一、PRODUCT INTRODUCTION	1
1. Overview	1
2. PERFORMANCE PARAMETERS	2
3. APPLICATIONS	3
二、ELECTRICAL, MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS	
1. ELECTRICAL SPECIFICATIONS	2
2. OPERATING ENVIRONMENT AND	
SPECIFICATIONS	Our Our Our
3. MECHANICAL SPECIFICATIONS. (UNIT:MM)	3
三、INTRODUCTION TO DRIVER INTERFACE AND WIRING	3
1. Interface definition	3
2. CIRCUIT DIAGRAM OF CONTROL SIGNAL INTERFACE	4
3. ONTROL SIGNAL TIMING DIAGRAM	5
四、INTRODUCTION TO DRIVE STATUS INDICATORS	5
1. FAULT DESCRIPTION	5
2. MONITORING PARAMETER DESCRIPTION	5
3. DESCRIPTION OF COMMONLY USED FUNCTION CODES	5
五、DRIVER BUTTON PARAMETER SETTING	6
六、POWER SUPPLY PRECAUTIONS	6
七、OPEN LOOP, CLOSED LOOP, BRAKE CONTROL SETTINGS	
八、BRAKE CONTROL SETTINGS	
九、MICROCONTROLLER-MULTI-SEGMENT SETTINGS	7
十、ORIGIN FUNCTION SEARCH	10
十一、SPEED MODE	11

ام شور	DDODLICT WADDANT		47	
	PRODUCT WARRANT	Y TERMS	.12	_

# **OK2D57ECS**

New generation digital display closed loop stepper driver

# 1.Product introduction

# 1. Overview

OK2D57ECS is a new closed loop stepper driver developed by our company based on more than ten years of stepper and servo R&D experience. It can used to drive NEMA 23, NEMA 24 closed loop stepper motor. It adapts the latest ARM chip and applied vector closed-loop control algorithm to completely overcome the loss of open-loop stepper motors. At the same time, it can significantly improve the high-speed performance and torque output of the motor, and reduce the heating and low-speed resonance problems of the motor. In addition, when the motor is continuously overloaded, the driver will output an alarm signal, which has the same reliability as the AC servo system. The traditional stepper drive solution is easy to upgrade, and the cost is not much higher than that of the open-loop stepper motor, which is only equivalent to 30-50% of the traditional AC servo system.

# 2. Performance parameters

- ◆ Built-in microcontroller function can replace PLC in most occasions, significantly reducing user costs.;
- ◆ Internally supports jog mode, open-loop/closed-loop option functions.
- ◆ Built-in smoothing filter function, external input can operate normally

without acceleration or deceleration;

- ◆ Adopts a new 32-bit motor control dedicated ARM smart chip;
- 4-digit LED digital tube display with 4 button operations, intuitive and easy to operate.;
- Adopt advanced vector current, speed and position closed-loop control algorithms;
- ◆ The current can be set arbitrarily (within the range of 0---6A);
- ◆ The standard motor comes with a 1000-line high-precision photoelectric or magnetic encoder.;
- Optocoupler isolation differential signal input, pulse response frequency up to 200KHZ.;
- ◆ Arbitrary microstep setting (200-60000) to meet all occasions; It has protection functions such as overcurrent, overvoltage, overspeed, overheating, and excessive tracking error;

# 3. Application:

Suitable for various small and medium-sized automation equipment and instruments, such as: engraving machines, wire stripping machines, marking machines, cutting machines, laser phototypesetting, plotters, CNC machine tools, automatic assembly equipment, etc. Particularly adapt to the applications desired with low noise, low heating, high speed and high precision.

# 二、Electrical, mechanical and environmental specifications

#### 1. Electrical Specification

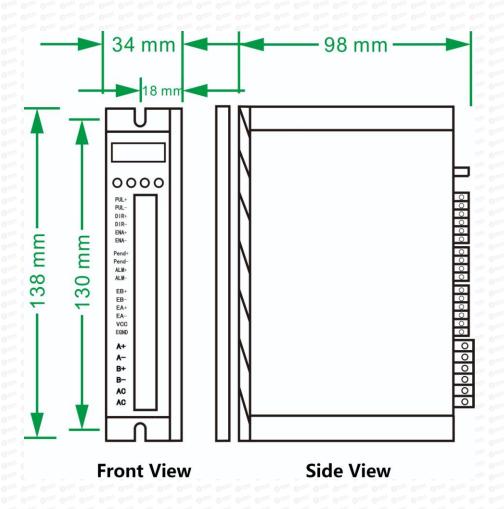
Deremeters	ores Ores Ores Ores	OK2D	57ECS	THE CASE OFFEE OF
Parameters	Min	Typical	Max	Unit

Continuous output current	1.0	ary Oray Oray Oray ary Oray Oray Oray	6.0	ORDER OF A
One; One; One; One; One; One; One; One;	Omr Omr Omr O Omr Omr Omr O Omr Omr Omr O	227 O.127 O.127 O.127 227 O.127 O.127 O.127 227 O.127 O.127 O.127	Omy Omy Omy Om Omy Omy Omy Om Omy Omy Omy Om	
Input Voltage	24	er Our Our Our	48	VDC
Logic Signal Current	0 121 0 121 0 121 0 0 121 0 121 0	10	20	mA
Power	Ones Ones Ones O	ner Orner Orner Orner	150	W
Pulse input frequency	Orași O	and Own Own Own	200	kHz
Isolation resistance	500	ner Orner Orner Orner	Our Our Our Our	МΩ
Digital output port logic current	Omy Omy Omy O Omy Omy Omy O Omy Omy Omy O	ner Oner Oner Oner ner Oner Oner Oner ner Oner Oner Oner	100	mA
Digital output port voltage resistance	Ome Ome Ome O	ner Oner Oner Oner ner Oner Oner Oner ner Orer Oner Oner	24	0 mm 0 mm 0 m

# 2. Operating Environment and other Specifications

Cooling	Natural Cooling or Forced cooling		
Direct Orient Orient Orient O	Environment	Avoid dust, oil fog and corrosive gases	
Operating environment	Ambient Temperature	0℃-50℃	
	Humidity	40-90%RH	
) The Out Out Out O	Vibration	10~55Hz/0.15mm	
Storage	77 Outs Outs Outs Outs Outs Outs Outs	-20℃—+65℃	
Temperature	ar Oner Oner Oner Oner Oner Oner Oner		
Weight	About 300g		

3. Mechanical Specifications: (unit: mm [linch=25.4mm])



#### 4. Methods of quick heat dissipation

- (1) The reliable operating temperature of the driver is usually within 60°C, and the operating temperature of the motor is within 80°C;
- (2) When installing the driver, please install it upright on its side to form strong air convection on the surface of the radiator. If necessary, install a fan close to the driver to force heat dissipation to ensure that the driver operates within a reliable temperature.

# 3.Introduction to driver interface and wiring

# 1. Interface definition

Motor and power input ports

PIN	Mark	Neme	Lead	color
01 0111	A+ 0== 0	Motor Phase A+	White	Red
2	A- Ozza Oz	Motor Phase A-	Green	Green
3	B+	Motor Phase B+	Blue	Yellow
4	B- 0	Motor Phase B-	Black	Blue
5	+VDC	Input DC voltage positive pole	24-48VDC  Pay attention to the direction	
6	GND	Input DC voltage negative pole		

Note: The closed-loop motor wiring must strictly follow the color definitions and cannot be wired at will.

**Encoder: Encoder signal input port** 

Pin	Name	Description	Note
011 011	EB+	Encoder channel B+ input	YELLOW
02	EB-	Encoder channel B- input	Green
3	EA+	Encoder channel A+ input	Black

4	EA-	Encoder channel A- input	Blue
5	VCC	Encoder power supply +5V input	RED OF STREET
6	EGND	Encoder power ground	White

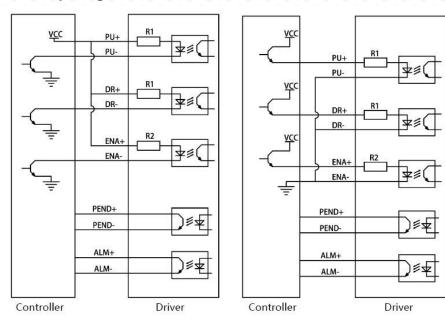
# Control Signal: Control signal port

PIN	Name	Description	Note
Om Om O	PUL+	Pulse positive input	The signal source is
0 1125	PUL-	Pulse negative input	universal from +5V to 24V, no need to connect resistors in series.
3	DIR+	Direction positive input	The signal source is
0 1224 0 1224 0 1 0 1224 0 1224 0 1	DIR-	Direction negative input	universal from +5V to 24V, no need to connect resistors in series.
5	ENA+	Motor enable positive input	When this signal is
0 1214 0 1214 0 10 1214 0 1214	ENA-	Motor enable negative input	valid, the motor is in a free state and does not lock the machine.
9	ALM+(BRK+)	Alarm/brake signal positive output	P-11 Setup to select alarm/brake
10	ALM—(BRK-)	Alarm/brake signal negative output	1011 O1101 O

# 2. Control signal interface circuit diagram

Control signal input and output interface circuit diagram, as shown in the figure.

# (1) Input signal connection



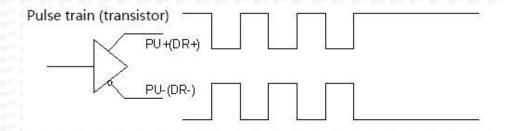
Common anode connection method

Common cathode connection

# Special note: This driver supports 5V-24V and

does not require a series resistor!

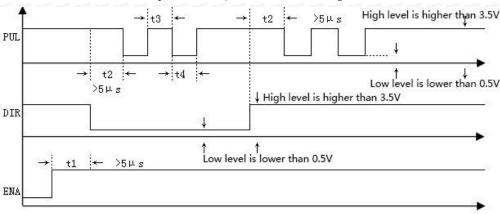
(2) When using differential input, please wire as shown below.



Pic 3(a) Differential mode control signal interface wiring diagram

#### 3. Control signal timing diagram

In order to avoid some malfunctions and deviations, PUL, DIR and ENA should meet certain requirements, as shown in Figure 4 below:



Picture 4 Timing diagram

#### Note:

- (1) t1: ENA must be ahead of DIR by at least 5ms. Usually, ENA+ and ENA- are NC (not connected).
- (2) t2: DIR must be ahead of PUL effective edge by 5ms to ensure correct direction;

- (3) t3: Pulse width not less than 2.5ms.
- (4) t4: Low level width not less than 2.5ms.

# 4. Introduction to drive status indicators

#### 1. Fault description

Number	Error code	Fault description	Troubleshooting
1221 O 1221 O 1221 O 12 1221 O 1221 O 1221 O 12 1221 O 1221 O 1221 O 12	Er01	hardware malfunction	Need to return to factory for testing
	Er02	Motor overcurrent	Check whether the motor is short-circuited or reduce the current
224 0224 0224 03 224 0224 0224 03 224 0224 0224 03	Er03	Drive overvoltage	Check whether the input voltage is too high
224 0224 0224 04 224 0224 0224 04 224 0224 0	Er04	Driver undervoltage	Check whether the input voltage is too low
5	Er05	Location out of tolerance	The motor is overspeeding, increase the current and voltage appropriately.

# 2. Parameter monitoring instructions

PIN	Function code	Function Description	Function introduction
1 0 mm 0 mm 0 mm 0 mm	L-00	Speed	Monitor the current speed,
0 11 2 0 11 0 1	L-01	Voltage	voltage, and current to check
··· 0 ·· 3 0 ··· 0	L-02	A phase current	whether the drive is working
111 0114011 01 111 011 011 011	L-03	B phase current	normally and resolve any abnormalities in time!

0121 05 0121 01	L-04	Following error	221 O.221 O.
0 mm	L-05	Number of received pulses	Check the number of received pulses in real time to determine
0111 0111 0111 01 0111 0111 0111 01 0111 0111 0111 01	L-06	Motor feedback pulse number	whether the motor has lost step.
8	L-08	Software version number	The bigger the number, the newer the version

Note: L-01 What is displayed is the DC voltage inside the driver;

#### 3. Description of commonly used function codes

Number	Parameter settings	Function code	Function Description
	Number of subdivided pulses	P-00	200-60000 can be set at will, factory default setting is 1600
022 022 022 022 022 022 022 022 022	Closed loop holding current	P-01	1.0-6.0, factory default 2.0A
121. 021. 011.	Jog operation	P-06	Enter into JOG, Press ▲ ▼ Jog
	Motor direction	P-12	0 reverse, 1 forward
1221 0 222 0 2221 1221 0 2221 0 2221	Reset	S-20	Set to 1 to restore factory settings

# **5.Driver button parameter settings:**

The driver's operation panel consists of 4 LED digital displays and 4 buttons M,  $\blacktriangle$ ,  $\blacktriangledown$ , and  $\blacktriangleleft$ , which are used to display various system status, parameter settings, etc.

#### **Button function description table**

Button	Function Description		
M 0122 M 0124 0124 0124 0124 0124 0124 0124 0124	Function selection: P parameter, S parameter, L parameter switching		
in Our Our Our	When the value changes: +1, long press to increase quickly. In jog mode: press and hold the motor to rotate forward		
	When the value changes: -1, press and hold to quickly reduce. In jog mode: press and hold the motor to reverse		
227 Octor Octor Octor  227 Octor Octor Octor  227 Octor Octor Octor  227 Octor Octor Octor  227 Octor Octor  227 Octor Octor  227 Oc	<ol> <li>Press and hold this button for 0.5 seconds to enter parameter setting</li> <li>When setting parameters, press once and shift to the left once</li> </ol>		
	3. After the setting is completed, press and hold this button for 0.5 seconds to confirm that the setting is successful and return to the current function code.		
	4. In case of a fault, press and hold this button for 2 seconds to reset the fault.		

After the driver is powered on, the enable display is run, indicating that the motor is powered on and the driver is working normally.

When the motor enable is turned off, stop is displayed.

# Complete parameter menu:

The driver provides 2 sets of parameters for user operation. The P parameter is used to set several general parameters of the driver. Parameter value (such as microstep resolution, lock current, motor type, etc.), S parameter is used to set the performance parameter index value of the driver.

P parameter function table

Parameter	Name	Parameter range	Factory default	Description
P-00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Microstep resolution option	200-60000	1600	Any microstep resolution settings
P-01	Closed loop holding current	1.0~6.0	2.0	Motor load setting current
P-02	low speed current	1.0~6.0	4.0	Generally do not change
P-03	Closed loop peak current	6.0~9.0	8.0	Generally do not change
P-04	Open loop mode operating current	1.0~8.0	4.0	Generally do not change
P-05	Open loop mode automatic semi-flow	10~90%	50%	Generally do not change
P-06 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Jog operation	JOG 0000 0000 0000 0000 0000 0000 0000 0	0 mm;	Press ▲, ▼ to move forward and reverse
P-07	Jog speed	0~100	100	Jog speed
P-08	pulse mode	0~1	00	0-pulse+ direction, 1-AB Orthogonal
P-09 0124 0124 0124 0124 0124 0124 0124 0124	operating mode	0~1 0~1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1227	0: pulse mode, 1: Internal position mode 2: speed mode
P-10	ALM alarm polarity	0~1	0 m2	0: Normally closed,

	Output settings	One; One; One; One; O	227 O.227 O.	1: Normally open
P-11	ALM function selection	0~1	22. Ozn. Ozn. Ozn. Ozn. Ozn. Ozn. Ozn. Ozn	0: Alarm Output, 1: Brake control 2: Z pulse
P-12	Motor running direction	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	221 0 22 0 22 0 22 0 22 0 22 0 22 0 22	0 reverse, 1 forward
P-13	ENA enable control	0~1	027 0227 0227 0227 0227 0227 0227 0227	0: Low level enable 1: High level enable
P-14	Pulse input pin filter	0~5		The larger the number, the stronger the filtering0> 4MHZ, 5> 150KHZ
P-16	Anti-disturbance time	0~1000ms	1000	Generally do not change
P-17	Tracking error alarm threshold	0~32000	4000	Generally do not change
P-18	Open and closed loop mode selection	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	221 Out Out O	0 open loop, 1 closed loop
P-25	Smoothing filter enabled	0~1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	221 Onny Onny O 221 Onny Onny O 221 Onny Onny O 221 Onn Onny O 221 Onn O	0 is not enabled, 1 is enabled (important)
P-26	Position loop smoothing filter	0~10000	150	Adjust this parameter if the

0.007 0.007 0.007 ( 0.007 0.007 0.007 ( 0.007 0.007 0.007 ( 0.007 0.007 0.007 ( 0.007 0.007 0.007 (	Ours Ours Ours Ours Ours Ours Ours Ours	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Oney Oney One Oney Oney One Oney Oney One Oney Oney One Oney Oney One	input pulse has no acceleration or deceleration.
P-98	Undervoltage, overvoltage alarm	0~1	0 0	0 alarm, 1 shield
P-99 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Position loop acceleration and deceleration time	<mark>0~1000</mark>	Omy Omy Om Omy Omy Om Omy Omy Om Omy Omy Omy Omy Omy Omy Omy Omy	When starting and stopping quickly, adjust this parameter
Om Om Om O	Onn	01111 01111 01111 01111 0111 01111 01111 01111 01111 01111 01111 01111	Orași Orași Orași Orași Orași Orași	

Special note: The bold yellow shading in the P parameter table is the commonly used function settings. The rest generally do not need to be changed. Just restore the factory settings to S-20 and set it to 1!

After setting the function, power off and restart is required!

# S parameter function table

Parameter	Name	Parameter range	Factory default	Description
S-19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Encryption	2020 - 024 024 024 024 024 024 024 024 024 024	0.007 0.007	Only when 2020 is set can other parameters of S be modified (the data of 2020 is still displayed as 0)
S-01 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Encoder resolution settings	4000 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0	4000	1.8°4000; 0.9°2000
S-03	Current loop proportional gain P	1~32000	1500	The larger the setting value, the higher the gain and the greater the stiffness.

Oney Oney Oney Oney Oney Oney Oney Oney Oney Oney Oney Oney	2227 O.227 O	7 Oun; Oun; Oun; Oun; () 7 Oun; Oun; Oun; () 8 Oun; Oun; Oun; () 9 Oun; Oun; Oun; ()	lerry Orney Orney lerry Orney Orney lerry Orney Orney	will easily cause overshoot
S-05	Position loop proportional gainKP	1~32000	2500	The larger the setting value, the higher the gain, the greater the stiffness, and the faster the position tracking. But a value that is too large may cause motor oscillation or overshoot.
S-06	Position loop integral gain KI	1~32000	500	Carr   Octor   Octor
S-07	Position ring KD	1~32000	100	One; One; One; One; One; One; One; One;
S-08	Position loop KVFF	1~32000	30	The larger the setting value, the faster the tracking speed and the greater the rigidity. It is strongly recommended to use the factory parameters and do not modify them at will.
S-20	Reset	0~1	1222 0 224 0 224 (	Restore factory settings after setting to 1

1~32000

200

S-04

Current loop

integral gain I

The smaller the setting

value, the faster the

integration speed, the stronger the system's resistance to deviations, and the greater the rigidity. If it is too small, it Special note: The driver's factory default current loop parameters, position loop parameters, etc. are the optimum parameters for the matching motor, and customers generally do not need to modify them. If the customer's application environment is special, the parameters with \* can be modified under the guidance of professionals to achieve the best use results.

# After setting the function, power off and restart is required!

Case 1: The user starts and stops quickly, brakes suddenly, and the motor shakes unstable when stopped. Set S-05 to 2000 and S-07 to 400 to achieve satisfactory results!

#### 6. Power supply precautions

The DC input voltage is DC24V~50V, and the power supply power is not higher than 150W. The higher the voltage input and the larger the current setting, the greater the motor torque and the better the high-speed performance. However, the motor generates more heat. In principle, as long as it meets the use, the smaller the current setting. The better.

Please note:

- 1) When wiring, pay attention to strictly follow the colors of the motors;
- 2) The driver must not be connected to 220V. The driver is DC, so pay attention to the direction;
- 3) The encoder power supply is provided by the driver and does not need to be powered separately;
- 4) The control signal wire and the motor phase wire cannot be entangled together, and it is better to add a shielding layer to the signal wire;

# 7. Open loop and closed loop settings

This driver is a closed-loop driver can drive Nema 34 (86 x 86) stepper motor which must be equipped with a 1000-line encoder. The motor's operating performance can be greatly improved by more than 30% compared to open-loop.

When an unexpected situation occurs, such as encoder failure or poor contact of the encoder line, you can set P-18 to 0 (need to power off and restart) and turn on the open-loop mode to solve customer problems to the greatest extent.

# 8. Brake control settings

When the motor is braked, the brake signal is controlled by the ALM alarm output pin.

Set P-11 to 1, P-85 power-on brake release delay time, P-86 alarm power-off delay time!

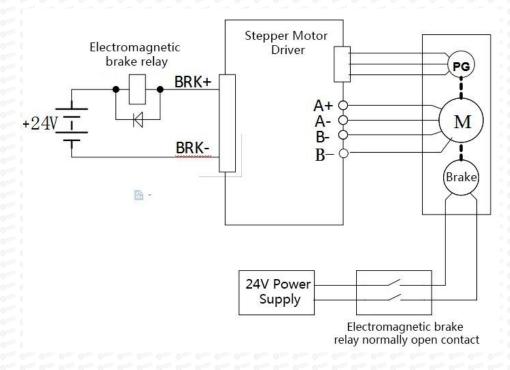
Press and hold left arrow to save

Wiring method for motor with brake:

Since the brake coil will generate a relatively large surge current when it operates, if the brake coil is directly connected to the output port of the driver, the optocoupler at the driver output port will be damaged, so a relay must be used as a relay control. Since the brake coil and relay are both inductive loads, it is recommended to add a freewheeling diode. Do not connect the diode in the opposite direction when wiring.

It is recommended that customers choose solid-state relays, then you don't need to use freewheeling diodes. The advantages of solid-state relays are: fast response, no need for freewheeling diodes, and no sound when powered on.

The wiring of the brake and relay is as shown below:



# 9. Microcontroller-multi-segment setting instructions

Multi-segment position means that the driver stores 8-segment position instructions internally, and the displacement, maximum operating speed, and acceleration and deceleration time of each segment can be set separately. The waiting time and connection method between each section can also be selected according to actual needs.

The time interval between each group of positions is determined by P-66~P-73, and

the number of cycles is determined by P-49. If the time interval is 0, it will switch to the next group of operations when the speed is the highest. If P-49=0 at this time, the cycle will continue. If you need to trigger the operation through the input terminal each time after the multi-segment setting is completed, instead of running according to the set time interval, please set P-19 to 1.

User parar	meters	Location command source
P-09	Out 1 to Out	Multiple location settings

User parameters Location command source		Location command source
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	O 1221 O	Segment continuous running mode, trigger once and execute everything
P-19	0 122 0 122	Segment single trigger mode, trigger once and execute a segment sequentially

Multi-position position external input trigger mode selection.

User		Function
paramete	ers	
21 O.121 O.121 O.12 21 O.121 O.121 O.12	0	high level signal
** 0 m; 0 m; 0 m	1	Rising edge signal factory default 1
P-23	2	Falling edge signal
	3	low level signal

The multi-segment position mode can be set to relative mode and absolute mode according to P-28.

User parameters		significance		
P-28	0	Relative mode: Each time it is triggered, the forward and reverse speeds are increased or decreased by the original command pulses at the current position according to the original command.		
	122 0 122 1 122 1 122 1 123 1 122 1 123 1 123 1 123 1 123 1	Absolute mode: Each time it is triggered, it will rotate forward or reverse to the absolute position of the given pulse according to the absolute value of the current given speed.		

Absolute type and relative type are widely used. Users can easily complete periodic operation by using the table above.

erry Orrey Orrey O	Multi-segment position mode internal trigger operation					
inny Orney Orney O.	Predetermined area	Set unit	Factory default	Effective method		
P-29	0: Not triggered 1: trigger	G	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Effective immediately		
	P-29 Set to 1 to trigger the multi-segment position mode. This parameter will automatically return to 0 after triggering.					

Internal position PUL Location command source		Location command source
function		
D 20	0 mm 0 m	PUL triggers emergency pause function and continues operation after restart
P-39	0 1011 0 1011 0 1011 1 0 1011	PUL triggers the emergency stop function and resets to run from the first stage after restarting.

P-48	The number of segments to run in multi-segment						
	Predetermined area	Set unit	Factory default	Effective method			
	1~8° out out out out out out	G	022 022 022 022	Effective immediately			

	Number of internal p	osition loops	of multiple segmer	nts
P-49	Predetermined area	Set unit	Factory default	Effective method
1227 O.1237 O.123 1227 O.1247 O.123 1227 O.1247 O.124	0~30000	G 0 000 000 000 000 000 000 000 000 000	01 0 01 0 01 01 01 01 01 01 01 01 01 01	Effective immediately

# External port function description

	Input a stop signal, and it needs to be terminated or paused every	
PUL	time it runs (select P-39).	12
	Please connect PUL+ to 24V and PUL- to 0V.	12
DIR	Input the start signal, and each trigger starts continuous operation or	122
DIK	single operation.	2
	Please connect DIR+ to 24V and DIR- to 0V.	9

	DIR pin filter time						
P-88	Predetermined area	Set unit	Factory default	Effective method			
	0~3000	ms	Outs Outs Outs Outs	Effective immediately			

The 8-segment position inside the multi-segment position mode can have different acceleration and deceleration settings according to actual needs. The relevant function codes are as follows:

	Position 1 acceleration	and decelerat	tion time					
	Predetermined area	Set unit	Factory	Effective				
2 Omy Omy ( 3 Omy Omy ( 3 Omy Omy ( 4 Omy Omy Omy ( 4 Omy Omy ( 4 Omy Omy Omy ( 4 Omy Omy Omy ( 4 Omy Omy Omy Omy ( 4 Omy Omy Omy Omy ( 4 Omy	One one one one one one one one	or Origi Origi Origi Origi	default	method				
	0~32000	ms	100	Effective				
H OTH OTH	One Oney Oney Oney Oney Oney One	Oing Oing Oing Oing Oing	is Ones Ones Ones Ones	immediately				
g Office Office	Position 2 acceleration	and decelerat	tion time	Diny Oury Oury Oury Oury O				
	Predetermined area	Set unit	Factory	Effective				
P-31	One Ones Ones Ones Ones Ones Ones Ones	or Orne Orne Orne Orne	default	method				
	0~32000	ms	100	Effective				
i Origi Origi	Only Oray Oray Oray Oray Oray Oray Oray	or Orner Orner Orner Orner	in Our Our Our Our	immediately				
P-32	Position 3 acceleration and subtraction time							
	Predetermined area	Set unit	Factory	Effective				
	One of the original of the ori	er Orner Orner Orner Orner Orner Orner Orner Orner	default	method				
	0~32000	ms	100	Effective				
	One One One One One One One One One	or Origi Origi Origi Origi	er Outer Outer Other Other	immediately				
	Position 4 acceleration	and subtraction	on time	Direct Origin Origin Origin Origin				
	Predetermined area	Set unit	Factory	Effective				
P-33	One Oraș Oraș Oraș Oraș Oraș Oraș Oraș Oraș	orne Orne Orne Orne	default	method				
	0~32000	ms	100	Effective				
	One One One One One One One One One	origi Origi Origi Origi Origi	77 O 227 O 227 O 227 O 227 (	immediately				
i Onii Onii	Position 5 acceleration	and decelerat	tion time	der der der der der der der der der der der				
P-31 P-32	Predetermined area	Set unit	Factory	Effective				
	One One One One One One One	Origi Origi Origi Origi	default	method				
	0~32000	ms	100	Effective				

	Direct Origin Origin Origin Origin Origin Origin Origin Origin Origin Origin Origin Origin Origin Origin	One Original Original	One Orner Orner Orner Or	immediately				
Oraș Oraș	Position 6 acceleration and subtraction time							
P-35 P-36 P-37	Predetermined area	Set unit	Factory default	Effective method				
	0~32000	ms	100	Effective immediately				
P-36	Position 7 acceleration and subtraction time							
	Predetermined area	Set unit	Factory default	Effective method				
	0~32000	0 12 0 12 0 12 0 12 0 12 0 12 0 12 0 12	100	Effective immediately				
Origi Origi C	Position 8 acceleration	and subtracti	on time	ner Orner Orner Orner Orner Orner				
P-36	Predetermined area	Set unit	Factory default	Effective method				
	0~32000	celeration and subtraction time ed area Set unit Factory default m  ms 100 Ei  celeration and subtraction time ed area Set unit Factory default m  ms 100 Ei  ms 100 Ei	Effective immediately					

The 8-segment position inside the multi-segment position mode can be set at different speeds according to actual needs. The relevant function codes are as follows:

	Position 1 running speed							
P-40	Predetermined area	Set unit	Factory default	Effective method				
	0~2000	r/min	100	Effective method				
0124 0124 0	Position 2 running speed							
P-41	Predetermined area	Set unit	Factory	Effective				

ing Oring Oring	One Origi Origi Origi Origi Origi Origi Origi	ning Oring Oring Oring	default	method			
	0~2000	r/min	100	Effective immediately			
ni Omi Omi	Position 3 running spec	ed and one one one	The Court Court Court Court	Diny Onny Onny Onny Onny Onny O			
	Predetermined area	Set unit	Factory	Effective			
P-42	One One One One One One One One One	dies Ories Ories Ories Ories	default	method			
	0~2000	r/min	100	Effective			
	One Office Office Office Office Office Office Office	ing Dines Ories Ories Ories ories Ories Ories Ories	THE OWN COURT OWN	immediately			
er Orer Orer	Position 4 running spec	ed) 1224 0 1224 0 1224 0 122	THE OTHER OTHER OTHER OTHER	Darry Oarry Oarry Oarry Oarry Oarry			
P-43 P-44 P-45	Predetermined area	Set unit	Factory	Effective			
	One Own Own Own Own Own Own	Diney Orney Orney Orney Orney	default	method			
	0~2000	r/min	100	Effective			
err Orerr Orerr	Only Only Only Only Only Only Only Only	dies Ories Ories Ories Ories de Ories Ories Ories Ories	::	Effective method Effective immediately  Effective immediately  Effective immediately  Effective immediately  Effective immediately  Effective immediately  Effective method Effective immediately  Effective method Effective immediately			
P-44	Position 5 running speed						
	Predetermined area	Set unit	Factory	Effective			
		ner Orner Orner Orner Orner	default	method			
	0~2000	r/min	100	Effective			
er Oraș Oraș	One One One One One One One One	Ding Orne Orne Orne	n One One One One	Effective method Effective immediatel  Effective immediatel  Effective immediatel  Effective immediatel  Effective immediatel  Effective immediatel  Effective method Effective immediatel			
	Position 6 running spec	ed	r Oraș Oraș Oraș Oraș Oraș (	Oraș Oraș Oraș Oraș Oraș Oraș Oraș Oraș Oraș Oraș Oraș Oraș			
	Predetermined area	Set unit	Factory	Effective			
P-43 P-44 P-45	0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 =	in Ding Oring Oring Oring	default	method			
	0~2000	r/min	Set unit Factory default method r/min 100 Effective immedia  Set unit Factory default method r/min 100 Effective immedia  Set unit Factory default method r/min 100 Effective immedia  Set unit Factory default method r/min 100 Effective immedia  Set unit Factory default method r/min 100 Effective immedia  Set unit Factory default method r/min 100 Effective immedia  Set unit Factory default method r/min 100 Effective immedia	Effective			
er Orar Orar	One One One One One One One	Dine Our Our Our	a Our Our Our Our	immediately			
	Position 7 running spec	ed	The Own Own Own	Diny Orny Orny Orny Orny			
	Predetermined area	Set unit	Factory	Effective			
P-46	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	or Orne Orne Orne Orne	default	method			
	0~3000	r/min	100	Effective			
er our our	0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 = 0 =	in Diny Own Own Own		immediately			
P-47	Position 8 running spec	ed • • • • •					

ar Omr Omr O	Predetermined area	Set unit	Factory	Effective
ar One One O	1224 O.124 O.124 O.124 O.124 O.124 O.124 O.124	Ones Ones Ones Ories	default	method
	0~3000	r/min	100	Effective
der Orier Orier O	ing One; One; One; One; One; One; One;	Our Orner Orner Orner	Orne Orner Orner Orner Orner	immediately

The 8-segment position in the multi-segment position mode can be set to continuous operation according to actual needs, that is, a multi-segment position cycle, in which the position, acceleration and deceleration time and interval time of each position can be set according to different needs. The relevant function codes are as follows:

oner Orner (	Position 000 given position	er Orrer Orrer Orrer er Orrer Orrer Orrer (	Oire;	der der der der der der der der der					
P-54	Predetermined area	Set unit	Factory default	Effective method					
	-2147483647~+2147483647	G	0 11	Effective method					
Omy Omy	Position 001 given position	origi Origi Origi Origi	Orre Orre Orre Orre O	Direct Original Origi					
P-52	Predetermined area	Set unit	Factory default	Effective method					
	-2147483647~+2147483647	G 0	Effective method						
Omy Omy	Position 010 given position								
P-54	Predetermined area	Set unit	Factory default	Effective method					
	-2147483647~+2147483647	G	0	Effective method					
Omi Omi	Position 011 given position								
P-56	Predetermined area	Set unit	Factory default	Effective method					

	-2147483647~+2147483647	21 Omy Omy Om	0	Effective	Original Ori		ing Orige Orige Orige Orige Orige (	default	method
er Ouer Ouer	0 10 0 10 11 0 11 0 11 0 11 0 11 0 11	G	The Cartina Cartina Cartina	method	Origi Origi Origi Origi Origi Origi Origi	-32000~+32000	ms out out	1000	Effective
	Position 100 given position	ED. OFF. OFF. OFF.	dang dang dang dang	Ome Ome Ome Ome Ome Ome	Direct Or of the Control of the Cont	ong ong ong ong ong ong ong ong ong o	and the same of th	ong ong ong ong o	method
	Predetermined area	Set unit	Factory	Effective	derry Oster Oren Oren Oren (	Interval time after the en	the same same same same	Only Only Only Only Only	Direct Chines Chines Chines Co
P-58	0 22 0	the Other Other Other	default	method	Origi Origi Origi Origi Origi	Predetermined area	Set unit	Factory	Effective
	-2147483647~+2147483647	G	0	Effective	P-68	One One One One One One One One	The Other Other Other Other	default	method
om Om	22 Onz. Onz. Onz. Onz. Onz. Onz. Onz. Onz.	in One Orne Orne	ding Office Office Office	immediately	Orner Orner Orner Orner (	-32000~+32000	ms	1000	Effective
	Position 101 given position	ing One One One	orni Orni Orni Orni Orni	One One One One One One	Direct Origin Origin Origin (	0112		011	method
	Predetermined area	Set unit	Factory	Effective	Ories Ories Ories Ories (	Interval time after the en	d of segment 4		Direct Chief Chief Chief Co
P-60	0 n 0 m 0 m 0 m 0 m 0 m 0 m 0 m 0 m	in One One One	default	method	Origin Origin Origin Origin (	Predetermined area	Set unit	Factory	Effective
Outer Outer Outer (	-2147483647~+2147483647	G	O THE OTH OTH	Effective	P-69	One One One One One One One	The Original Original Original	default	method
	Our	The Course Course Course	The state of the s	method		-32000~+32000	ms	1000	Effective
	Position 110 given position			Otter Otter Otter Otter Otter Otter Otter	Ories Ories Ories Ories Ories Ories Ories Ories Ories	Orig Orig: O	nier Osia, Osiar Osiar Osiar (	01217	immediate
	Predetermined area	Set unit	Factory	Effective	Ones Ores Ores Ores	Interval time after the end of segment 5			
P-62		ter Orier Orier Orier	default	method	Origin Origin Origin Origin (	Predetermined area	Set unit	Factory	Effective
	-2147483647~+2147483647	3647	Ottal Ottal Ottal Ottal Ottal Ottal	Effective	P-70	Origi Origi Origi Origi Origi Origi Origi Origi O	The Original Original Original	default	method
	O. 187 O.	G	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	method		-32000~+32000	ms of the	1000	Effective
ni Omi Omi	Position 111 given position	ing One One One	orne Orne Orne Orne	Our Our Our Our Our Our	Orreg Oreg Orreg Orreg (	Ores Ores Ores Ores Ores Ores Ores Ores	nier Orig Orier Orier Orier (	Oire Oire Oire Oire Oire Oire Oire Oire Oire	immediate
	Predetermined area	Set unit	Factory	Effective	Dang Orang Orang Orang O	Interval time after the end of segment 6			
P-64	O. 17	ter Orter Orter Orter	default	method	Original Original Original Original (	Predetermined area	Set unit	Factory	Effective
	-2147483647~+2147483647	the Other Other Other	one one one	Effective	P-71	One One One One One One One One		default	method
	Our Our Our Our Our Our Our Our Our	G	0	method	Ding Orng Orng Orng (	-32000~+32000	ms of the second	1000	Effective
ar Oraș Oraș	Interval time after the end of	segment 1	One One One One	Our Our Our Our Our Our	Origi Origi Origi Origi Origi Origi Origi Origi Origi (	Orize	ing Orna Orna Orna Orna Orna (	Original Ori	immediate
	Predetermined area	Set unit	Factory	Effective	Direct Origin Origin Origin (	Interval time after the end of segment 7			Ding One; One; One; O
P-66	0. 157 O.	ter Otter Otter Otter	default	method	Orne Orne Orne Orne (	Predetermined area	Set unit	Factory	Effective
	-32000~+32000	ms	1000	Effective	P-72	One One One One One One One One One		default	method
	Oney Oray Oray Oray Oray Oray Oray Oray Ora	THE OFFICE OFFI	Gray Origi Origi Origi	method	Direct Origin Origin Origin	-32000~+32000	ms	1000	Effective
ny Orny Orny	Interval time after the end of	segment 2	Office Office Office Office	Our Our Our Our Our Our	Direct China	Om	ing Orn, Orn, Orn, Orn,	Diety Orien Orien Orien O	immediate
P-67	Predetermined area	Set unit	Factory	Effective	P-73	The interval after the end	l of cogmont 9		

Origi Origi	ore Orey Orey Orey Orey Orey Orey Orey Or	er Om Orne Ome Ome	default	method	
	-32000~+32000	ms	1000	Effective	
Ones Ones O		er Oute Outer Outer Outer	Date Office Office Office Office	method	
Orași Orași C	Interval time after the en	d of segment 3	Origi Origi Origi Origi	Dang Orași Orași Orași Orași	
	Predetermined area	Set unit	Factory	Effective	
P-68	0 mg	iri Omi Omi Omi Omi Omi (	default	method	
	-32000~+32000	ms	1000	Effective	
Oraș Oraș C	722	er Our Our Our Our	Origi Origi Origi Origi O	method	
	Interval time after the en	d of segment 4	Ones Ones Ones Ones O	Direct Origin Origin Origin Origin	
	Predetermined area	Set unit	Factory	Effective	
P-69	Diny Orny Orny Orny Orny Orny Orny Orny Or	Orne Orne Orne Orne	default	method	
	-32000~+32000	ms	1000	Effective	
Oraș Oraș C	one O	ing Outer Orient Orient Orient (	Origi Origi Origi Origi Origi Origi Origi Origi Origi	immediately	
	Interval time after the end of segment 5				
	Predetermined area	Set unit	Factory	Effective	
P-70	one Origin Origin Origin Origin Origin Origin Origin Origin	the Office Office Office Office	default	method	
	-32000~+32000	ms	1000	Effective	
Oraș Oraș C	one; One; One; One; One; One; One; One	om Om Om Om	Origi Origi Origi Origi	immediately	
	Interval time after the end of segment 6				
	Predetermined area	Set unit	Factory	Effective	
P-71	one one one one one one one one one	One One One One One	default	method	
	-32000~+32000	ms	1000	Effective	
Omy Omy C	om om om om om om om om	one One One	One One One One	immediately	
	Interval time after the end of segment 7				
	Predetermined area	Set unit	Factory	Effective	
P-72	one O	ing Oring Oring Oring Oring (	default	method	
	-32000~+32000	ms	1000	Effective	
Oraș Oraș	one One One One One One One One One	er Our Our Our Our	Origi Origi Origi Origi	immediately	
P-73	The interval after the end	of segment 8	Origi Origi Origi Origi	Direct Original Original Original	

ing Ones Ones	Predetermined area	Set unit	Factory	Effective
	origi	Origi Origi Origi Origi Origi	default	method
	-32000~+32000	ms	1000	Effective
ing Orng Orng	Olay Olay Olay Olay Olay Olay Olay Olay	Orner Oner Orner Orner Orner	Grang Grang Grang Grang	immediately

# 10.Origin function search

# 1. Features

**2.** When using the origin return function, you can use the input contact ORGP (external detector input terminal) as the origin reference point, and you can use forward search or reverse search.

# 3. User parameter settings

	Origin search selection		Origin search selection		
	Predetermined area	Set unit	Factory default	Effective method	
P-74	0: Not looking for the origin 1: Automatically find the origin when turning on the machine 2: I/O port triggers to find the origin	G	0	Effective immediately	

Function	PIN
I/O trigger signal	Enable terminal
ORGP signal	Pulse terminal

Parameter	Function	Note
name		
<b>P-75=</b> H□□□0	Reverse to find the origin	Divisi Ories Ories Ories (
<b>P-75=</b> H□□□1	Turn forward to find the origin	Delies Ories Ories Ories
<b>P-75=</b> H□□1□	Use the input terminal ORGP as the origin reference point to search.	
<b>P-75=</b> H□0□□	After reaching the origin reference point, decelerate and stop.	mr;
<b>P-75=</b> H□1□□	After reaching the input terminal ORGP, use the opposite direction to find the rising edge of the input terminal ORGP at the second speed as the origin.	Carry   Octobr   Oc

, Oraș Oraș O	Origin/mechanical orig	gin search first spe	ed	27 Outs Outs Outs Outs Outs 27 Outs Outs Outs Outs Outs	
P-76	Predetermined area	Set unit	Factory default	Effective method	
- Omy Omy O	0~2000	0.1r/min	500	Effective immediately	
, Omy Omy O	Origin/machine search	second speed	. O 1277 O 1277 O 1277 O 12 2 O 1277 O 1277 O 1277 O 12	r: Our: Our: Our: Our: Our: Our:	
P-77	Predetermined area	Set unit	Factory default	Effective method	
	0~1000	0.1r/min	200	Effective immediately	
one one o	Origin search offset pulse number				
P-78	Predetermined area	Set unit	Factory default	Effective method	
9 0 mg 0 mg 0	-32000~+32000	G 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 (111) (111) (111) (111)	Effective immediately	

# 11, Speed mode

Speed mode is mostly used in the precision CNC machining industry. Users can select the mode through P-09 and make different settings according to different occasions.

#### User parameter settings

Digital setting refers to storing the set speed value through function code P-93 or P-94 or P-95 and using it as a speed command.

#### (1) Digital given speed mode

There are two application methods for digital given speed mode: the first is for the user to set different speed command values in the P-93 or P-94 or P-95 function code before making an action, and then pass the pulse, Direction The terminal performs speed switching; the second is to use communication methods to change the value of the function code.

#### A: User related parameters

User parameters		Speed command source				
P-09	2	Digital given				
	Speed command	Speed command keyboard setting value 1				
P-93	Predetermined area	Set unit	Factory default	Effective method		
	0~±4000	r/min	100	Effective immediately		
Origi Origi Origi	Speed command	Speed command keyboard setting value 2				
P-94	Predetermined area	Set unit	Factory default	Effective method		
	0~±4000	r/min	200	Effective immediately		
r Ories Ories Ories	Speed command keyboard setting value 3					
P-95	Predetermined area	Set unit	Factory default	Effective method		
	0~±4000	r/min	300	Effective immediately		

B: Input signal setting, use the following input signals to switch the operating speed.

Signal name	Name	Function
Digital given speed selection 1	Pulse terminal	Digital given speed
Digital given speed selection 2	Direction terminal	selection

### C: Digital given speed operation

Pulse terminal	Direction terminal	( mg ) carg ) ca
OFF •	OFF	0: Zero speed
OFF	ON	P-93: Setting value 1 speed
ON	OFF	P-94: Setting value 2 speed
ON	ON	P-95: Setting value 3 speed

If external terminals are not needed, it will run automatically after power-on. Set P-96 to 1, and then the speed at this time is specified by P-93.  $\circ$ 

#### **Command ramp function settings**

The ramp function control function refers to converting a large-changing speed command into a relatively smooth constant acceleration and deceleration speed command, that is, by setting the acceleration and deceleration time to achieve the purpose of controlling acceleration and deceleration. In the speed control mode, if the given speed command changes too much, the motor will jump or vibrate violently. If the acceleration and deceleration time of the soft start is increased, the motor can start smoothly and avoid the above situation. Mechanical parts are damaged.

#### User parameter settings

	Acceleration time				
P-89	Predetermined area	Set unit	Factory default	Effective method	
	1~30000	ms of officers	200	Effective immediately	
rry Orry Orry Or	Deceleration time				
P-90	Predetermined area	Set unit	Factory default	Effective method	
	1~30000	ms	200	Effective immediately	

#### S-curve smoothing function

During the acceleration and deceleration process, since acceleration and deceleration changes such as starting and stopping will cause impact, it is necessary to add an S-curve acceleration and deceleration command to the speed command, that is, by adding an arc to the acceleration and deceleration slope to make the servo motor run more smoothly.

#### (1) User parameter settings

	S-curve deceleration time				
P-91	Predetermined area	Set unit	Factory default	Effective method	
	1~12000	ms	100	Effective immediately	
Omn Omn Omn	S Curve start flag				
P-92	Predetermined area	Set unit	Factory default	Effective method	
	0: Does Switch on 1: Switch on	G		Effective immediately	

#### 12 Product warranty terms

#### 1. One year warranty

Our Company warrants its products against defects in materials and workmanship for a period of 12 months from

shipment out of factory. During the warranty period, We will either, at its option, repair or replace products which proved to be defective.

#### 2. Not covered by warranty

The above warranty does not extend to any product damaged by reasons of improper or inadequate handlings by customer, improper or inadequate customer wirings, unauthorized modification or misuse, or operation beyond the electrical specifications of the product and/or operation beyond environmental specifications for the product.

#### 3. Maintenance process

If it is necessary to repair the product, it will be handled according to the following process:

- (1) Before shipping, you need to call the agent to obtain the return permit number.;
- (2) A written description is attached with the product, explaining the fault phenomenon of the drive being returned for repair; the voltage, current and usage environment when the fault occurred; and the name, phone number and mailing address of the contact person.
- (3) Please pay the postage first and send it to the company's location or designated repair point. The company refuses to accept any express freight collect.

#### 4. Warranty limitations

We make no other warranty, either expressed or implied, with respect to the product. We specifically disclaim the implied warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not allow limitations on how long and implied warranty lasts, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the 12-month duration of this written warranty.

#### 5. Maintenance requirements

When returning for repair, please fill in the "Maintenance Report" truthfully to facilitate repair analysis.