Manual

I. Introduction

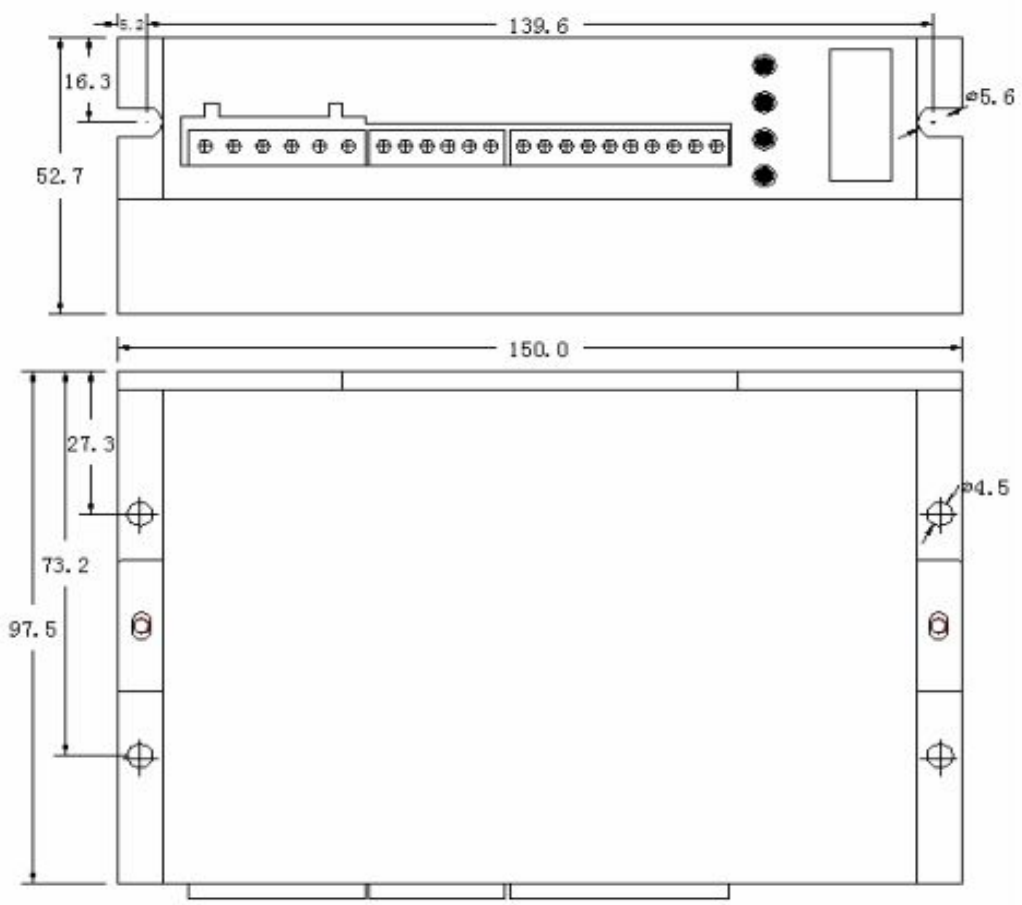
A new generation of DSP digital closed-loop stepper drives, using advanced closed-loop vector control technology. Completely overcome the traditional open-loop stepper motor lost step problems, and significantly improve the performance of high-speed stepper motor. Reduce heat and reduce the degree of motor vibration motor, and further enhance the speed and accuracy of the work equipment. Reduce the energy consumption of the device. In addition, when the motor continuous overload, the drive will output an alarm signal. We have the same reliability and AC servo system. Motor mounting dimensions adapted to traditional (57/60) and 86 Series stepper motor is fully compatible with conventional open-loop stepper drive scheme can be seamless upgrades and cost. With respect to the terms of the traditional AC servo system has a very high cost advantage.

The drive is suitable for a variety of small and medium sized automation equipment and instruments, such as: wood engraving machine, wire harness,processing machines, laser cutting machine, high-speed plotter, small CNC machine tools, automated assembly equipment. In the low noise, smooth operation, high-speed response device applications excellent special effects.

Technical Features

With a new 32-bit motor control dedicated DSP chip;
Using advanced closed-loop vector control technology;
LED digital display with key operation, intuitive, easy to operate;
Quiescent current and dynamic current can be set (within 0-6.5A);
Adaptable drive (57/60) and 86 series hybrid closed-loop stepper motors;
Optically isolated signal input / output;
Impulse Response frequency up to 200KHz;
16 file segmentation selection, a maximum of 256 segments (51200 pulses / rev);
With the flow, overheating, over-voltage and ultra-poor tracking error protection;

2.Mechanical installation dimensions (unit: mm)



Note: keep the drive good heat dissipation Note: keep the drive good heat dissipation

(1) drives reliable operating temperature is usually less than 60 ℃, motor temperature is within 80 ℃;

(2) When installing the drive, please try to use side mounted upright, so that the radiator surface to form a strong air convection; if necessary, close the drive installed at the fan, forced cooling, drive to ensure reliable workers

Working within the operating temperature range.

3.Drive ports and wiring description

3.1 port definition, lead color description

A, Motor and power supply input port

Port No.	symbol	description	Lead color
1	A+	A phase motor winding +	white
2	A-	A phase motor winding -	green
3	B+	B phase motor winding +	blue
4	B-	B phase motor winding -	black
5	AC	Power input	AC18~ 80V/DC24-110V
6	AC	Power input	

B. Encoder signal input port

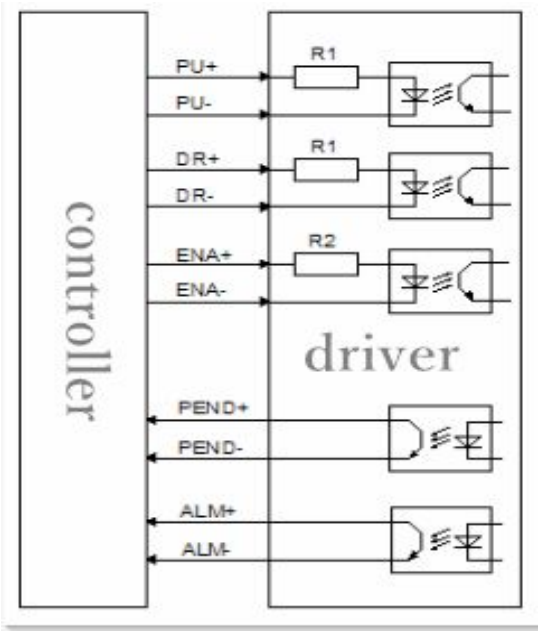
Port No.	Symbol	description	Lead color
1	EB+	Encoder B phase positive input	yellow
2	EB-	Encoder B phase negative input	green
3	EA+	Encoder A phase positive input	black
4	EA-	Encoder A phase negative input	blue
5	VCC	Encoder power 5V input	red
6	EGND	GND	white

C. Controller signal port

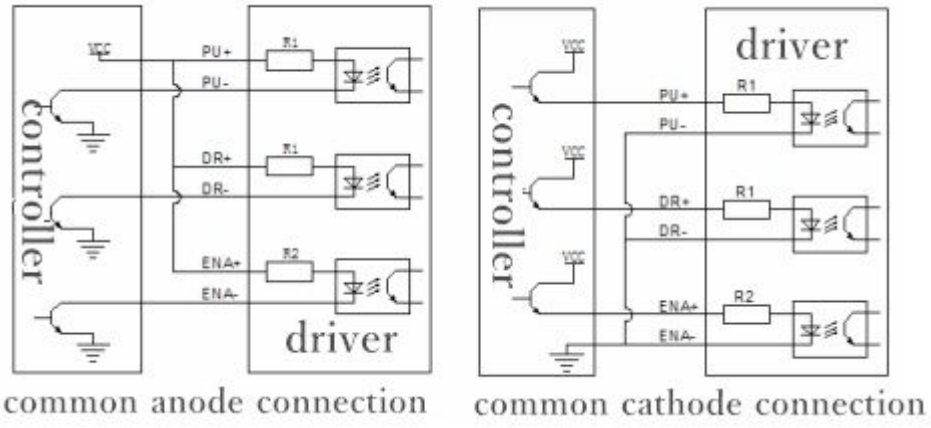
Port No.	symbol	description	description
1	PU+	Pulse positive input	5-24V
2	PU-	Pulse negative input	
3	DR+	Direction positive input	
4	DR-	Direction negative input	
5	ENA+	Motor power positive input	This signal is valid when the motor is in a free state, not locking
6	ENA-	Motor power negative input	
7	Pend+	Signal positive input	Place the motor drive output signal to the host computer
8	Pend-	Signal negative input	
9	ALM+	Alarm signal positive input	After the drive failsafe output signal to the host computer
10	ALM-	Alarm signal negative input	

3.2 control signal interface circuit

Control signal input and output interface circuit, as shown in Figure 2.



Differential mode control signal interface wiring diagram



Independent terminal mode control signal interface wiring diagram

4. Setting

Operation of the drive panel consists of four LED digital display and four

button , various status, parameter settings to display.

Key Functions Table

Key	Function
	Exit,cancel,back to last page,finish setting
	Page down, the value changes to adjust the current size of the data bits
	On the flip, the value changes for data bit shift operation
	Enter parameter modification mode, parameter modification confirm, press 3 seconds

When the drive is displayed on power-per-click the current version number of drives used for 3 seconds to display the current drive status (idle running speed 0, there is a failure to display the current fault code), drive into the normal operating mode, real-time display the current number of revolutions of the motor (r / min), the highest level when the motor reverse rotation number flashes. Drive failure alarm, flashing display the corresponding error code.

4.1 Parameter Function Description

Driver provides two sets of parameters for user operation, a few routine parameter values (such as breakdown, locking current, motor type, etc.) P0 set of parameters for setting drive, P1 set of parameters used to set the drive's performance parameter index value,as follows photo:

4.1.1 data sheet

No.	description	value	Defaults	Explanation
P000	P1 Parameter Value Password	1	0	To modify the system's performance parameters
P001	Segment select	2-256	10	16 file segments
P002	Motor direction selection	0,1	0	Motor Reversing setting
P003	Motor type selection	57,86	57	(57/60), 86 motor flange
P004	Position tolerance limit	1-9999	4000	

P005	Locking current percentage	0-100%	100	
P006	Electronic gear numerator division		1	The value can not be set to 0
P007	Electronic gear denominator division		1	The value can not be set to 0
P100	Running current percentage	10-120%	100	*
P101	Current loop KP	1-200	25	Factory setting,prohibit amend
P102	Current loop KI	1-200	45	Factory setting,prohibit amend
P103	Damping	1-2000	900	Factory setting,prohibit amend
P104	Speed loop KP	1-200	15	*
P105	Speed loop KI	1-200	150	*
P106	KP position loop	1-200	60	*
P107	Speed feedforward kp	1-200	15	*
P108	Internal drive enable/power	0,1	1	*

note:

The factory default drive current loop parameters, velocity loop parameters, position loop parameters best matching the motor parameters, customers generally do not need to be changed. Client applications such as special environment can be modified to change the banding * parameter, parameter under the guidance of dedicated personnel to achieve the best use effect. Modify some parameters described in the following:

P104	Speed loop KP	The larger the value, the higher the gain, the greater stiffness
P105	Speed loop KI	The smaller the set value, the faster integration, system deviation, the stronger the resistance, the greater the stiffness is too small prone to overshoot.
P106	KP position loop	The smaller the value, the higher the gain, the greater the stiffness, the faster position tracking, but the value is too small may cause oscillation or overshoot
P107	Speed feedforward kp	The larger the value, the faster the track corresponding to the outside, the greater rigidity, too prone to overshoot

4.1.2 Drive drive internal breakdown Table (P001 internal value inside)

Subdivision	SEt	2	4	5	8	10	16	20	25
Subdivision	32	40	50	64	100	128	200	256	

Note: Note:

1, please use the host computer to calculate the pulse equivalent in the selected table 4.1.2 subdivision × 200, to give the unit

Pulses / revolution value segment.

2, the closed-loop system can not simply drive to replace the motor line to change the direction

of the motor, if the motor
Please change the direction of running through parameter P002 the value in a given direction is inconsistent for commutation.
3, when the value of P001 in selected segments SEt, electronic gear drive segment variable definitions.
Electronic gear can be defined by input to the drive unit pulse command causes the drive means to move any
Distance, pulse command generated by the host controller does not need to consider the transmission gear ratio reduction
Than the number of lines or the motor encoder. It can easily match with a variety of pulse source, in order to achieve the user
Ideal control resolution (angle / pulse).

The formula is:
P × G = N × C × 4
P: Pulse number of input commands
G: electronic gear ratio:
G =Divide the denominator/Dividing numerator
N: the number of turns the motor
C: The photoelectric encoder count / rev, the system C = 1000
For example: When the host controller output command pulse is 6000, the motor one revolution

$$G=\frac{N*C*4}{P}=\frac{1*1000*4}{6000}=\frac{2}{3}$$

The parameter P006 is set to 2, P007 is set to 3, the above results about mathematical points calculated to try
Take the minimum divisor. The electronic gear ratio is recommended for:

$$\frac{1}{20}\leq G\leq 20$$

4.2 Parameter Settings
Preferences 4.2.1 User Parameters value P0 group group settings
Standby mode, press "" button for 3 seconds to enter the P parameter setting mode, display the first parameter P001
(Segmentation selection), press "", "P parameter type" key to select the page you want to change. For example, if
We need to change the segment value in the display P001 state, press the "" key to enter the digital tube was
Shows the currently used value segment, press "" button for 3 seconds to enter modification status, when the current segment value is flashing,
By "", "" keys to flip selected segments desired value, press "" button for 3 seconds to confirm, the value stops flashing
Shuo, subdivision changes are complete, press the "" key to return.
P001 subdivision parameters, P002 and P003 select motor direction Motor type selection of these three categories

Internal drive parameters have been doing the appropriate values simply by "", "" key to select the next page
The desired value. Wherein the P004 and P005 parameters content of the user can be set to any desired device
Intended value, into the corresponding setting interface through digit press "" button to select the data you want to change (a
Bits, ten, one hundred and one thousand), and then by pressing the "" to adjust the size of the data bits (0-9 changes). Note:
This mode, press "", "" show only turn to show P000 to P005, modify parameters, parameter changes are complete to save on re
Electrical parameter values modified before starting work with!

4.2.2 System System parameter value P1 group setting group setting

Standby mode, press "" button for 3 seconds to enter the P parameter setting mode, display the first parameter P001,
Then press "" to display P000, press "" to enter, display P000 value 0, press "" button for 3 seconds.
Go to Edit status (blinking digits flashing), press "" key to change the value to 1 (the "" key is used to shift operations), press "" button for 3 seconds, P1 set of parameter values successfully changed the password, the user interface is displayed directly transferred back to the P001 interface, then modify the parameters P1 set simply press "", "" key to enter the page you want to edit a P1
Parameter interface, then modify parameter modification after completion press "" button for 3 seconds to save. NOTE: Heavy on new
The value of P000 after power re Restore Defaults! value!
4.3 drive drive Code Alarm Code
Drive failure alarm, the display will flash a corresponding error code, if there are multiple alarms hair. Students will be displayed alternately.

Arm code	Arm name	Arm details
Er 01	Overcurrent	Motor current is too large
Er 02	Over speed	Motor speed exceeds the maximum limit value (maximum 3000 rpm / min)
Er 03	Position tolerance	Value of position deviation counter exceeds a set value
Er 04	Drive overheat	Drive temperature exceeds the set value (up to 80 ℃)
Er 05	DC overvoltage	Main circuit input voltage exceeds a set value
Er 06	EPROM error	EPROM read and write errors

5. Product Warranty
One Year warranty
The Company is also available from the date of shipment one-year warranty, the warranty period, the company provides users ,free maintenance service.