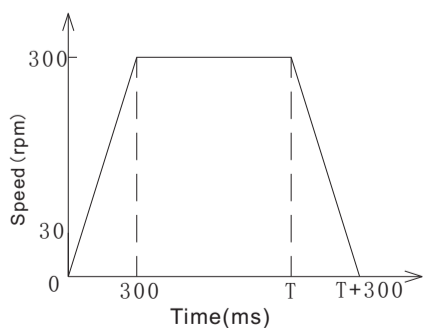
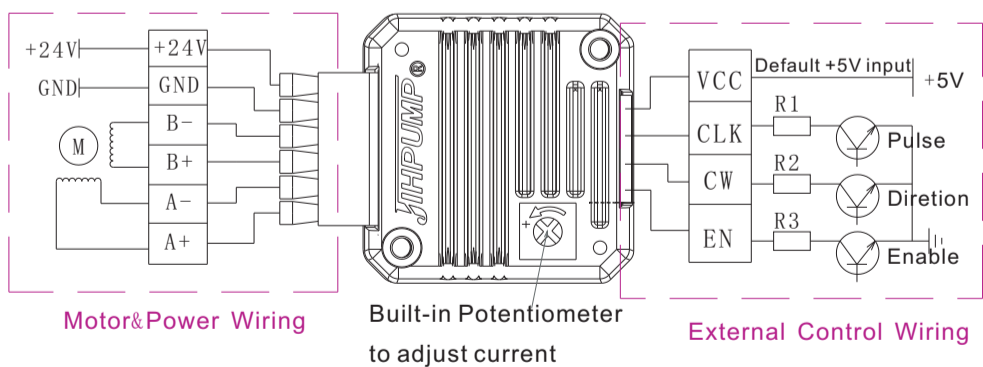
1. External AD control has optional 0-5V, 0-10V or 4-20mA. Factory default is 4-20mA. If you need 0-5V or 0-10V, please inform us to input different program before delivery.
2. Speed adjustment has two ways, built-in and external potentiometer adjustment.
3. Built-in potentiometer to adjust the speed, counterclockwise rotation, the speed increases; clockwise rotation, the speed decreases.
4. The built-in potentiometer speed range is 0~300rpm, and the external signal(4-20mA,0-5V,0-10V,) speed range is also 0~300 rpm. For instance, the built-in potentiometer speed is SPEED 1, the external signal speed range is SPEED 2, so the motor speed is SPEED 1 plus SPEED 2.

2. Model QBT-M2



Controller QBT-M2 is adjusted by the built-in potentiometer from 0 to 2A, and the startup current can be up to 2.5A.

The external control is the pulse frequency to adjust the motor speed, 16 subdivision, max speed 600rpm, and start/stop and forward/reverse can also be controlled.



Speed Curve for Pulse Frequency Control

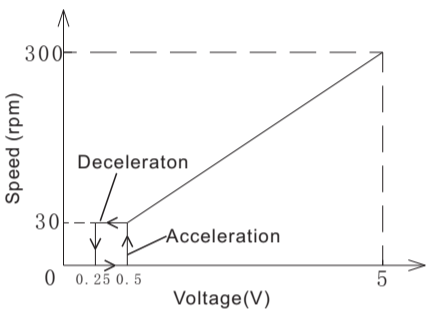
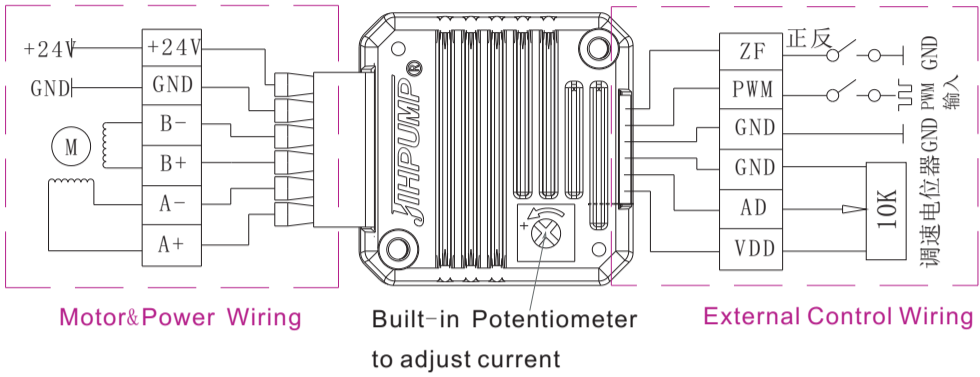
QBT-M2 Function

1. Pulse frequency adjustment speed, 16 subdivision, the maximum speed can reach 600rpm, the input pulse duty cycle is generally 50%, and 600rpm corresponding frequency is 32KHz.
2. The higher the pulse frequency, the faster the speed.
3. The high the forward rotation, the low the reverse rotation.
4. The low enable for stop, high for running.
5. When the common terminal input voltage VCC is 5V, the series resistance  $R1=R2=R3=0\Omega$ , When the common input voltage VCC is 24V, the series resistance  $R1=R2=R3=2K\Omega/0.5W$ .
6. Built-in potentiometer to adjust the current, counterclockwise rotation for current increases, clockwise rotation for current reduction.
7. Suitable for the pulse generated by the IO port of the single-chip micro-computer to control the stepping motor system. The acceleration of the control system is recommended to be 1 rpm/ms.

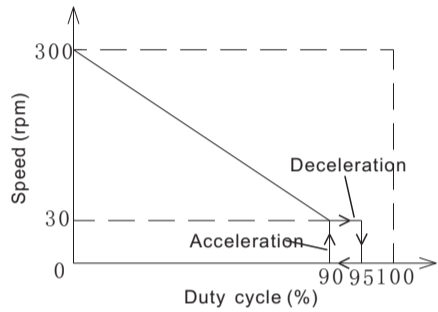
3. JBT-AP



The JBT-AP type controller current is adjusted by 0~2A by the built-in potentiometer, and the starting flow can be up to 2.5A. The controller can adjust the speed of the motor through an external potentiometer, or through the PWM pulse signal. The speed adjustment range is 0-300 rpm. The speed value adjusted by potentiometer and PWM pulse signal can be added. The forward and reverse rotation of the motor is controlled by the external control.



Speed Graph for External Potentiometer



Speed graph for PWM Pulse Signal

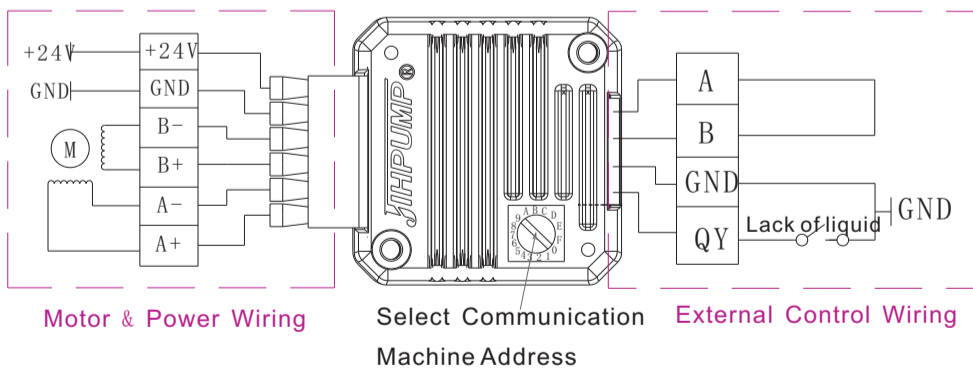
JBT-AP Function

1. Built-in potentiometer adjusts the current, rotates counterclockwise, the current increases; rotates clockwise, the current decreases.
2. Fig 10: 0~5V voltage regulates speed 0~300rpm, 5% or less (ie voltage <0.25V) stop, more than 10% (ie voltage >0.5V) start, the speed and PWM pulse signal adjustment speed data add.
3. Fig 11: 0% to 100% of 2KHz to 20KHz 0 to 5V PWM pulse signal regulation speed 0 ~ 300rpm, duty cycle 95% or more stop, duty cycle below 90% start, and plus external potentiometer speed data.
4. The external control positive and negative ports are suspended for forward rotation, short circuit for reverse rotation.

4. JBT-AT



The JBT-AT controller provides a constant current of 1.6A and starts up to 2A. The controller can control the speed, start and stop and forward and reverse through MODBUS data, the speed range is unlimited, and the data 6000 corresponds to 600 rpm. The built-in rotary dial switch sets the communication address 1~16, which is suitable for PLC digital networking.



MODBUS control

1. communication parameter format: MODBUS\_rtu standard communication protocol, baud rate 115200, 8 data bits, 1 stop bit, no parity.
2. Implementation of the command code: the command code used for communication is 01, 02, 03, 04, 05, 06, the starting address is 0.
3. 01 read relay, 0 address start/stop, 1 address is forward/reverse.
4. 02 read discrete input, 0 address no liquid.
5. 03 read holding register, 0 address rotation speed.
6. 04 read input register, no definition.
7. 05 write relay, 0 address start/stop, 1 address is forward/reverse.
8. 06 write holding register, 0 address rotation speed.
9. The address of the communication machine is set by the rotary dial switch, and 0~F corresponds to the address of 1~16.
10. This machine can communicate in multiple machines, and can connect up to 16 machines in series.

