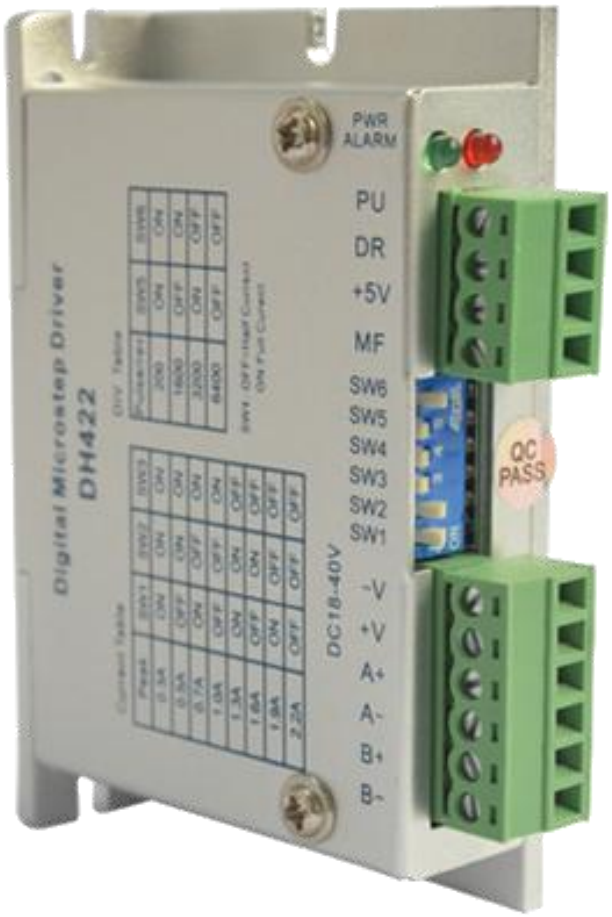


Shenzhen ECON Technology Co.,Ltd

www.hybridservo.com

DH422-Ultra low noise , high stability and smoothness digital stepper drive

Introduction

1.Overview

DH422 is the new generation high performance fully digital stepper drive which base on 32bit DSP with a advanced algorithm .the power supply range is DC18~36V. it can drive frame 42mm 2 phase stepper motor .

Ultra low noise and high smoothness at middle/low speed ,and high torque at high speed, which can be applied to different speed control applications. adopt smooth and accurate sinusoidal current vector control technology ,which make motor low heat .

2. **Features**

●new generation 32bit DSP
●good smoothness ,low noise ,low heat
●build-in micro step setting
●build-in current setting
●the standstill current can be set to 50%
●optical-isolated differential pulse input
●the response frequency is up to 100KHz
●over voltage , under voltage, over current protection

3. **Applications**

It can be used in various kinds of machines ,such as dispenser machine. floating machine

3D printer, labeling machine, medical machine, laser cut machine, and so on ,its unique features make it an ideal solution for the applications which require low noise ,low vibration, low heat and high precision

Mounting dimension（unit：mm）

You can mount the drive on the wide or the narrow side of the chassis using #2 screws.If possible,the drive should be securely fastened to a smooth,flat metal surface that will help conduct heat away from the chassis. If this is not possible,then force airflow from a fan may be required to prevent the drive from overheating. See below installation image:

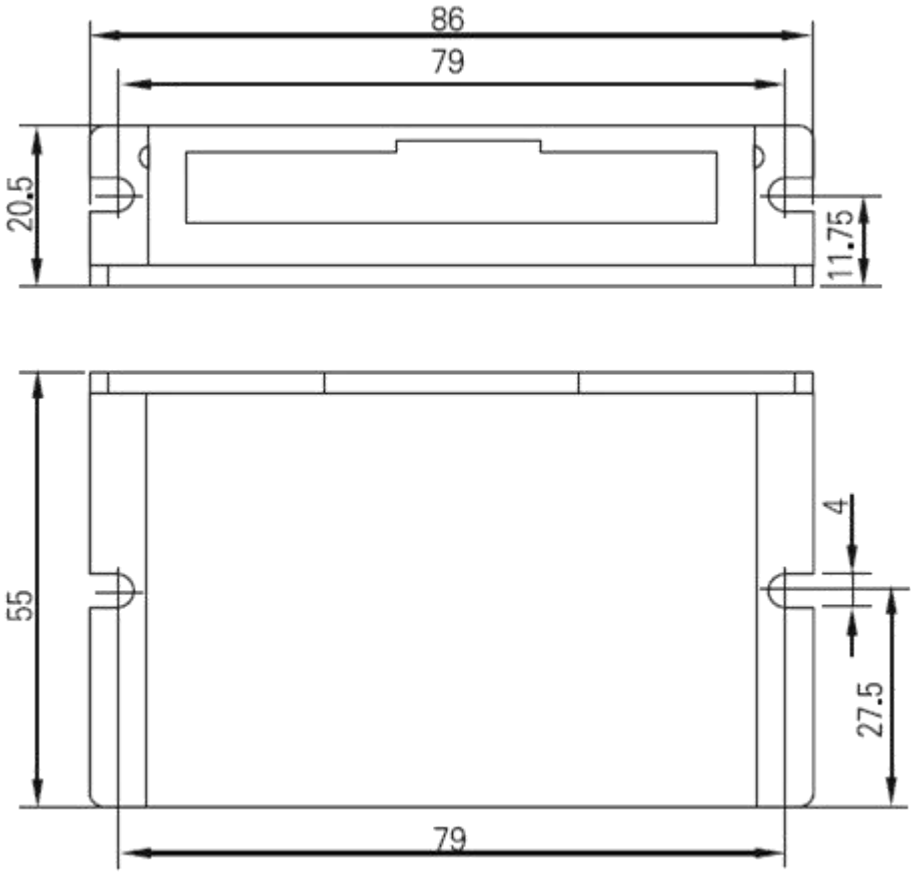
Note:

•Never use the drive in a space where there is no air flow or where other devices cause the surrounding air to be more than 50℃.

•Never use the drive in a space where the temperature is under -10℃

•Never put the drive where it can get wet or where metal or other electrically conductive particles can get on the circuitry.

•Always provide air flow around the drive.When mounting multiple drives near each other,maintain at least one half inch of space between drives.

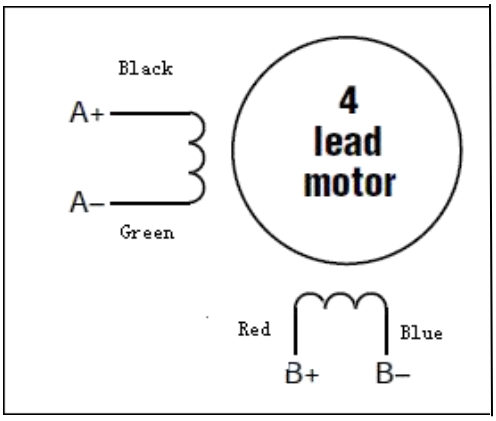


Motor Connecting

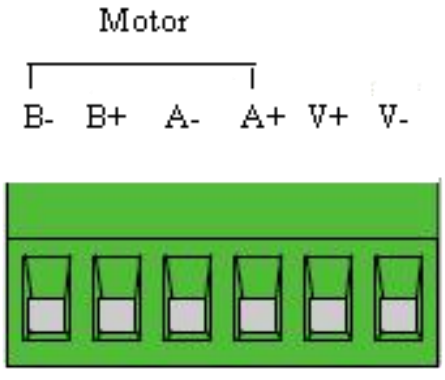
Never connect or disconnect the motor while the power is on.

Four Lead Motor

These motors can only be connected one way. Please follow the sketch below.



Motor&Power Connector



Configuring the Drive

Step 1: Selecting a Motor

The DH422 drive is optimized for use with carefully selected motors. To select a motor, simply move the rotary switch to the letter or number that corresponds to the motor of your choice. You can do this while power is on, but it is safer to select the motor before applying power to the drive so that you do not risk applying too much current to your motor.

If your motor is not on the list, please set the switch to a selection whose rotor inertia, holding torque and current are within 10% of your motor. Custom configurations can be added for qualifying applications.

DH542 Motor Table

Item	Motor	Wiring	Current	Holding Torque	Rotor Inertia
			A	oz-in	g.cm²
1	QL42HD40-01A	4 leads	1.2	57	54
2	QL42HD47-01A	4 leads	1.2	68.5	77
3	QL42HD60-01A	4 leads	1.2	103	110

Step 2: Setting the Current

The maximum current for the motor you have selected is set automatically when you set the rotary switch. But you may want to reduce the current to save power or lower motor temperature. This is important if the motor is not mounted to a surface that will help it dissipate heat or if the ambient temperature is expected to be high.

Step motors produce torque in direct proportion to current, but the amount of heat generated is roughly proportional to the square of the current. If you operate the motor at 90% of rated current, you'll get 90% of the rated torque. But the motor will produce approximately 81% as much heat. At 70% current, the torque is reduced to 70% and the heating to about 50%.

Three of the small switches on the front of the DH422 drive are used to set the percent of rated current that will be applied to the motor: SW1,SW2 and SW3. Please set them according to the illustration below.

Peak current A)	RMS current (A)	SW1	SW2	SW3
0.3	0.2	ON	ON	ON
0.5	0.4	OFF	ON	ON
0.7	0.5	ON	OFF	ON
1.0	0.7	OFF	OFF	ON
1.3	0.9	ON	ON	OFF
1.6	1.1	OFF	ON	OFF
1.9	1.4	ON	OFF	OFF
2.2	1.6	OFF	OFF	OFF

Step 3:Setting Idle Current

Motor heating and power consumption can also be reduced by lowering the motor current when it is not moving. One small switch on the front of drive can set the idle current,SW4 is ON,then the current is 100%,when SW4 is OFF,the current is 50%. The 50% idle current setting will lower the holding torque to 50%, which is enough to prevent the load from moving in most applications. This reduces motor heating by 75%. In some applications, such as those supporting a vertical load, it is necessary to provide a high holding torque. In such cases, the idle current can be set to 90% as shown below.

SW4：OFF=Half Current
ON=Full Current

Step 4:Micro step setting

Pul/rev	SW5	SW6
200	ON	ON
1600	OFF	ON
3200	ON	OFF
6400	OFF	OFF

Reference Materials

Drive Interface description

Name	function	description
PWR	Power light	When power on ,the green light is on
ALARM	Over current/under voltage/over voltage displaying light	If the drive Over current/under voltage/over voltage, the red light is on
PU	Pulse input	Pulse signal: In single pulse (pulse/direction) mode, this input represents pulse signal, each falling edge active; 4-5V for High-level, 0-0.5V for low-level
DR	Direction input	DIR signal: In single-pulse mode, this signal has low/high voltage levels, representing two directions of motor rotation;
+5V	Pulse input VCC	Optical-coupler power supply, and the typical voltage is +5V. Series connect resistors (at the PU, DR, MF terminals) for current-limiting when +12V or+24V used.(should connect 1k resistor for +12V,2k for +24V)
MF	Enable	Enable signal: This signal is used for enabling/disabling driver. High

	signal	level for enabling the driver and low level for disabling the driver. Usually left **UNCONNECTED (ENABLED)**.
V-	Power input COM	DC18-36V
V+	Power input VCC	
A+,A-	Motor A phase	Connect to Motor A phase
B+,B-	Motor B phase	Connect to Motor B phase

Note!

1: Connect power supply rightly ,can't exceed 36VDC

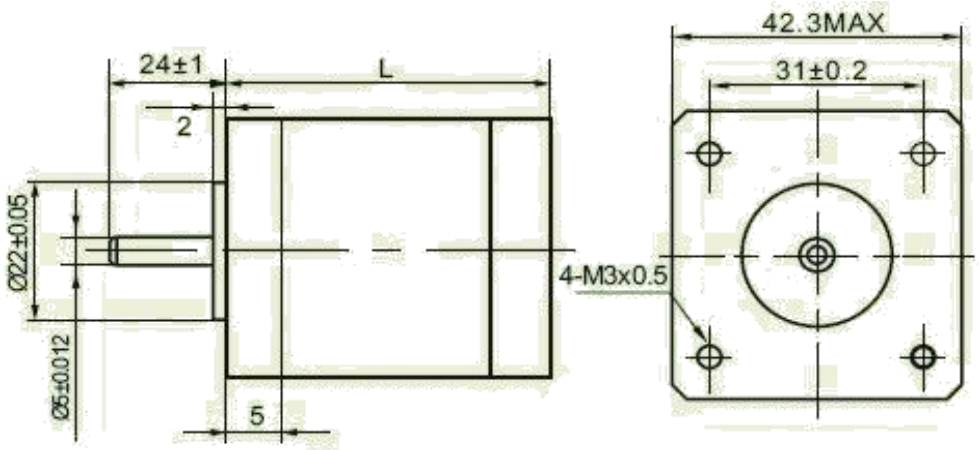
2: If the control signal (PU, DR,MF) is over 5V ,please connect resistors (at the PU+, DR+, MF+ terminals) for current-limiting.

3:if the alarm light is on ,please check it after power off

A :Check the power supply range is lower than 18V or higher than 36V

B:Connect power supply after eliminate motor wiring and other circuit short problems

Motor Drawing



Motor	Length(L)
QL42HD40-01A	41±1mm
QL42HD47-01A	49±1mm
QL42HD60-01A	61±1mm

QL42 Outline Drawing

Torque-Speed Curve

QL42 with DH542

Connection:4 leads

24V DC Power supply