ADTECH (SHENZHEN) Technology Co., LTD.

Q2BYG806DK Driver

Q2BYG808MD Driver

User's Manual

Copyright Notice

Basic Information

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Q2BYG808MD	2013-6-9	C00	39	Huang Chufang	

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2013.06.09	C00/39	Huang Chufang	

Precautions

◆ **Transport and storage:**
- ☞ Do not stack product package more than six layers;
- ☞ Do not climb, stand on or place heavy stuff on the product package;
- ☞ Do not pull the cable still connecting with machine to move product;
- ☞ Prevent the product package from humidity, sun exposure, and rain.

◆ **Open-box inspection:**
- ☞ Open the package to confirm the product to be purchased by you;
- ☞ Check damages situation after transportation;
- ☞ Confirm the integrity of parts comparing with the parts list or damages situation;
- ☞ Contact our company promptly for discrepant models, shortage accessories, or transport damages.

◆ **Wiring**
- ☞ Ensure the persons involved into wiring and inspecting are specialized staff;
- ☞ Guarantee the product is grounded with less than 4Ω grounding resistance. Do not use neutral line (N) to substitute earth wire;
- ☞ Ensure grounding to be correct and solid, in order to avoid product failures or unexpected consequences;
- ☞ Connect the surge absorption diodes to the product in the required direction, otherwise, the product will be damaged;
- ☞ Ensure the power switch is OFF before inserting or removing plug, or disassembling chassis.

◆ **Overhauling**
- ☞ Ensure the power is OFF before overhauling or components replacement;
- ☞ Make sure to check failures after short circuit or overloading, and then restart the machine after troubleshooting;
- ☞ Do not allow to frequently connect and disconnect the power, and at least one minute interval between power-on and power-off.

Contents

Chapter 1 Product Information

Product silkscreen is as follows (806DK for example):
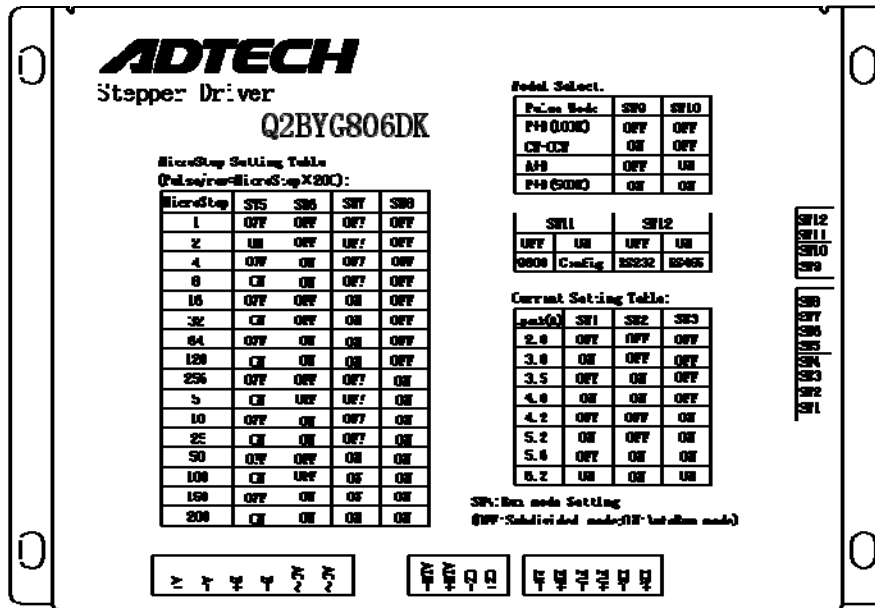
1.2 Naming convention of stepper motor and driver

1.2.1 Naming convention of stepper driver
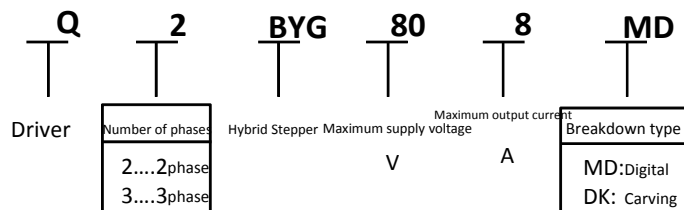
Example: Q2BYG808MD, two-phase hybrid stepper motor driver, power supplies up to 80V, maximum

output current: 8A, digital subdivision.

1.2.2 Naming convention of stepper motor
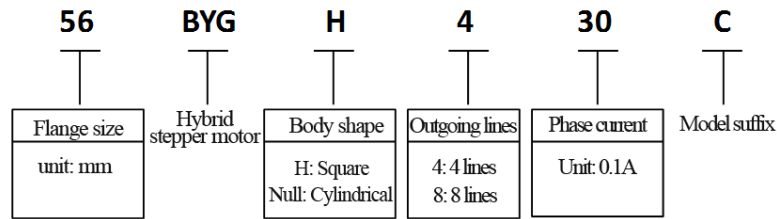
Example: 56BYGH430C: hybrid stepper motor, flange 56mm, square body, four outgoing lines, phase

current 3.0A

1.3 Features of Q2BYG808MD stepper driver

➢ Micro-step control, up to 256 subdivisions.

➢ Automatic semi-flow when stationary, semi-flow ratio four-level adjustable.

➢ Three control signals input: single pulse (PU + DR), double pulse (CC + CCW), quadrature pulse (A + B).

➢ External enable control, motor axis is released when power is connected.

➢ RS232/RS485 communication, modify control parameters and control mode and view state and waveform.

➢ DIP switch modifies baud rate

➢ Available control modes: external pulse, internal position, internal speed is started when power is connected, control internal speed via voltage level and custom mode.

➢ Home position Z output per revolution of the motor

➢ Automatically identify motor parameters

➢ Stall detection and alarm differential output

➢ Protection alarm display & output.

1.4 Technical specifications of drive

The main specifications of Q2BYG808MD/Q2BYG806DK are shown in the following table:

Basic specifications	Control technology		Advanced space vector control technology
	Input power supply		Single power supply 40~100VAC (808MD) Single power supply 40~100VAC (806DK)
	Overvoltage protection point		160VDC (808MD) / (806DK)
	Undervoltage protection point		40VDC (808MD) / (806DK)
	Phase current (A) (808MD)		2.0, 3.0, 3.5, 4.0, 4.2, 5.2, 5.6, 6.2
	Phase current (A) (806DK)		
	Number of subdivisions		1, 2, 4, 8, 16, 32, 64, 128, 256, 5, 10, 25, 50, 100, 200
	Dimensions		144×102×48.5mm
	Conditions of Use	Operating / storage temperature	45℃/-20℃~55℃
		Operating / storage humidity	40%~80%/0%~90% (no condensation)
		Degree of protection	IP10
		Resistance to vibration / shock	4.9m/s2/19.6 m/s2
		Altitude	<1000m, derate if above 1000m
		Atmospheric pressure	86~106kpa
Input signal	Instruction pulse	Pulse species	1. Pulse + direction 2. Pulse + pulse 3. A + B 90 ° quadrature pulse
		Pulse shape	1. Differential drive 2. Open collector
		Pulse frequency	1. Differential drive: 500K 2. Open collector: 200K

Output signal	Differential output	Position home Z, stall alarm ALM
Built-in functions	Protection function	Overcurrent, overvoltage, undervoltage, stall and other alarms
	Monitoring functions	Current, speed, bus voltage, position, operating mode, etc.
	Communication functions	Achieve communication with PC via RS232 or RS485, and achieve parameter modification and system running status monitoring (RS232 and RS485 can't be used simultaneously. You can use DIP switch to select the desired communication.)
	Indication functions	Red (alarm), green (working) indicator

1.5 Applications

It is suitable for a variety of small and medium sized automation equipment and instruments, such as: dispenser, marking machine, cutting machine, engraving machine, labeling machine, plotter, automatic assembly equipment, numerical control machine tool, etc. It has outstanding application effect in the equipment that users expect low vibration, low noise and high-speed.

For long time running that stall situation should be monitored, such as wood carving, 806DK and 808MD have stall detection function without encoder.

Chapter 2 Installation

2.1 Installation of stepper drive

2.1.1 Installation environment conditions

The environment for stepper drive installation has a direct impact on the normal operation and life of the drive, so the drive installation environment must meet the following requirements:
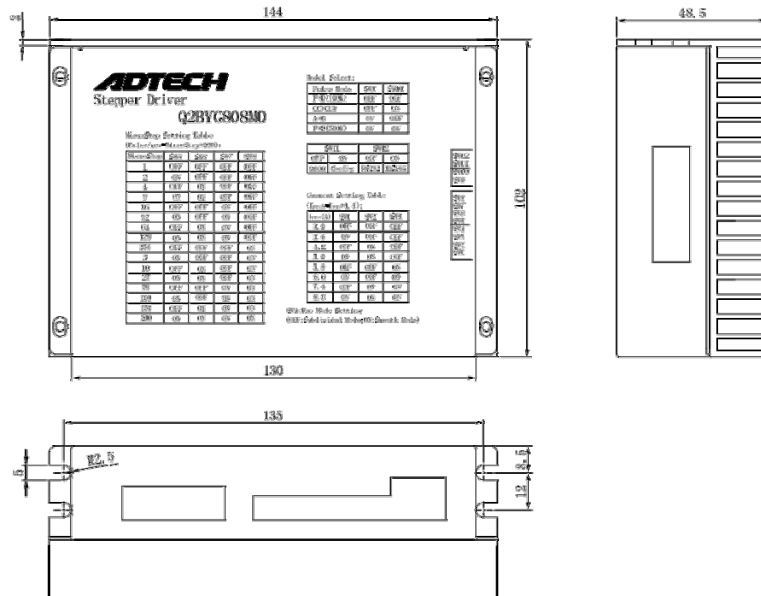
➢ Operating environment: temperature: 0 ~ 45℃; humidity: 40%~80% (no condensation);

➢ Storage environment: temperature: -40~55℃; humidity: < 90% (no condensation);

➢ Vibration: < 0.5G;

➢ Prevent raining and humid environment;

➢ Avoid direct sunlight;

➢ Prevent oil mist and salt erosion;

➢ Keep away from corrosive liquid and gas;

➢ Prevent dust, cotton, and small metal filings;

➢ Keep away from radioactive and flammable objects;

➢ When several drives are installed in the control cabinet, retain sufficient space to help the flow of air; to help cooling, please install a fan to reduce the temperature around the drive; to ensure long-term safety, the operating temperature should be 45℃;

➢ If there is unavoidable vibration source nearby, use vibration absorber or install anti-vibration pad to avoid transmitting the vibration to the drive;

➢ When interference is mixed in power supply circuit of input signal, it is easy to cause drive malfunction. If interference may be mixed, take appropriate measures, such as adding a noise filter and a variety of other anti-jamming measures, to ensure the normal operation of the drive. (Note that the leakage current will increase if noise filter is added. In order

to avoid this situation, you can use an isolation transformer. The control signal lines of the drive are susceptible to interference, and reasonable alignment and shielding are required.)

2.1.2 Installation method and size

➢ Mounting direction: Recommended mounting direction of the stepper drive is vertical;

➢ Mounting and fixing: use four vertical mounting holes, and tighten with screws;

➢ Ventilation: use natural cooling; cooling fan must be installed in the electrical control cabinet. The mechanical mounting dimensions of multiple drives are shown below: unit (mm)

➢ Drive size: unit (mm)

2.2 Installation of stepper motor

2.2.1 Environment of use

➢ Operating environment: temperature: 0 ~ 45℃; humidity: 40%~80% (no condensation);

➢ Storage environment: temperature: -40~55℃; humidity: < 80% (no condensation);

➢ Vibration: < 0.5G, avoid direct sunlight;

➢ Prevent raining, humid and oil fouling environment;

➢ It is normal that the surface temperature of the motor during working is lower than 85℃;

➢ For unused motor lines of 6-wire or 8-wire motor, wrap with insulating tape to prevent conduction with foreign objects.

2.2.2 Definition of motor rotation direction

Facing to the motor shaft extension, forward is to rotate counterclockwise direction, and reverse is to rotate in clockwise direction. The direction of the motor in the drive can swap positive and negative pole of any phase of AB, swap positive and negative pole of direction signal or change internal parameters P16 of the drive, and change direction according to the actual situation.
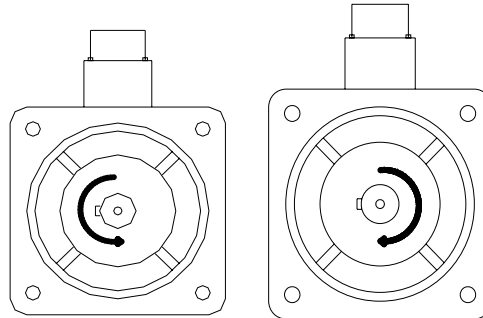
Forward rotation　　　　　Reverse rotation
Counter-clockwise (CCW)　　Clockwise (CW)

Chapter 3 Wiring

3.1 Port name and function
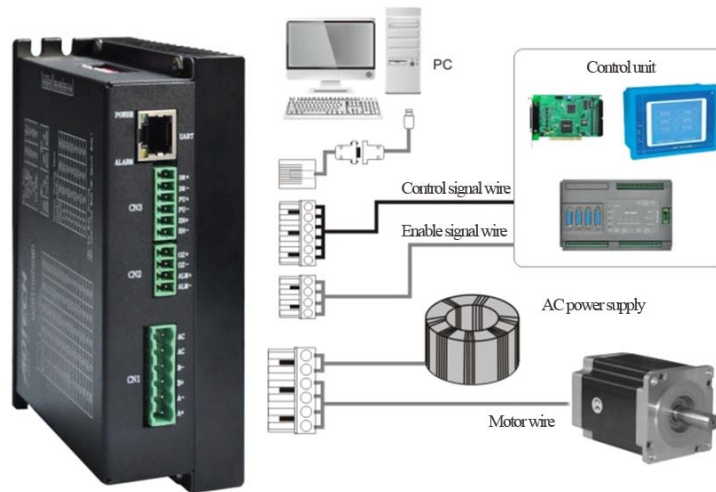
(1) Control / enable signal interface (CN3)

Signal	Function	Description
DR+	Direction control signal	High / low level state, requirements: low level 0~0.5V, high level 4~5V, corresponding to two directions of the motor. The initial running direction of the motor depends on the motor wiring; swap any phase to change the initial running direction of the motor.
DR-		
PU+	Pulse control signal	Rising edge active; each time pulse signal changes from low to high, the motor moves one step; requirements: low level 0~0.5V, high level 4~5V, pulse width ≥1.5us.
PU-		
EN+	Enable control signal	Used to enable/release motor, EN+ connects to +5V, EN- is grounded, the drive will cut off electrical current of each phase in a free state, and the temperature rise and heating of the drive and motor will be reduced. When this feature is not in use, keep the signal terminal null.
EN-		

(2) Output signal interface (CN2)

Signal	Function	Description
OZ+	Home signal	Output a pulse signal of 50us width for every revolution of the motor.
OZ-		
ALM+	Stall alarm signal	When motor is stall, output stall alarm signal, high level active; low level active during normal running.
ALM-		

(3) Power supply and motor interface (CN1)

Signal	Name	Description
AC	AC power supply terminal	AC power supply terminal, any power supply between 40V ~ 80VAC
AC	Power ground	
B-	B-phase winding	B-phase winding of the motor
B+		
A-	A-phase winding	A-phase winding of the motor
A+		

(4) Communication interface UART

Set to RS232 and RS485 communication with DIP switch SW12, set the communication baud rate with DIP switch SW11, connect to a serial communication port of PC via dedicated cable, and change parameters, save parameters and monitor operation status through dedicated PC debugging software.

Pin No.	Name	Symbol	Functional application
1	Power ground	GND	Power ground
2	SCI receiving terminal	RXD	Serial data receiving terminal
3	SCI transmission terminal	TXD	Serial data transmission terminal
4	RS485 signal-	RS485-	RS485 input signal-
5	RS485 signal+	RS485+	RS485 input signal+
6	Power+	+5V	Positive terminal of the power supply
7		NC	Reserved
8		NC	Reserved

(5) Alarm / power LEDs

Description of LEDs:

LED	content
Green LED	Power indicator, when the drive is powered, this LED is lit; when the power is cut off, the LED turns off.
Yellow LED	Fault alarm LED; when a failure occurs, the yellow LED is lit

(6) DIP switch

Q2BYG808MD/806DK stepper drive uses 8-bit DIP switch S1 to set the output current, subdivision precision and operation mode; set by 4-bit DIP switch S2. The front view of DIP switch is as follows:
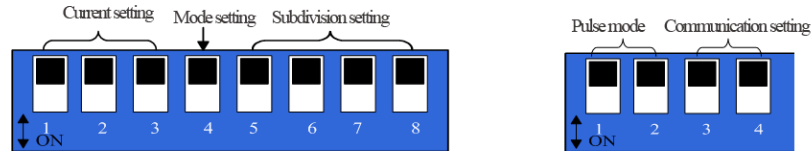

Fig. (2) Front View of DIP Switch

1) Current setting (Ipeak): SW1-SW3

Ipeak(A) (808MD)	Ipeak(A) (806DK)	SW1	SW2	SW3
3.0	2.0	OFF	OFF	OFF
4.0	3.0	ON	OFF	OFF
4.2	3.5	OFF	ON	OFF
5.2	4.0	ON	ON	OFF
5.6	4.2	OFF	OFF	ON
6.2	5.2	ON	OFF	ON
7.0	5.6	OFF	ON	ON
8.0	6.2	ON	ON	ON

2) Running mode setting SW4

SW4	Mode	Description
OFF	Subdivision operating mode	Move corresponding angle according to the number of subdivisions every step
ON	Self-test mode	Run at 30rpm automatically in 32 subdivisions, change the magnification by changing the subdivision speed

3) Number of subdivisions SW5-SW8

Subdivision	SW5	SW6	SW7	SW8
1	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF
4	OFF	ON	OFF	OFF
8	ON	ON	OFF	OFF
16	OFF	OFF	ON	OFF
32	ON	OFF	ON	OFF
64	OFF	ON	ON	OFF
128	ON	ON	ON	OFF
256	OFF	OFF	OFF	ON
5	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
25	ON	ON	OFF	ON
50	OFF	OFF	ON	ON
100	ON	OFF	ON	ON
150	OFF	ON	ON	ON
200	ON	ON	ON	ON

4) Pulse mode SW9-SW10

The drive can accept three control pulse inputs from PC: single pulse, double pulse, orthogonal pulse; where P+D (100K) is filtered single pulse, featuring good anti-jamming capability. When the duty cycle is 1:1, the maximum frequency of the received pulse is 100K, and the actually required minimum pulse width is 5us; P+D (500K) is unfiltered single pulse; when the duty cycle is 1:1, the maximum frequency of the received pulse is 500K, and the actually required minimum pulse width is 1us.

Pulse mode	SW9	SW10
P+D(100k)	OFF	OFF
CW+CCW	ON	OFF
A+B	OFF	ON
P+D(500K)	ON	ON

5) Communication setting

Set the baud rate of serial communication by SW11; Config is custom baud rate (default: 115200); SW12 is used for serial communication mode setting. The two settings need to restart the drive to take effect.

Baud rate		Communication mode	
SW11		SW12	
OFF	ON	OFF	ON
9600	Config	RS232	RS485

3.2 Control cable connection

The drive uses differential interface circuit and built-in high speed optocoupler, featuring higher receiving frequency than similar products, excellent interface compatibility and strong anti-interference capability (especially differential output mode). It is applicable for NPN open collector output, PNP output and differential output. The interface circuit is shown below:
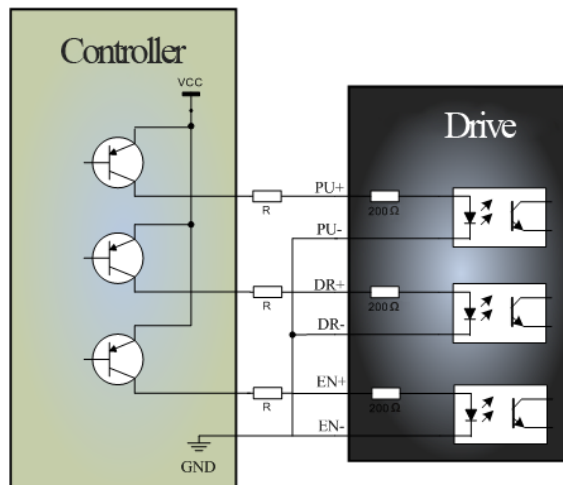
(1) NPN type output terminal (common anode)

When VCC is connected to +5V, R is short connected; when VCC is connected to +12V, R is 1KΩ, 1⁄4W; when VCC is connected to +24V, R is 2KΩ, 1⁄4W;
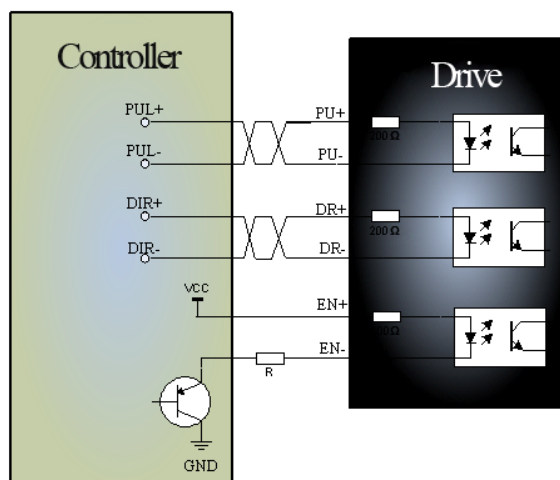

-17-
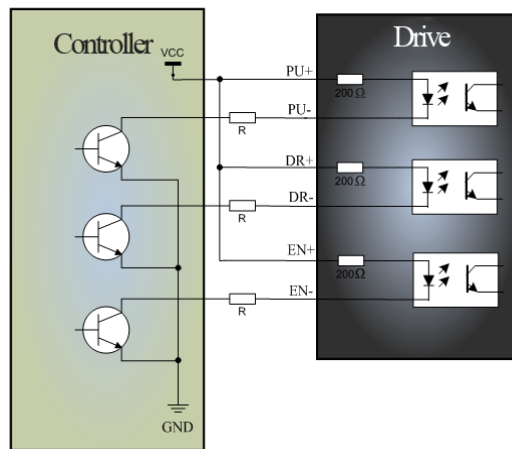
(2) PNP type output terminal (common cathode)

When VCC is connected to +5V, R is short connected; when VCC is connected to +12V, R is 1KΩ, 1⁄4W; when VCC is connected to +24V, R is 2KΩ, 1⁄4W;
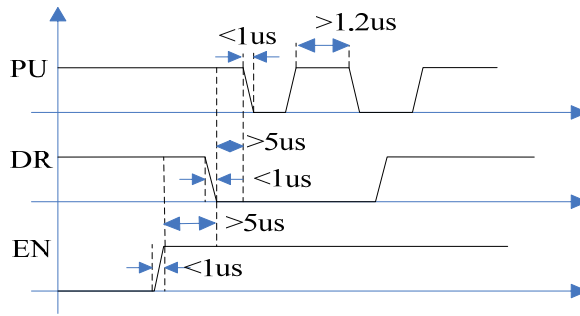

(3) Differential output wiring

When VCC is connected to +5V, R is short connected; when VCC is connected to +12V, R is 1KΩ, 1⁄4W; when VCC is connected to +24V, R is 2KΩ, 1⁄4W;


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(4) Control signal timing diagram

In order to avoid malfunction and deviations, PU, DR and EN signals should meet certain timing requirements, as shown below:

3.3 Motor cable connection

Drive and motor have different wiring, and the motor operating results are very different. Typically, the supply voltage of the drive determines the high-speed performance of the motor, the higher the voltage, the greater the high speed torque. The current value determines the output torque of the motor, the higher the current, the greater the motor output torque. However, if the supply voltage is large, the vibration in low speed operation will be larger; if the current value is set large, the heating of drive and motor will be very serious. Therefore, the user should take the appropriate connections in order to achieve satisfactory results. Below are typical wiring methods:
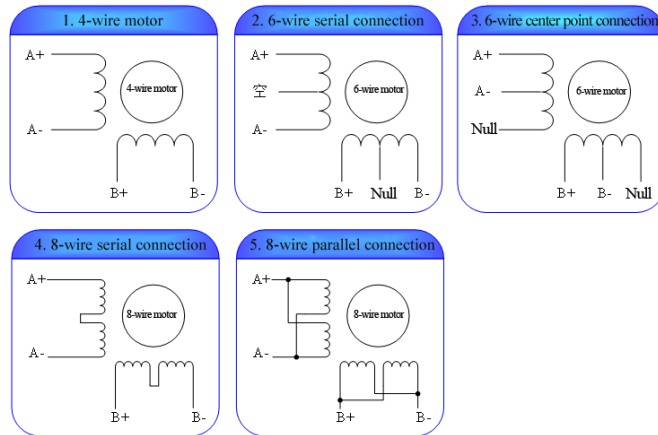
(1) Four-wire motor: Only one connection is available; DIP switch setting current should be ≤ rated motor current.

(2) Six-wire motor:

Two connection methods are available, as follows:

Connection method	Applications	Terminals	Features
Serial connection	Speed≤200rpm, occasions require high torque	A+, A- B+, B-	Motor torque is high at low speed and low at high speed. It is easy to heat when the motor is running. DIP switch settings current ≤ 50% rated current.
Center point connection	200rpm≤speed ≤600rpm, occasions require high torque	A+, A- B+, B-	Motor torque is low at low speed and high at high speed. DIP switch setting current ≤ rated current.

(3) Eight-wire motor:

Two connection methods are available, as follows:

Connection method	Applications	Terminals	Features
Serial connection	Speed≤200rpm, occasions require high torque	Two wires of center tap are short connected, and the connected drive terminals are A +, A-, B +, B-	Motor torque is high at low speed and low at high speed, and heating is serious. DIP switch settings current ≤ 50% rated current.
Parallel connection	200rpm≤speed ≤600rpm, occasions require high torque	Two wires of center tap are connected to the two wires in parallel, and the connected drive terminals are A +, A-, B +, B-,	Motor torque is low at low speed and high at high speed. DIP switch setting current ≤1.4*rated current.

Q2BYG808MD is connected to four-wire and eight-wire motor as follows:
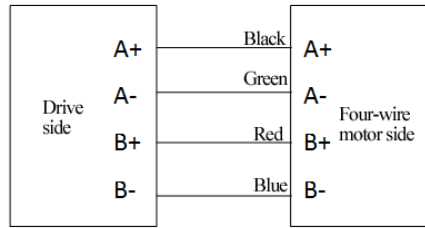
☀ Note:

When the drive is connected with motors of other companies, the pin colors may be different. In actual wiring, measure the lead category with a multimeter before wiring to prevent damage to the motor or drive.

3.4 Wiring requirements

➢ To prevent interference with the drive, the control signals use shielded cable, which is single-grounded. One end of the shielded cable PC is grounded, and the drive of the shielded wire is vacant. A machine only can be grounded at the same point. If it is not true ground wire, it may cause serious interference, and the shield layer doesn't need to be connected.

➢ Pulse and direction signal lines can't be bound together with motor lines, but should be separated at least 10cm, or else the motor noise is easy to interfere with pulse direction signal and cause failures such as inaccurate electrical positioning and instable system.

➢ If one power supply is provided to multiple drives, they should be connected to the power supply in parallel rather than in chain.

➢ Do not plug or unplug strong electric terminal CN1 of electrified drive, the electrified motor still has large current flowing through the coil when stopped, and plugging/unplugging CN1 terminal will lead to huge moment induced emf and burn the drive.

> Do solder the wire tip before connecting the wiring terminal, or else it may damage the terminal due to large contact resistance and overheating.
> The thread ends shouldn't be exposed out of the terminal, or else it may cause short circuit and damage the drive.
> When the motor is connected to the drive, make sure that the motor has been turned off. Make sure that the unused motor leads won't contact with other objects. Do not connect the motor leads to the ground or power supply.

Chapter 4 Drive and Computer Communications

Q2BYG808MD series stepper drives can communicate with other devices via RS232 or RS485. The communication mode can be set via DIP switch. Below is the example.

4.1 Installing USB-RS485/RS232 driver

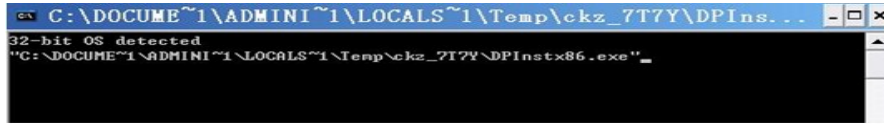(1) Insert the driver CD into the CD-ROM, and click on the CD-ROM to show the following folder (Below is the example of Windows XP/2000)
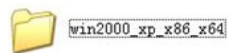
Click to enter

Click the executable file "setup.exe" to show the following installation window;

Wait for the installation to complete.

(2) View the communication port of the computer allocated for this drive. Right-click My Computer and select "Properties" menu to pop up the window
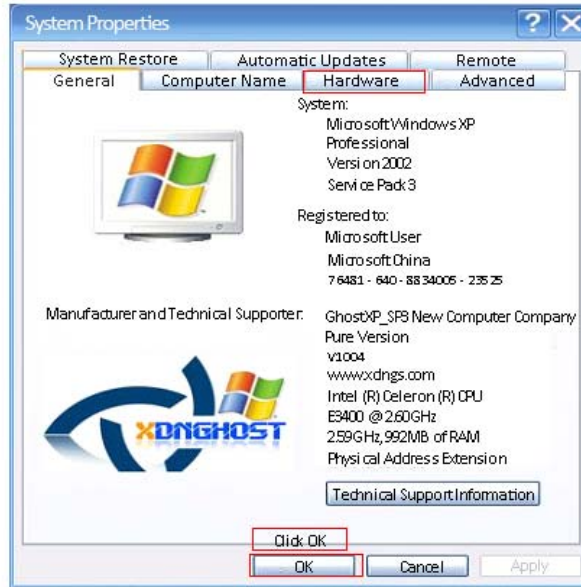
Click OK to pop up the window, select Hardware - Device Manager, and click OK;
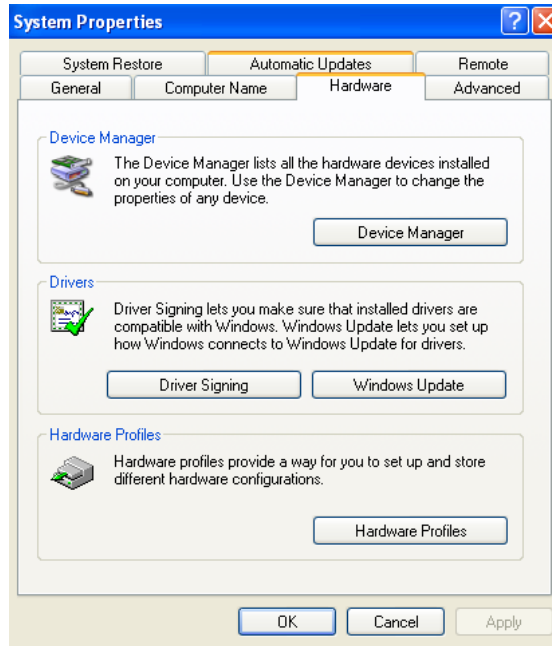
Click Ports (COM & LPT) to view the COM port of the computer allocated for the drive, write down the COM number, and use to connect parameter management software.
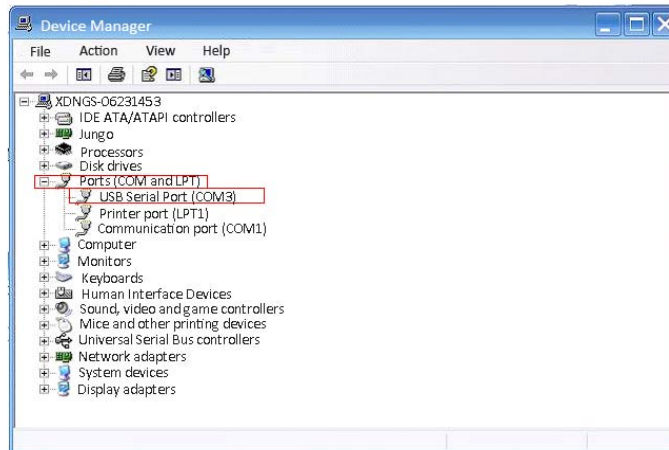
(3) If the COM isn't between COM1-COM6, please change as follows:
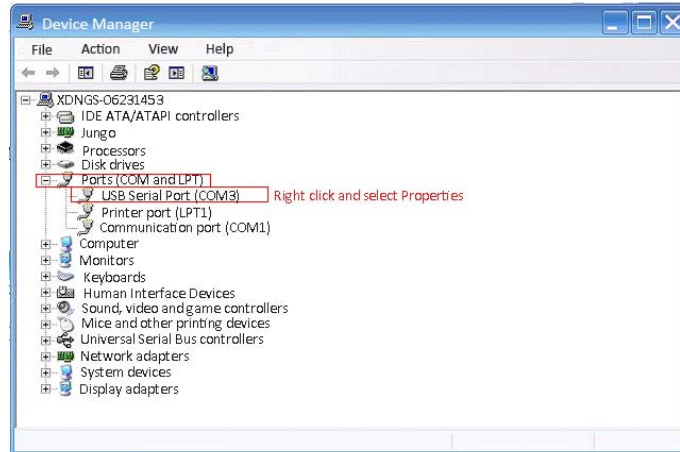
In the pop-up dialog box, select the "Port Settings" - "Advanced" and click OK;
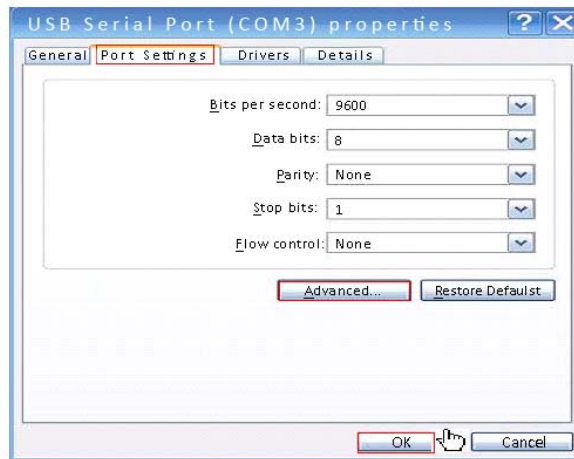
In the pop-up window, select a COM port within 1-6, and click OK, step by step;
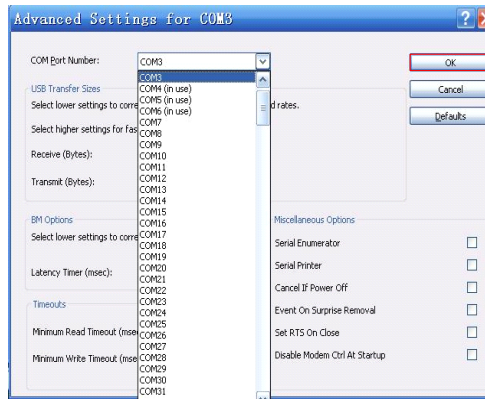
Return to the screen, right-click "Ports (COM & LPT)", and select "Scan for hardware changes";

After scanning, write down the changed COM port and use to connect the software.

4.2 Open the driver software, and set parameters

(1) Start the management software

Open the drive management software, as shown below;
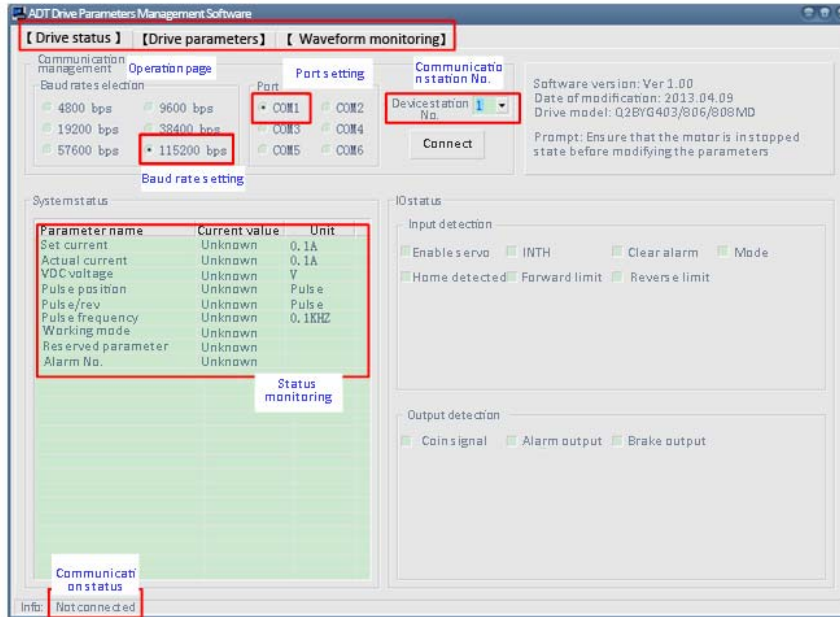
(2) Set communication parameters

The communication port is the integrated serial port COM1 of the computer and other ports are obtained through the above steps; the number of communication station is 1 by default; baud rate is set by DIP switch. After setting the communication parameters, "Connect" motor to communicate.

4.3 Parameter settings

(1) After connecting the communication successfully, the basic state of the motor running is displayed on the drive status screen; you can check if the machine has failure according to the status of the servo system running; the interface is as follows;
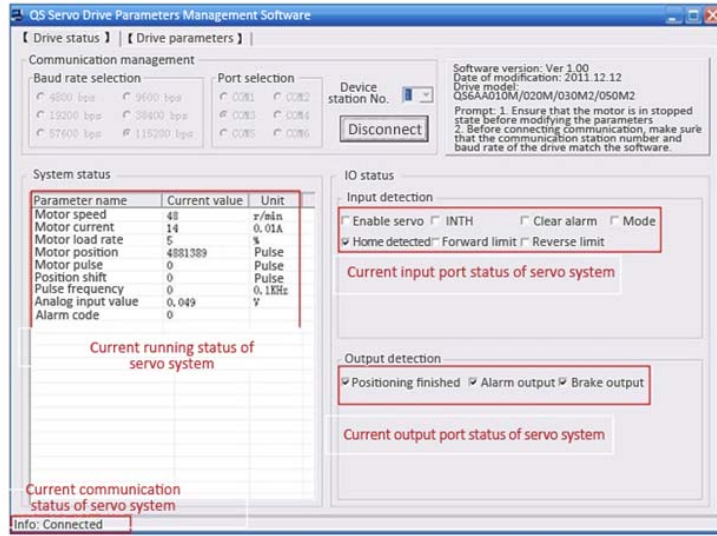
(2) Click "Driver Parameters" to enter the parameter modification interface;
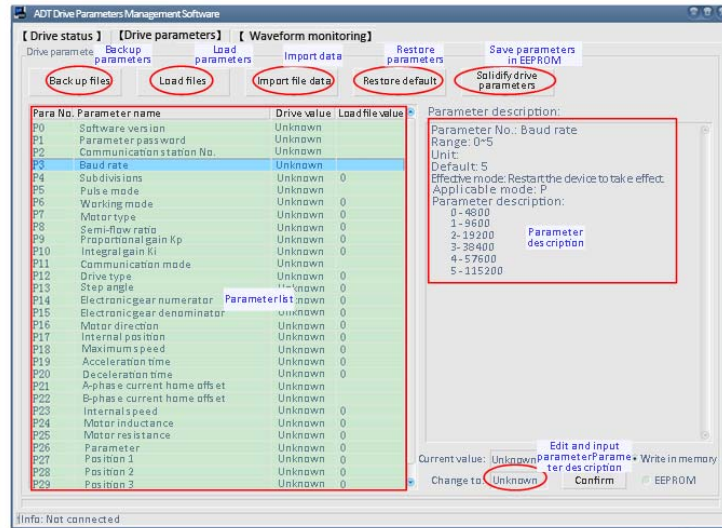
4.4 Custom baud rate

If you want to use custom baud rate, change the parameter P44. Below is the example of the steps to change the baud rate of the drive from 9600 to 115200:

(1) The baud rate is 9600, port is COM3, communication is RS232, and communication connection is OK.
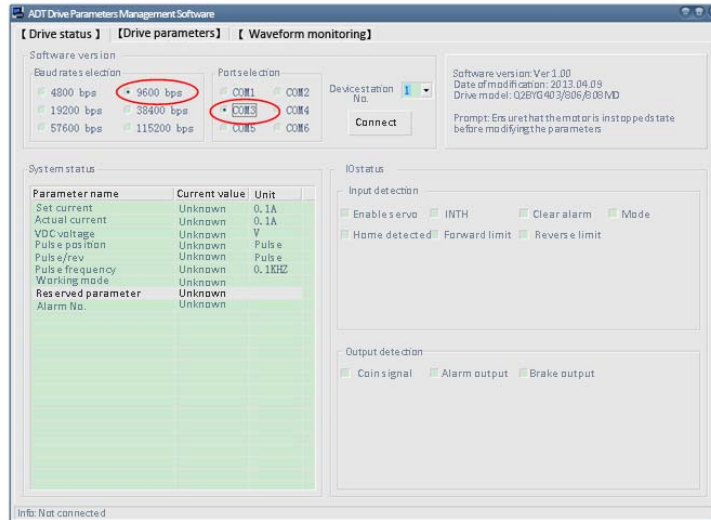
(2) At this time, you can see P44 = 0 in P3 parameter "communication baud rate"; to change the baud rate to 115200, set this parameter to 7; other baud rates are similar.

(3) After changing P3 to 5, click OK to modify, and you can see that P3 has been changed to 5 in "Drive Values" on the left.
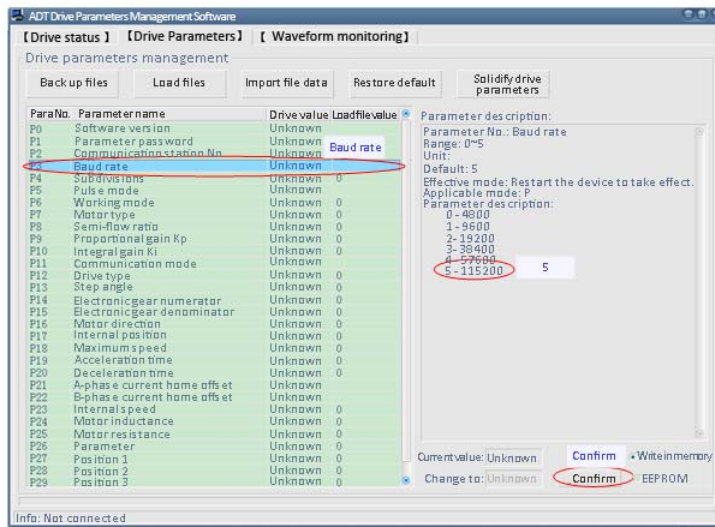
(4) Click Cure parameters to cut off power of the drive.
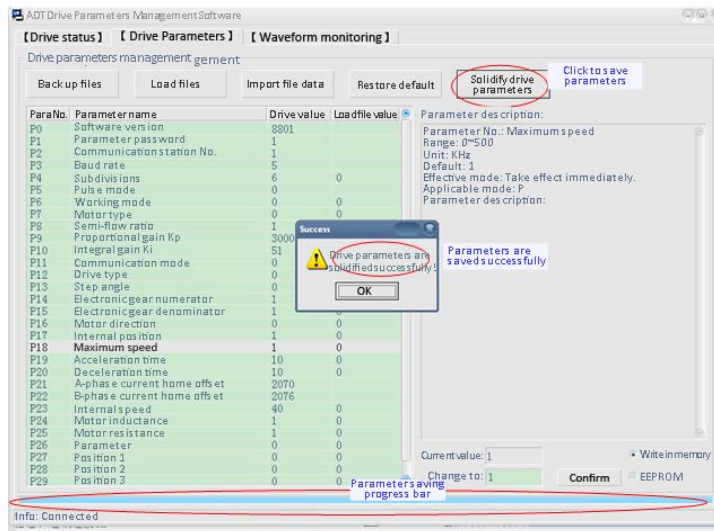
(5) SW11 is changed from off to on, and is powered up normally after connecting the drive.

(6) Re-open "Stepper drive parameters management software", select the communication baud rate to 115200, select the correct port (COM3), click Connect, and the communication connection is OK.
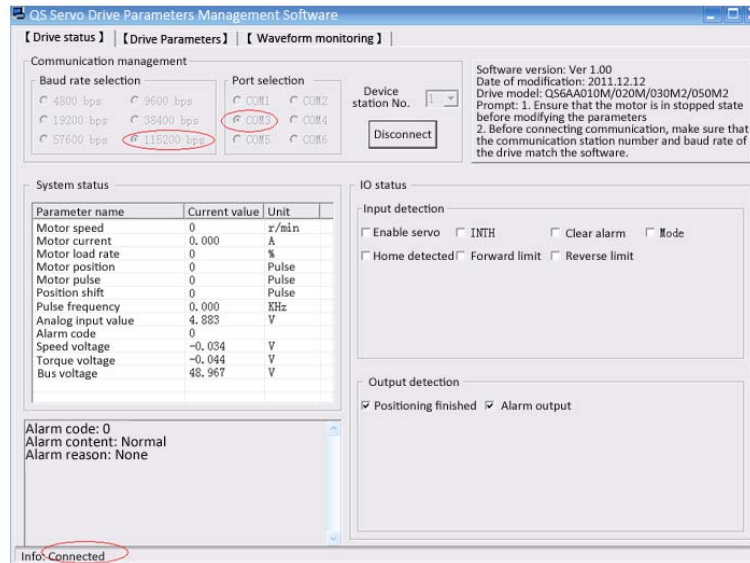
Chapter 5 Drive Parameters

After successful communication, adjust the parameters of the stepper drive through parameter management software to achieve the best operating results.

5.1 List of Parameters

Parameter	Name	Range	Default	Unit	Remark
P0	Software version	0-9999	Read only		②
P1	Parameter password	0-9999	Read only		②
P2	Communication station No.	0-9999	Read only		③
P3	Baud rate	0~5	1		③
P4	Number of	1~16	1		①

Parameter	Name	Range	Default	Unit	Remark
	subdivisions				
P5	Pulse mode	0~1	0		①
P6	Working mode	0~5	0		①
P7	Motor model	0~10000	0		③
P8	Semi-flow ratio	0~3	1		①
P9	Proportional gain Kp	0~32000	Read only		①
P10	Integral gain Ki	0~32000	Read only		①
P11	Communication mode	0~1	0		①
P12	Drive model	0~1	0		②
P13	Step angle	0~3	0		②
P14	Electronic gear numerator	1~32000	1		①
P15	Electronic gear denominator	1~32000	1		①
P16	Motor direction	0~1	0		①
P17	Internal position	0~32000	0	100*pulse	①
P18	Maximum speed	0~500	0	KHz	①
P19	Position acceleration time	0~32000	0	ms	①
P20	Position deceleration time	0~32000	0	ms	①
P21	A-phase current home offset	1~32000	2048		②
P22	B-phase current home offset	1~32000	2048		②
P23	Internal speed	0~600	40	Rpm	①
P24	Motor inductance	0~1000	100	0.1mH	②
P25	Motor resistance	0~1000	0	0.1Ω	②
P26	Reserved parameter	-32000~32000	0		①
P27	Reserved parameter	-32000~32000	0	r	①
P28	Reserved parameter	-32000~32000	0		①
P29	Reserved parameter	-32000~32000	0		①

Note: (Remarks ①, ② and ③ in the table have the following meanings)

①   The parameter takes effect immediately after changing.

②   The parameter can't be modified.

③   Restart the device to take effect after modification.

5.2 Parameter Description

No.	Parameter name	Function	Range
P0	Software version	Read only, display different versions	8800-80XX
P1	Parameter password	Read only, show password	0000-9999
P2	Communication station No.	Corresponding address of the drive in serial communication	0-255
P3	Baud rate	Transmission speed of serial communication: 0-4800, 1-9600, 2-19200, 3-38400, 4-57600, 5-115200	0-7
P4	Number of subdivisions	Motor step angle subdivisions 1-1 full step pulses per revolution: 200 2-2 half-step pulses per revolution: 400 3-4 Pulses per revolution: 800 4-8 Pulses per revolution: 1600 5-16 Pulses per revolution: 3200 6-32 Pulses per revolution: 6400 7-64 Pulses per revolution: 12800 8-128 Pulses per revolution: 25600 9-256 Pulses per revolution: 51200 10-5 Pulses per revolution: 1000 11-10 Pulses per revolution: 2000 12-25 Pulses per revolution: 400 13-50 Pulses per revolution: 10000	1-16

No.	Parameter name	Function	Range
		14-100 Pulses per revolution: 20000 15-150 Pulses per revolution: 30000 16-200 Pulses per revolution: 40000	
P5	Pulse mode	Input instruction pulse mode. 0-PU+DR(100K), single pulse 1-CW+CCW, double pulse 2-A+B quadrature pulse 3-PU+DR(500K) single pulse	0-3
P6	Working mode	The drive controls motor mode: 0- external pulse subdivision, control command impulse through external port, number of subdivisions is active, 1- electronic gear; control command impulse through external port, number of subdivisions is inactive; determine the number of pulses per revolution according to electronic gear numerator and denominator 2- internal position, the rising edge of PU signal triggers internal position to start, run corresponding distance according to the P17, P18, P19, P20. Direction DR is inactive. 3- start internal speed after power-on, drive is powered, and motor runs continuously at the speed set by P23 and the direction set by P16. External signal is inactive, and the number of subdivisions is inactive. 4- level controls internal speed, the drive is powered, DR is low level, and the motor stops; DR is high level, the motor starts and runs continuously at the speed set by P23 and the direction set by P16. External signal is inactive, and the number of subdivisions is inactive. 5- custom according to special requirements	0-5

No.	Parameter name	Function	Range
P7	Motor model	When the drive is equipped with motor, choose the corresponding motor model parameters in order to achieve the best results 0- default, the motor can achieve the basic performance 1111- custom, add motor model or custom motor 5600-56BYGH420A 5601-56BYGH630DJP 5602-56BYGH630EJP 5603-56BYGH430B 5604-56BYGH630C 5605-56BYGH842 8500-85BYGH820A 8501-85BYGH830A 8502-85BYGH842A 8503-85BYGH840C 8504-85BYGH862D 8505-86BYG840B 8506-85BYG840C 8507-85BYG862A	0-9999
P8	Semi-flow ratio	To reduce motor heating, the motor current attenuates automatically when the external pulse suspends 1s 0-100% does not reduce 1-50% 2-25% 3-12.5%	0-3
P9	Proportional gain Kp	Set proportional gain of PID controller; The larger the set value, the greater the gain and the stiffness; parameter value depends on the motor and load. Generally, the greater the load inertia, the	1-32000

No.	Parameter name	Function	Range
		bigger the set value; under rapid acceleration/deceleration and high speed, the set value is greater; set as small as possible in low speed without losing step.	
P10	Integral gain Ki	Set integral time constant of PID controller;	1-32000
P11	Communication mode	Serial communication 0-RS232 1-RS485	0-1
P12	Drive model	0-Q2BYG806DK 1-Q2BYG808MD	0-1
P13	Step angle	Stepper motor step angle 0-1.8° 1-1.2° 2-0.9°	0-2
P14	Electronic gear numerator	Set sub-frequency multiplication of position command pulse (electronic gear); In electronic gear ratio control mode, set parameter P14 and P15 to easily achieve pulse equivalent matching; considering that the acceptable frequency range of the drive is lower than 500K, increase the value as much as possible;	1-32000
P15	Electronic gear denominator	Same as above parameter P14	1-32000
P16	Motor direction	Change the direction of the motor running by this parameter, and do not need to adjust the wiring of the motor. 0-CW 1-CCW	0-1
P17	Internal position	Set the number of pulses required for one revolution in internal position control mode, unit: 100 * pulse	1-32000
P18	Maximum speed	Set the constant speed of the motor in trapezoidal acceleration/deceleration in internal position control	0-500

No.	Parameter name	Function	Range
		mode, unit: KHz	
P19	Acceleration time	Acceleration time of trapezoidal acceleration/deceleration in internal position control mode, the greater the value, the longer the acceleration time, unit: ms	0-32000
P20	Deceleration time	Deceleration time of trapezoidal acceleration/deceleration in internal position control mode, the greater the value, the longer the deceleration time, unit: ms	0-32000
P21	A-phase current home offset	Drift value of A-phase current zero point;	1900-2148
P22	B-phase current home offset	Drift value of B-phase current zero point;	1900-2148
P23	Internal speed	Motor rotation speed in internal speed control mode, unit: rpm	0-600
P24	Motor inductance	Phase inductance of the motor, unit: mh	0-1000
P25	Motor resistance	Phase resistance of the motor, unit: Ω	0-1000

➢ It is recommended to set and modify all parameters when the motor is stationary;

➢ Before long-term storage, the parameters must be solidified and written;

When the drive power is cut off, wait at least 5 seconds before powering up again;

Chapter 6 FAQ

6.1 Motor selection

Q2BYG808MD is suitable for 4, 6, 8-wire two-phase hybrid stepping motor. Please select appropriate motor and drive to ensure optimal motor running.

(1) It is known from the torque-frequency characteristics of stepper motor, the output torque decreases when the motor speed increases. Generally under light load, the maximum operating speed is below 15 rev/ sec; under heavy load, the maximum operating speed is about 10 rev/ sec.

(2) When the stepper motor has been selected, select the stepper motor model of appropriate torque according to the load size.

(3) During working, the system transmission ratio can be changed through the gear box and timing belt to adjust the relationship between the output torque and load speed.

(4) Increase the supply voltage of the drive to improve the speed of the stepper motor; increase the operating current of the drive to increase the torque of the stepper motor; increase the number of subdivisions of the stepper motor to improve the precision and smooth operation of the stepper motor and reduce vibration and noise.

6.2 Troubleshooting

Failure	Possible cause	Solution
Power LED is off	Power system failure	Check the power supply line
	Supply voltage is low	Increase the supply voltage
Alarm LED is on	Motor wire is connected improperly	Check connection
	Voltage is too high or too low	Check the power supply
	Overcurrent	Check the power supply
Motor does not run	Not powered	Check the power supply circuit, and power on
	Motor wire is connected improperly	Check connection
	Protection circuit operates	Re-power

Failure	Possible cause	Solution
	Enable signal is low	Disconnect EN signal
	Current setting is too small	Reset current
	The number of subdivision is too small	Reset subdivision
	No pulse signal input	Adjust the pulse signal
Position is inaccurate	Subdivision is incorrect	Reset subdivision
	Motor load is too large	Replace the motor or increase current
	Motor wire poor contact	Check wiring and connect properly
Motor rotation is wrong	Direction signal connection error	Swap two wires of the same phase winding
	Motor wire is disconnected	Check and connect properly
Motor acceleration stall	Acceleration is too large	Reduce acceleration
	Motor torque is too small	Match the appropriate motor
	Maximum speed is too large	Reduce the maximum speed
Serial connection exception	Serial cable disconnected	Check connection
	Communication port setting error	Check COM port number assigned by PC
	Baud rate is set incorrectly	Check the settings of baud rate DIP switch