Be more intelligent in motion control

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RTELLIGENT

Be more intelligent in motion control

2023 PRODUCTS CATALOGUE

SERVO|STEPPER|MOTION CONTROL

AC Servo / DC Servo / Speed Regulation Brushless System
Open loop & Closed loop Stepper / Fieldbus Stepper / Linear Stepper
Motion Control Card / Fieldbus IO Module

Shenzhen Rtelligent Technology Co.,Ltd

2023 PRODUCTS CATALOGUE

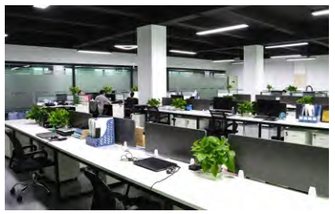
About us

Shenzhen Rtelligent Technology Co., Ltd., located in Shenzhen, China, is a national high-tech enterprise dedicated in R & D, marketing and sales of high performance motion control products based on latest control technologies.

Since its establishment in 2015, the management has been focusing on the field of industrial automation. Our main products include servo system, stepper system, motion control card, etc., which are widely used in high-end intelligent manufacturing indutries such as 3C electronics, new energy, logistics, semiconductor, medical , CNC laser processing , etc. The global sales network covers more than 70 countries and regions, and the annual sales increase year by year.

Rtelligent adheres to deeply understand and meet customer demand, always takes reliable quality and leading technology as its core competitiveness, attaches great importance to and continuously increases R&D investment. At present, it has more than 60 patents for invention, utility model, copyright, trademark information, etc; The products have passed CE and other product quality & safety certification.

"Be more intelligent in motion control" is our slogan, we always continues to be deeply committed to the field of automation, seek to better understand our customers' needs and develop intelligent products and solutions to create values for customers around the world.



Business Partner

CYG长园 | 大族激光 HAN'S LASER | FOXCONN | exact S·C

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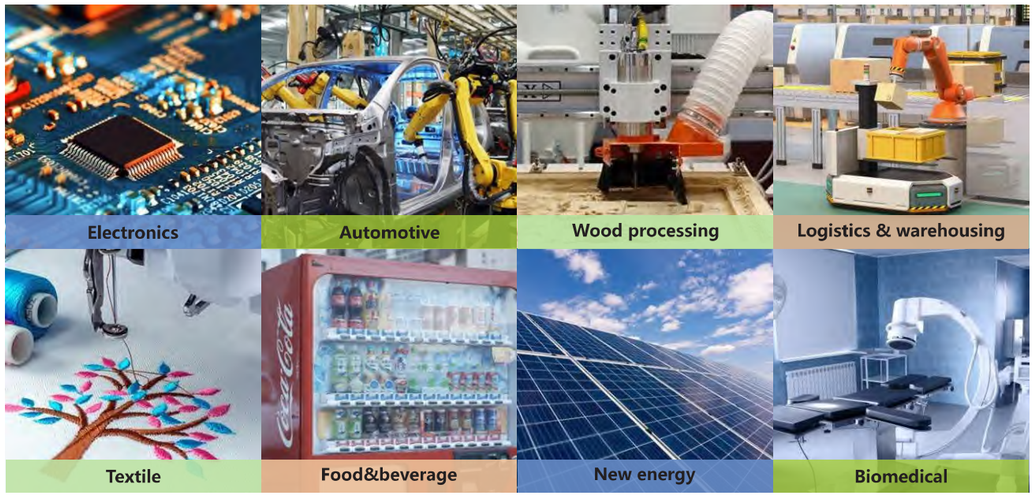
Industry & Application



Honor & Qualification

CONTENTS

SERVO SYSTEM

Be more intelligent in motion control

EtherCAT

CANopen

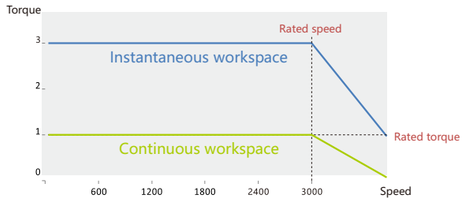
Modbus

AC Servo System

RS series AC servo is a general servo product line developed by Rtelligent , covering the motor power range of 0.05 ~ 3.8kw. RS series supports ModBus communication and internal PLC function, and RSE series supports EtherCAT communication .

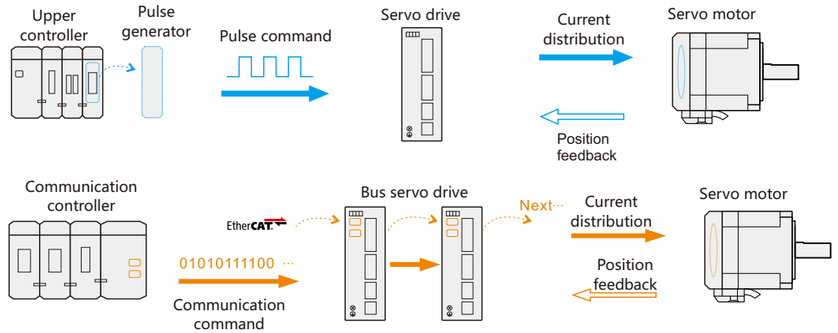
RS series servo drive has a good hardware and software platform to ensure that it can be very suitable for fast and accurate position, speed, torque control applications.

RSN series AC motors with optional 17bit magnetic encoder and 23bit optical encoder single-turn or multiturn absolute encoder, suitable for different working environments.



AC servo working curve

System Diagram

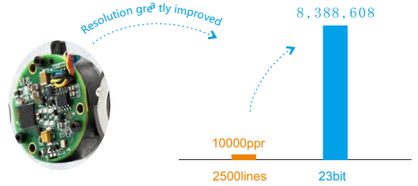


Characteristics of RS Series

Higher encoder accuracy

The new version of the RS series encoder features a high speed communication protocol with optional 17bit magnetic and 23bit optical encoders for higher resolution.

The high resolution encoder brings higher position feedback accuracy.

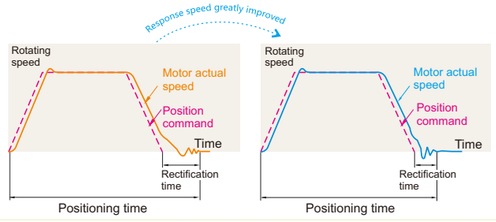


Faster response

The RS drive adopts a highly equipped DSP+FPGA hardware platform, which makes the response frequency of each loop higher and the positioning time of the servo system shorter.

Faster computing speed brings faster response speed.

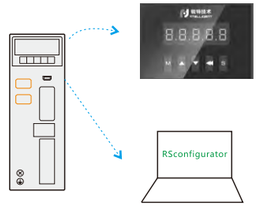
The minimum CSP synchronization cycle of RSE series is 200μs.



Easy to use

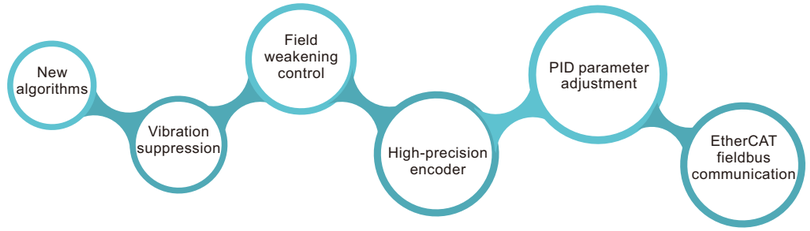
PC debugging software is connected to the drive via USB for monitoring parameters and drive operation status.

The operation panel also allows direct debugging and modification of drive parameters.



AC Servo Drive

RS series AC servo drive, based on DSP+FPGA hardware platform, adopts a new generation of software control algorithm, and has better performance in terms of stability and high-speed response. The RS series supports 485 communication, and the RSE series supports EtherCAT communication , which can be applied to different application environments.



Naming Rule

RS 400 E

1 Series Name

2 Output power of motor
400: 400W 3000: 3000W

3 Fieldbus type
None: Pluse+485 communication
E: EtherCAT communication
C: Economical pulse

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Features

EtherCAT RSE series

Cost-effective RSC series

High performance RS series

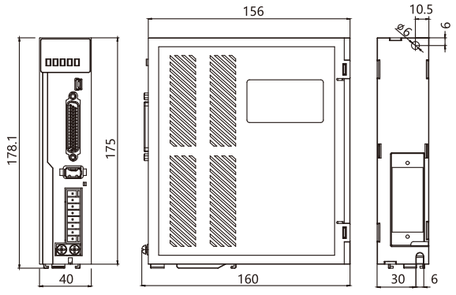
Series	PUL&DIR	Quadrature Pulse	Frequency Division Output	Analog	Communication		Mini-USB Interface	Maximum Motor Power
					RS485	EtherCAT		
RSE						√	√	3.8kW
RSC	√						√	2.0kW
RS	√	√	√	√	√		√	3.8kW

Technical Specifications

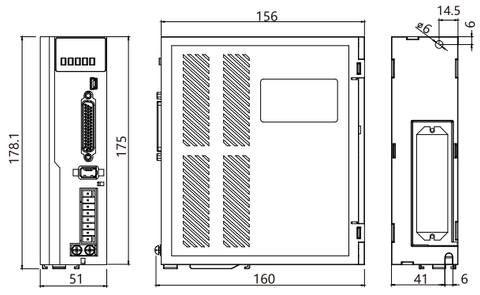
Model	Continuous current(A)	Maximum current(A)	Input power supply	Dimensions (mm)	Weight (mm)	Matching motor
RS100/RS100CS/RS100E	3.0	9.0	Single phase 220VAC	A:175x156x40	1.0	Below 100W
RS200/RS200CS/RS200E	3.0	9.0	Single phase 220VAC	A:175x156x40	1.0	Below 200W
RS400/RS400CS/RS400E	3.0	9.0	Single phase 220VAC	A:175x156x40	1.0	Below 400W
RS750/RS750CS/RS750E	5.0	15.0	Single phase 220VAC	B:175x156x51	1.2	Below 750W
RS1000/RS1000CS/RS1000E	7.0	21.0	Single phase 220VAC	B:175x156x51	1.2	Below 1kW
RS1500/RS1500CS/RS1500E	9.0	27.0	Single phase 220VAC	B:175x156x51	1.2	Below 1.5kW
RS3000/RS3000E	12.0	36.0	Single phase/3 phase 220VAC	C:196x176x72	2.1	Below 3.8kW

Installation Dimension

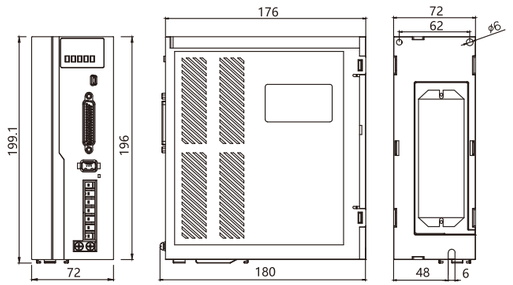
Below 400W



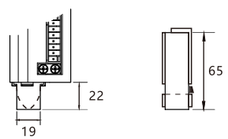
Below 2000W



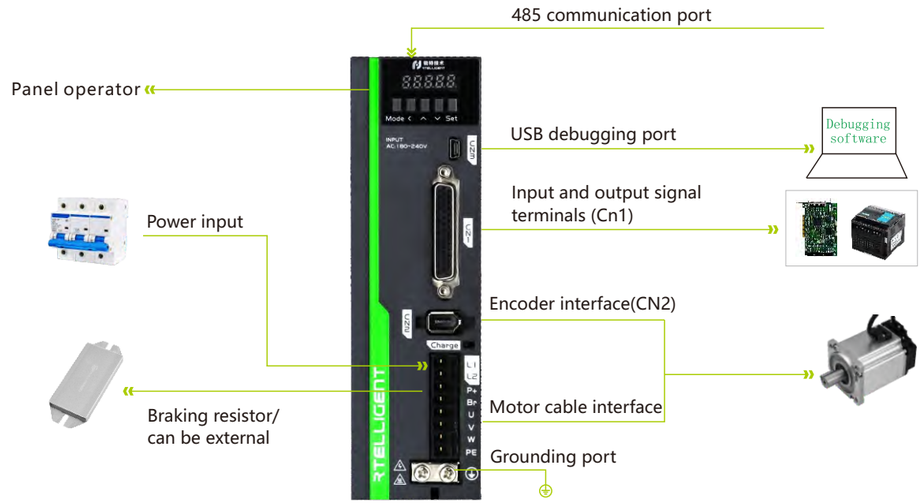
Below 3000W



Absolute battery box dimension



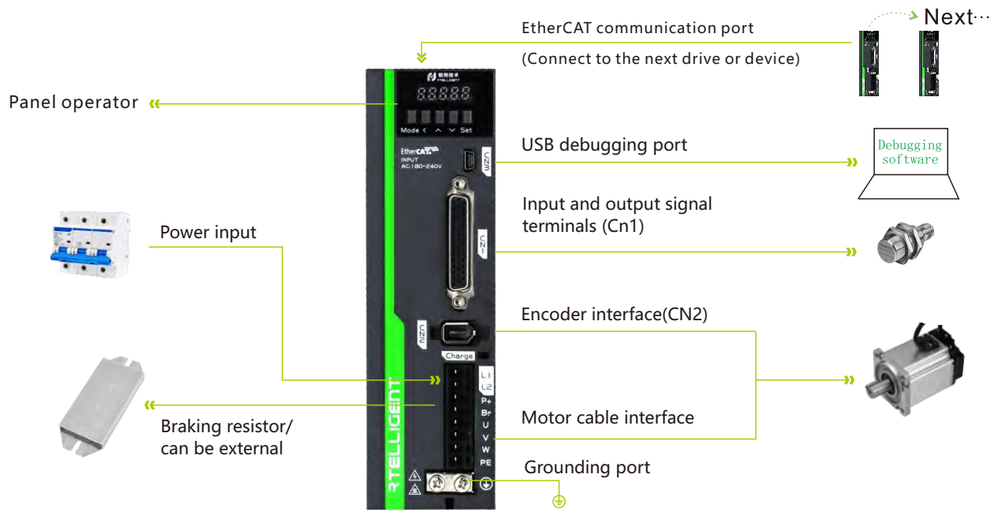
RS Series Drive Interface & Connection



Control Signal Interface Definition

Function	Signal	Pin number	Signal definition	Default Function	Illustration
External pulse interface	PUL+	3	Differential pulse+		Differential input, 5V
	PUL-	4	Differential pulse-		
	DIR+	5	Differential direction+		
	DIR-	6	Differential direction-		
	24VPUL+	16	24V pluse +		24V
	24VDIR+	17	24V direction +		
Universal input interface	IN1(SV-ON)	2	Input 1	Servo enable	Below 24V Support common anode or Common cathode Mixed use of NPN and PNP is not supported
	IN2(POT)	7	Input 2	Positive limit	
	IN3(NOT)	8	Input 3	Negative limit	
	IN4(ALMRST)	9	Input 4	Alarm clear	
	IN5(PULStop)	10	Input 5	Pulse inhibit	
	IN6(Home)	11	Input 6	Origin input	
	IN7(ZEROStart)	12	Input 7	Start back to zero	
	IN8(EMEStop)	13	Input 8	Emergency stop	
	INCOM	1	Input common port		
Common cathode universal output interface	OUT1(SV-RDY)	32	Output 1	Servo ready	Below 24V Common cathode output Current not exceeding 50
	OUT2(INP)	33	Output 2	Positioning completed	
	OUT3(ALM)	34	Output 3	Alarm output	
	OUT4(ZERODONE)	35	Output 4	Return to zero complete	
	OUTCOM-	31	Output common port	Output ground	

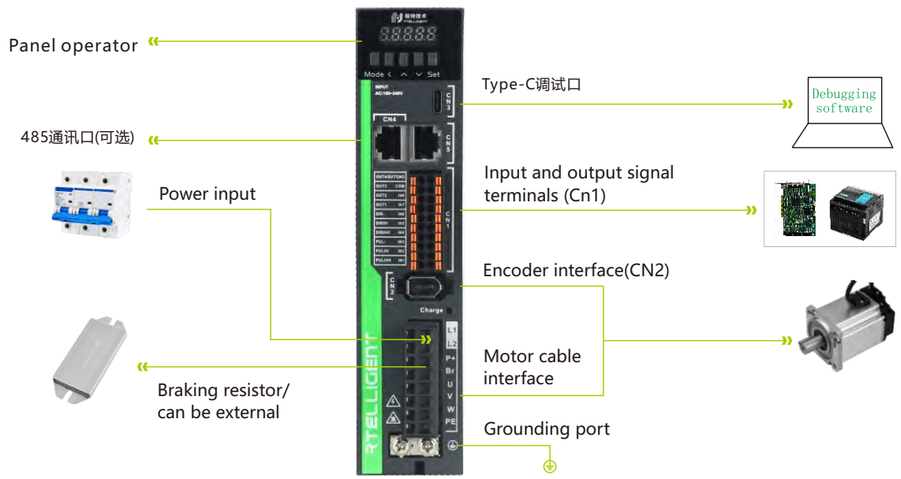
RSE Series Drive Interface & Connection



Control Signal Interface Definition

Function	Signal	Pin number	Signal definition	Default Function	Illustration
Universal input interface	INCOM	1	Input common port		Support common anode or common cathode Mixed use of NPN and PNP is not supported
	IN1	2	Input 1		
	IN2	3	Input 2	Probe 1	
	IN3	4	Input 3	Probe 2	
	IN4	5	Input 4	Positive limit	
	IN5	6	Input 5	Negative limit	
	IN6	7	Input 6	Origin signal	
	IN7_24V+	16	Input 7		Differential input terminal: 24V signal is connected to IN7_24V and IN7- terminals 5V signal is connected to IN7_5V+ and IN7-terminals
	IN7_5V+	17			
	IN7-	18			
	IN8_24V+	19	Input 8	Emergency stop	Differential input terminal: 24V signal is connected to IN8_24V+ and IN8- terminals 5V signal is connected to IN8_5V+ and IN8- terminals
	IN8_5V+	20			
	IN8-	21			
Universal output interface	OUTCOM-	31	Output common port		Common cathode output
	OUT1	32	Output 1	Servo ready	
	OUT2	33	Output 2	Alarm output	Current does not exceed 50mA
	OUT3-	34	Output 3	Location arrives	Differential output
	OUT3+	35			
	OUT4+	36	Output 4	Brake output	Current does not exceed 200mA
	OUT4-	37			

RSC Series Drive Interface & Connection



Control Signal Interface Definition

Function	Signal	Signal definition	Default Function	Illustration
External pulse interface	5VPUL+	Differential pulse+		Differential input, 5V
	PUL-	Differential pulse-		
	5VDIR+	Differential direction+		
	DIR-	Differential direction-		
	24VPUL+	24V pluse +		24V
	24VDIR+	24V direction +		
Universal input interface	IN1(SV-ON)	Input 1	Servo enable	Below 24V Support common anode or Common cathode Mixed use of NPN and PNP is not supported
	IN2(POT)	Input 2	Positive limit	
	IN3(NOT)	Input 3	Negative limit	
	IN4(ALMRST)	Input 4	Alarm clear	
	IN5(PULStop)	Input 5	Pulse inhibit	
	IN6(Home)	Input 6	Origin input	
	IN7(ZEROStart)	Input 7	Start back to zero	
	IN8(EMEStop)	Input 8	Emergency stop	
	INCOM	Input common port		
Common cathode universal output interface	OUT1(ALM)	Output 1	Servo ready	Below 24V Common cathode output Current not exceeding 50
	OUT2(INP)	Output 2	Positioning completed	
	OUT3(ZERODONE)	Output 3	Alarm output	
	OUT4(BRK)	Output 4	Return to zero complete	
	OUTCOM-	Output common port	Output ground	

AC Servo Motor

Rtelligent RSN series AC servo motors, based on Smd optimized magnetic circuit design, use high magnetic density stator and rotor materials, and have high energy efficiency.

- Multiple types of encoders are available, including optical, magnetic, and multi-turn absolute encoder.
- RSN60/80 motor have more compact size, saving installation cost.
- Permanent magnet brake is optional, moves flexible, suit for Z -axis applications.

Naming Rule

RSNA M 06 J 13 30 A - Z

1 2 3 4 5 6 7 8

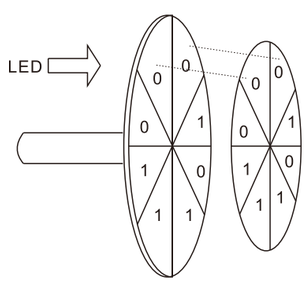
1. Serial name
   A: Five pairs of poles, ultra-thin, silver
2. Motor inertia code
   S: Small inertia M: Medium inertia
   H: Large inertia
3. Motor flange size
   06:60mm 13:130mm
4. Encoder code
   J : 17bit magnetic unicyclic absolute encoder
   H : 23bit optical unicyclic absolute encoder
   G : 17bit magnetic multiturn absolute encoder
   L : 23bit optical multiturn absolute encoder
5. Motor rated torque
   13:1.3 Nm 150: 15 Nm
6. Motor rated speed
   30: 3000 rpm 15: 1500 rpm
7. Is there an oil seal
   A: With oil seal inside
   None: No oil seal inside
8. Brake code
   Z: With brake

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Motor with Brake

- Servo motor with brake
  Suitable for Z-axis application environment,
  When the driver is powered off or alarms, the brake will be applied,
  Keep the workpiece locked and avoid free fall
- Permanent magnet brake
  Fast start and stop, low heating
- 24V DC power supply
  Can use drive brake output port control
  The output port can directly drive the relay to control the brake on and off

Motor with Absolute Encoder



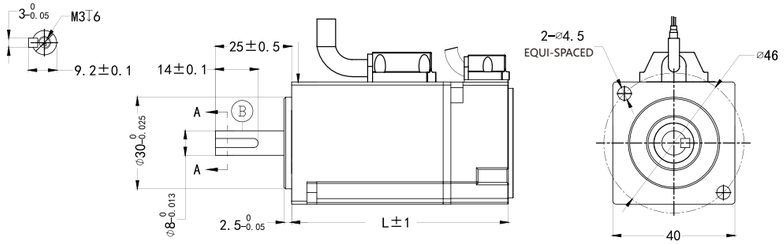
- Absolute encoder servo motor
  Suitable for applications that accurately memorize the position after power failure
  The relative encoder loses position information due to power failure, causing the mechanical position to be externally affected and not at the initial position.
- Working principle
  By encoding each independent position on the encoder, the position is communicated to the drive.
- External power supply battery
  Provides working power for the multi-turn absolute encoder
  When the drive is powerd off, it can still provide working power

AC Servo Motor 80/60/40mm Series Technical Specifications

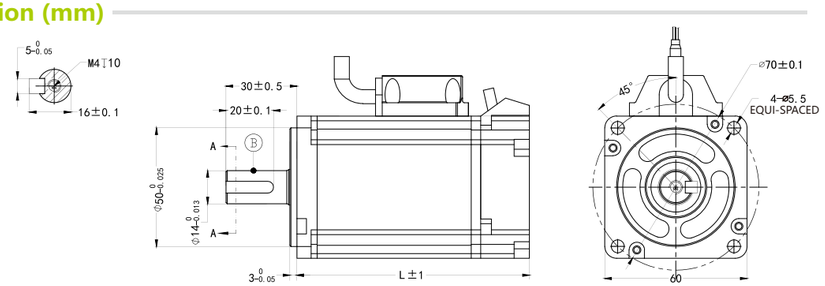
Model	RSNA-M 04J0130A	RSNA-M 04J0330A	RSNA-M 06J0630A	RSNA-M 06J1330A	RSNA-M 08J2430A	RSNA-M 08J3230A
Rated power (W)	50	100	200	400	750	1000
Rated voltage (V)	220	220	220	220	220	220
Rated current (A)	1.1	1.1	1.9	2.3	4.2	5.6
Rated torque (N.M)	0.16	0.32	0.64	1.27	2.39	3.20
Maximum torque (N.M)	0.48	0.96	1.92	3.81	7.17	9.60
Rated speed (rpm)	3000	3000	3000	3000	3000	3000
Maximum speed (rpm)	6500	6500	5000	5000	5000	5000
Back EMF (V/Krpm)	10.5	18.8	26.6	37.0	35.7	34.6
Torque constant (N.M/A)	0.14	0.29	0.33	0.55	0.57	0.57
Wire resistance (Ω,20℃)	14.30	14.90	10.72	6.60	2.03	1.26
Wire inductance (mH,20℃)	14.80	14.80	21.04	20.56	10.20	6.86
Rotor inertia($X10^{-4}kg.m^2$)	0.036	0.079	0.26	0.61	1.71	2.11
Weight (kg)	0.35	0.46 Brake 0.66	0.84 Brake 1.21	1.19 Brake 1.56	2.27 Brake 3.05	2.95 Brake 3.73
Length L (mm)	61.5	81.5 Brake 110	80 Brake 109	98 Brake 127	107 Brake 144	127 Brake 163

*The encoder comes standard with 17bit magnetic encoding, 23bit optical encoding is optional, and multi-turn absolute value specifications are optional.

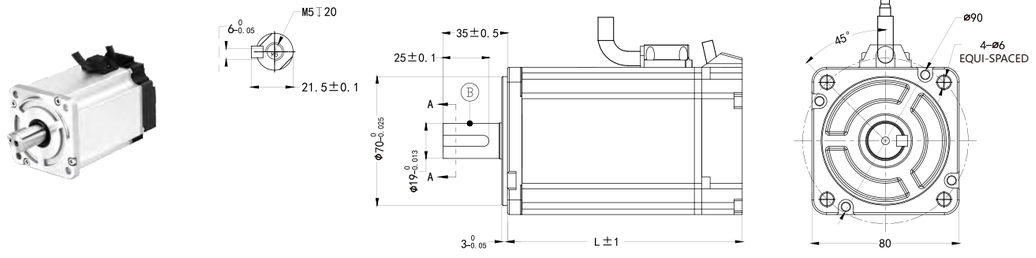
Frame 40 Dimension (mm)



Frame 60 Dimension (mm)



Frame 80 Dimension (mm)

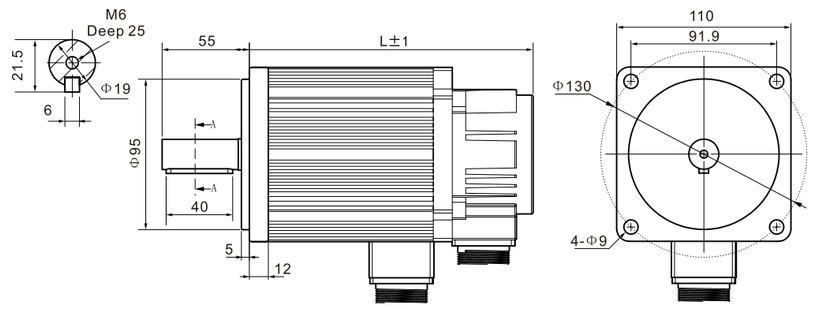


AC Servo Motor 110mm Series Technical Specifications

Model	RS□-M 11J4030A	RS□-M 11J5030A	RS□-M 11J6020A	RS□-M 11J6030A
Rated power (kW)	1.2	1.5	1.2	1.8
Rated voltage (V)	220	220	220	220
Rated current (A)	5.0	6.0	4.5	6.0
Rated torque (N.M)	4.0	5.0	6.0	6.0
Motor pole pairs	4	4	4	4
Encoder Specifications	17bit	17bit	17bit	17bit
Rated speed (rpm)	3000	3000	2000	3000
Maximum speed (rpm)	4500	4500	3000	4500
Back EMF (V/Krpm)	54	62	83	60
Wire resistance (Ω,20℃)	1.09	1.03	1.46	0.81
Wire inductance(mH,20℃)	3.3	3.43	4.7	2.59
Rotor inertia(X10^{-4}kg.m²)	5.4	6.3	7.6	7.6
Weight (kg)	6.0	6.8 Brake 7.3	7.9 Brake 8.4	7.9 Brake 8.4
Length L (mm)	189	204 Brake 264	219 Brake 279	219 Brake 294

*The encoder comes standard with 17bit magnetic encoding, 23bit optical encoding is optional, and multi-turn absolute value specifications are optional.

Frame 110 Dimension (mm)

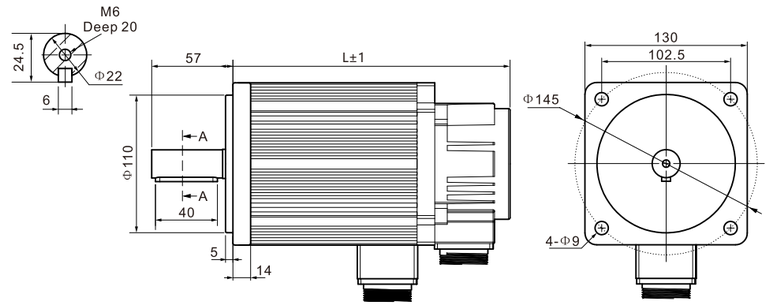


AC Servo Motor 130mm Series Technical Specifications

Model	RS□-M 13J4025A	RS□-M 13J6025A	RS□-M 13J7725A	RS□-M 13J10025A	RS□-M 13J15015A	RS□-M 13J15025A
Rated power (kW)	1.0	1.5	2.0	2.6	2.3	3.8
Rated voltage (V)	220	220	220	220	220	220
Rated current (A)	4.0	6.0	7.5	10	9.5	13.5
Rated torque (N.M)	4.0	6.0	7.7	10	15	15
Motor pole pairs	4	4	4	4	4	4
Encoder Specifications	17bit	17bit	17bit	17bit	17bit	17bit
Rated speed (rpm)	2500	2500	2500	2500	1500	2500
Maximum speed (rpm)	4000	4000	4000	3500	3000	3500
Back EMF (V/Krpm)	72	65	68	70	114	67
Wire resistance (Ω,20℃)	2.76	1.21	1.01	0.73	1.1	0.49
Wire inductance(mH,20℃)	6.42	3.87	2.94	2.45	4.46	1.68
Rotor inertia(X10^{-4}kg.m²)	0.85	1.25	1.53	1.94	2.77	2.77
Weight (kg)	6.2 Brake 7.8	7.4 Brake 9.0	8.3 Brake 9.9	9.8 Brake 11.4	12.6 Brake 14.2	11.7 Brake 13.3
Length L (mm)	166 Brake 223	179 Brake 236	192 Brake 249	209 Brake 290	241 Brake 322	231 Brake 303

*The encoder comes standard with 17bit magnetic encoding, 23bit optical encoding is optional, and multi-turn absolute value specifications are optional.

Frame 130 Dimension (mm)

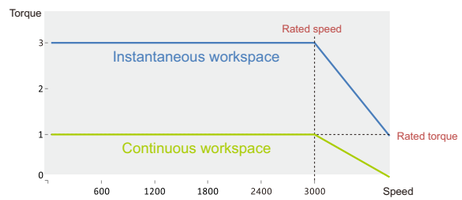


Low-voltage Servo System

Low-voltage servo is a servo motor designed to be suitable for low-voltage DC power supply applications. DRV series low-voltage servo system supports CANopen, EtherCAT, 485 three communication modes control, network connection is possible.

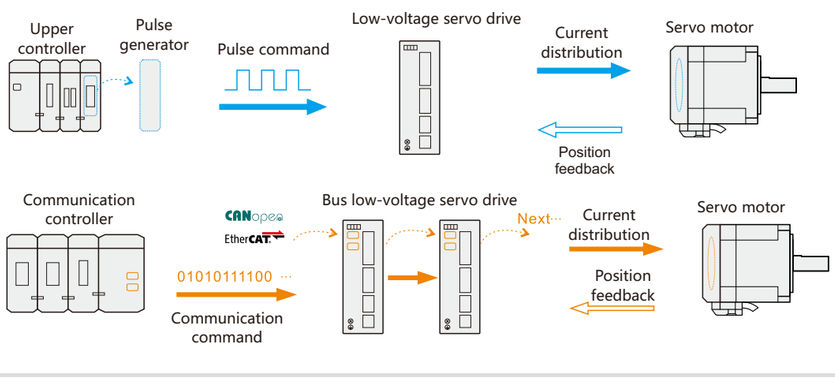
DRV series low-voltage servo drives can process encoder position feedback to achieve more accurate current and position control.

TSN series low-voltage servo motors are compatible in size with high-voltage servos and a variety of encoders type optional.



Low-voltage servo working curve

Low-voltage Servo System Frame Diagram



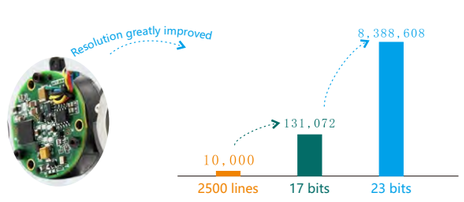
Features

Multiple communication modes

DRV series drives include three bus communication methods: 485 communication, CANopen, EtherCAT, suitable for various applications.

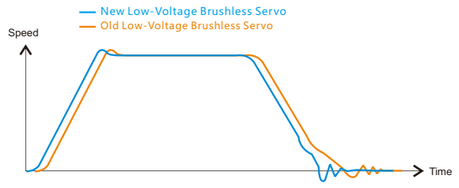
Higher encoder accuracy

The standard 17 bit (optional 23 bit) high-resolution encoder has strong anti-interference ability and higher motor control accuracy.



Fast response

DRV servo drive adopts DSP + FPGA hardware platform, with high frequency of three loop bandwidth, which can complete positioning response in a shorter time.

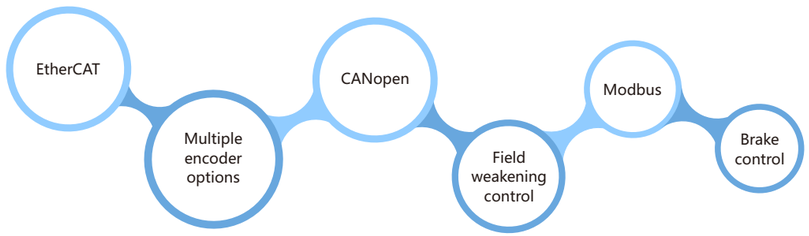


Get rid of the limitations of traditional power supply modes

Adopting low-voltage DC power supply to meet mobile power supply needs such as AGV.

Low-voltage Servo Drive

DRV series low-voltage servo drive is a low-voltage servo scheme with higher performance and stability, which is mainly developed on the basis of excellent performance of high-voltage servo.DRV series control platform is based on DSP+FPGA, with high speed response bandwidth and positioning accuracy, which is suitable for various low-voltage and high current servo applications.



Naming Rule

DRV 400 C

1 Serial Name
DV: Economic version
DRV: High-performance

2 Maximum output power
400:400W 1500:1500W

3 Fieldbus type
None: Pluse+485 communication
E: EtherCATcommunication
C: CANopen communication

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Features

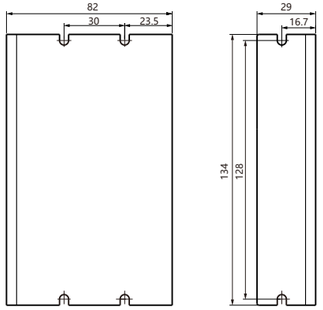
High performance DRV serie	EtherCAT DRVE Series	CANopen DRVC Series
		
• Power range up to 1.5kw • Encoder resolution up to 23bits • Excellent anti-interference ability • Better hardare and high reliability • With brake output	• Power range up to 1.5kw • High speed response frequency,shorter positioning time • Comply with CiA402 standard • Support CSP/CSV/CST/PP/PV/PT/HM mode • With brake output	• Power range up to 1.5kw • High speed response frequency, shorter positioning time • Comply with CiA402 standard • Fast baud rate up IMbit/s • With brake output

Technical Specifications

Model	Continuous current(A)	Maximum current(A)	Input power	Size(mm)	Weight (kg)	Matching motor
DV400	12	36	18~50VDC	134x82x29	0.4	Below 400W
DRV400/DRV400C/DRV400E	12	36	24~70VDC	175x98x33	0.7	Below 400W
DRV750/DRV750C/DRV750E	25	70	24~70VDC	175x98x33	0.7	Below 750W
DRV1500/DRV1500C/DRV1500E	38	105	24~70VDC	201x190.5x33	0.8	Below 1.5kW

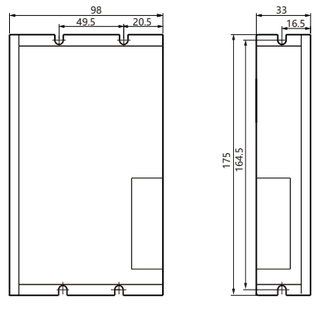
Installation Dimension

DV400



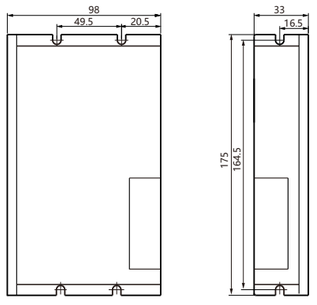
Front Side

DRV400



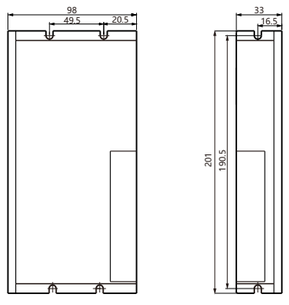
Front Side

DRV750



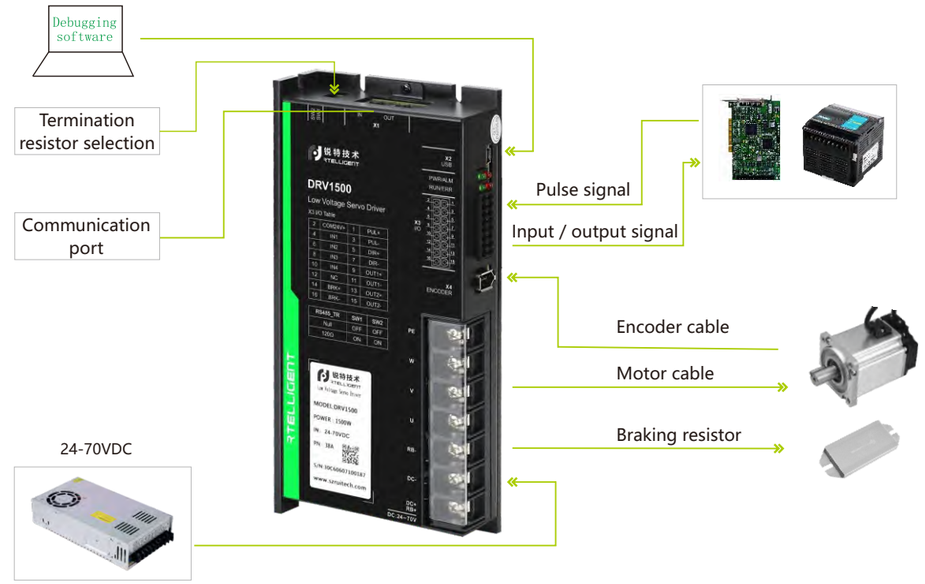
Front Side

DRV1500



Front Side

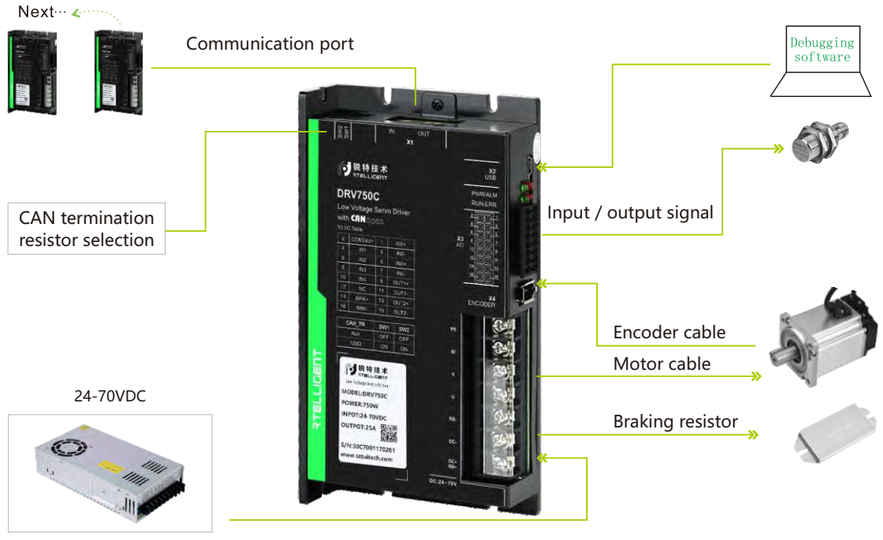
DRV Series Drive Interface & Connection



IO Control Signal Interface Definition

Function	Signal	Pin number	Signal definition	Default Feature	Illustration
External pulse interface	PUL+	1	Pulse positive	Position command signal	Signal terminals can accept 5V-24V signals, no need to connect resistors in series
	PUL-	3	Pulse negative		
	DIR+	5	Positive direction		
	DIR-	7	Negativedirection		
Universal input interface	INCOM+	2	Intput common port		24V signal input
	IN1	4	Input 1	Servo enable	
	IN2	6	Input 2	Positive limit	
	IN3	8	Input 3	Negative limit	
	IN4	10	Input 4	Origin input	
Universal output interface	OUT1+	9	Output 1+	Alarm output	
	OUT1-	11	Output 1-		
	OUT2+	13	Output 2+	Return to zero complete	
	OUT2-	15	Output 2-		
	OUT3+	14	Output 3+	Brake output	It can be directly connected to the positive and negative signal terminals of the electromagnetic brake of the motor, without relay drive
	OUT3-	16	Output 3-		

DRVC/E Series Drive Interface & Connection

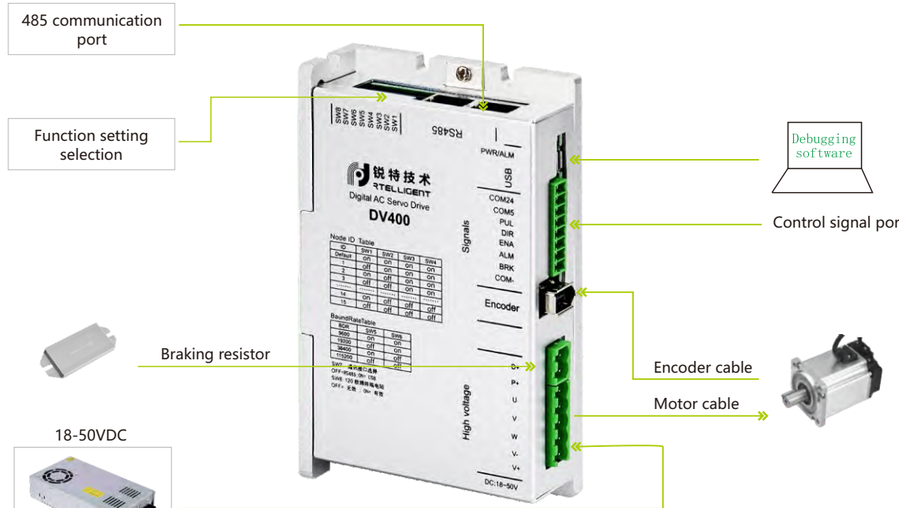


*DRVE series without termination resistor option

IO Control Signal Interface Definition

Function	Signal	Pin number	Signal definition	Default Feature	Illustration
Universal input interface	INCOM+	2	Input common port		24V signal input
	IN1	4	Input 1	Positive limit	
	IN2	6	Input 2	Negative limit	
	IN3	8	Input 3	Origin input	
	IN4	10	Input 4	Emergency stop	
	IN5+	1	Input 5	Probe 1	
	IN5-	3			
	IN6+	5	Input 6	Probe 2	
	IN6-	7			
Universal output interface	OUT1+	9	Output 1+	Alarm output	
	OUT1-	11	Output 1-		
	OUT2+	13	Output 2+	Return to zero	
	OUT2-	15	Output 2-		
	OUT3+	14	Output 3+	Brake output	It can be directly connected to the positive and negative signal terminals of the electromagnetic brake of the motor, without relay drive
	OUT3-	16	Output 3-		

DV400 Series Drive Interface & Connection



RS485 Communication

Station No.	SW1	SW2	SW3	SW4
Default	on	on	on	on
1	off	on	on	on
2	on	off	on	on
3	off	off	on	on
4	on	on	off	on
5	off	on	off	on
6	on	off	off	on
7	off	off	off	on
8	on	on	on	off
9	off	on	on	off
10	on	off	on	off
11	off	off	on	off
12	on	on	off	off
13	off	on	off	off
14	on	off	off	off
15	off	off	off	off

Baud Rate Setting

BDR	SW5	SW6
9600	on	on
19200	off	on
38400	on	off
115200	off	off

The baud rate of the slave station must correspond to the baud rate set by the master station

When adjusting the dial code,it is necessary to power off and restart the drive to take effect.

Control Signal Port

Identification	Function description
COM24	24V control signal input common terminal Only one of 24V and 5V input can be selected
COM5	5V control signal input common terminal Only one of 24V and 5V input can be selected
PUL	External command pulse input port
DIR	External command direction input port
ENA	External enable input port
ALM	Alarm output port
BRK	Brake output port
COM-	Control signal output common terminal: ov

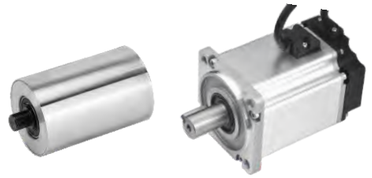
Energy Consumption Braking Port

Identification	Function description
P+	Energy consumption braking resistor wiring terminals, braking resistor regardless of positive or negative
D+	

Low-voltage Servo Motor

TSN series low-voltage servo motors cover the power range of 0.05~1.5kW, and are equipped with communication encoders for higher positioning accuracy. This series motors have a rated speed of 3000rpm, and have torque-frequency characteristics of the same specifications as AC servos, which can meet the needs of high-performance low-voltage servo applications.

- More compact size, saving installation cost
- 23bit Multi-turn absolute encoder optional
- Permant magnetic brake optional, suit for Z -axis applications



Naming Rule

TSNA 06 J 06 30 A H- 48 Z

1 Serial Name
A:Five pairs of poles, sliver

2 Motor flange size
06:60mm 13:130mm

3 Encoder code
J:17bit magnetic unicyclic absolute encoder
G:17bit magnetic multiturn absolute encoder
L:23bit optical multiturn absolute encoder

4 Motor rated torque
06:0.6Nm 13:1.3Nm

5 Motor rated speed
30:3000rpm

6 Is there an oil seal
A: With oil seal inside
None: No oil seal inside

7 Motor power connector code
Optional

8 Motor rated voltage
48:48V

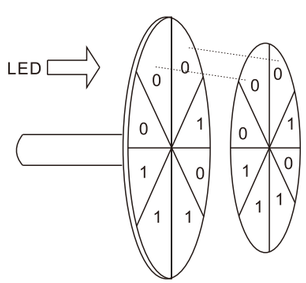
9 Brake code
Z: With brake

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Motor with Brake

- Servo motor with brake
  Suitable for Z-axis application environment,
  When the driver is powered off or alarms, the brake will be applied,
  Keep the workpiece locked and avoid free fall
- Permanent magnet brake
  Fast start and stop, low heating
- 24V DC power supply
  Can use drive brake output port control
  The output port can directly drive the relay to control the brake on and off

Absulote Encoder Low-voltage Servo Motor

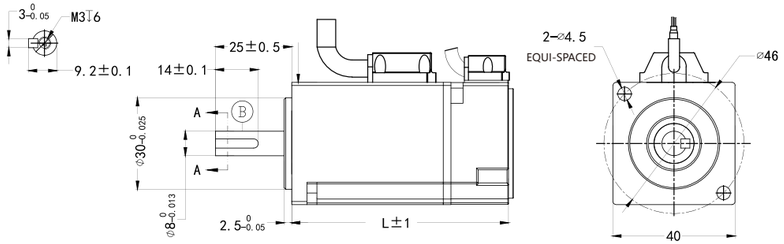


- Absolute encoder servo motor
  Suitable for applications that accurately memorize the position after power failure
  The relative encoder loses position information due to power failure, causing the mechanical position to be externally affected and not at the initial position.
- Working principle
  By encoding each independent position on the encoder, the position is communicated to the driver.
- External power supply battery
  Provides working power for the multi-turn absolute encoder
  When the drive is powerd off, it can still provide working power

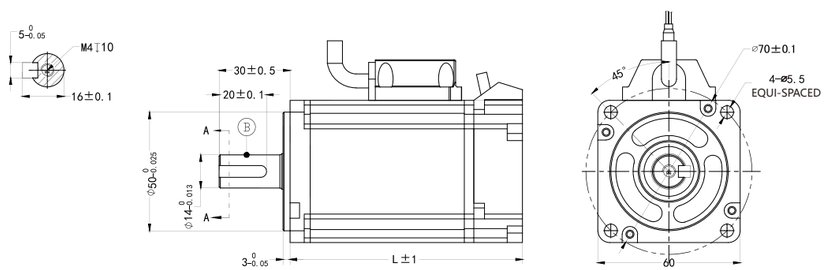
Low Voltage Servo Motor 40/60mm Series Technical Specifications

Model	TSNA-04J0130AS-48	TSNA-04J0330AS-48	TSNA-06J0630AH-48	TSNA-06J1330AH-48
Rated power (W)	50	100	200	400
Rated voltage (V)	48	48	48	48
Rated current (A)	4	5.30	6.50	10
Rated torque (N.M)	0.16	0.32	0.64	1.27
Maximum torque (N.M)	0.24	0.48	1.92	3.81
Rated speed (rpm)	3000	3000	3000	3000
Maximum speed (rpm)	3500	3500	4000	4000
Back EMF (V/Krpm)	3.80	4.70	7.10	8.60
Torque constant (N.M/A)	0.04	0.06	0.10	0.12
Wire resistance (Ω,20℃)	1.93	1.12	0.55	0.28
Wire inductance (mH,20℃)	1.52	1.06	0.90	0.56
Rotor inertia(X10^{-4}kg.m^2)	0.036	0.079	0.26	0.61
Weight (kg)	0.35	0.46 Brake 0.66	0.84 Brake 1.21	1.19 Brake 1.56
Length L (mm)	61.5	81.5 Brake 110	80 Brake 109	98 Brake 127

Frame 40 Dimension (mm)



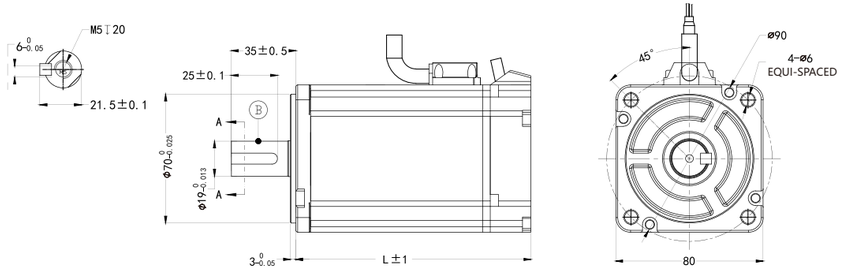
Frame 60 Dimension (mm)



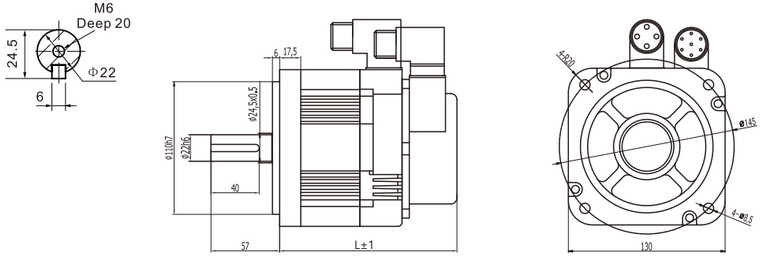
Low Voltage Servo Motor 80/130mm Series Technical Specifications

Model	TSNA-08J2430AH-48	TSNA-08J3230AH-48	TSMA-13J5030AM-48
Rated power (W)	750	1000	1500
Rated voltage (V)	48	48	48
Rated current (A)	18.50	26.4	39
Rated torque (N.M)	2.39	3.2	5
Maximum torque (N.M)	7.17	9.6	15
Rated speed (rpm)	3000	3000	3000
Back EMF (V/Krpm)	8.50	8	8.1
Torque constant (N.M/A)	0.13	0.12	0.13
Wire resistance (Ω,20℃)	0.09	0.047	0.026
Wire inductance (mH,20℃)	0.40	0.20	0.10
Rotor inertia($X10^{-4}kg.m^2$)	1.71	2.11	1.39
Weight (kg)	2.27 Brake 3.05	2.95 Brake 3.73	6.5
Length L (mm)	107 Brake 144	127 Brake 163	148

Frame 80 Dimension (mm)



Frame 130 Dimension (mm)



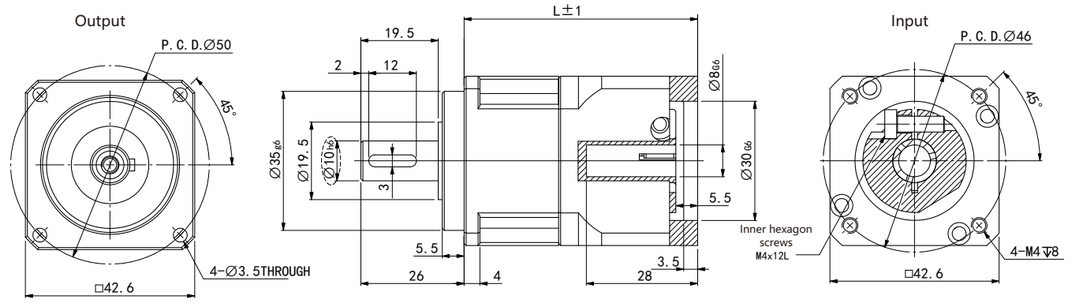
Reducer for Servo Motor

Precision Servo Reducer

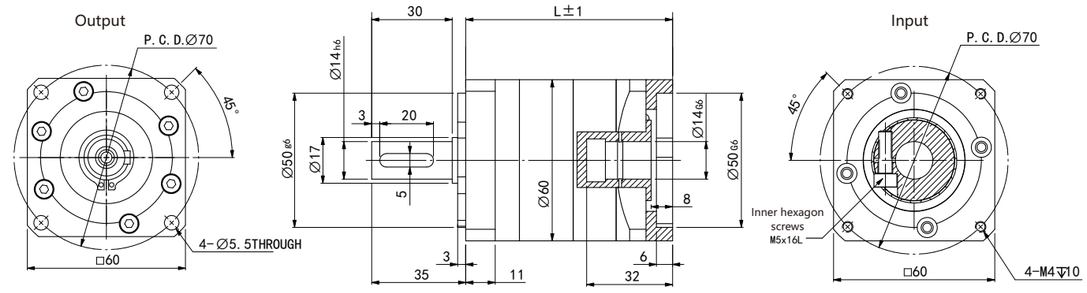
Model	Input dimension (Motor insertion end)				Output dimension (Client installation end)				Length	
	Shaft diameter	Boss diameter	Mounting hole distance	Mounting hole size	Shaft diameter	Boss diameter	Mounting hole distance	Mounting hole size	L1	L2
42SPX-□	8	30	P.C.D.46	M4	10	35	P.C.D.50	3.5	59	80
60SPX-□	14	50	P.C.D.70	M4	14	50	P.C.D.70	5.5	77	95
90SPX-□	19	70	P.C.D.90	M5	20	80	P.C.D.100	6.5	110	130

*The L1 reducer can have a reduction ratio range of 3-10, the L2 reducer can have a reduction ratio range of 15-100.

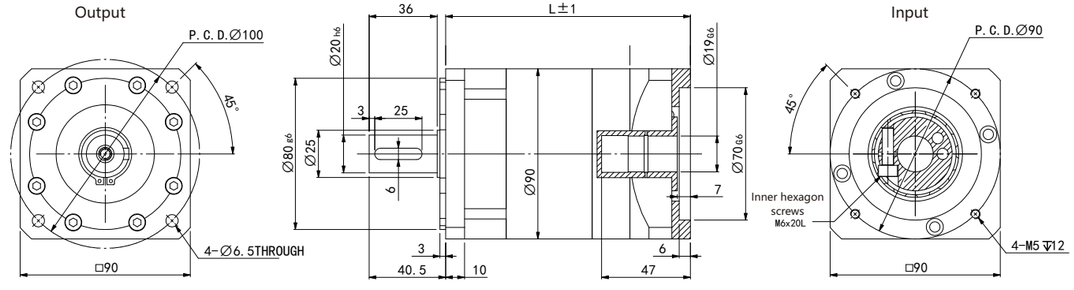
The Size of 42SPX Series (mm)



The Size of 60SPX Series (mm)



The Size of 90SPX Series (mm)

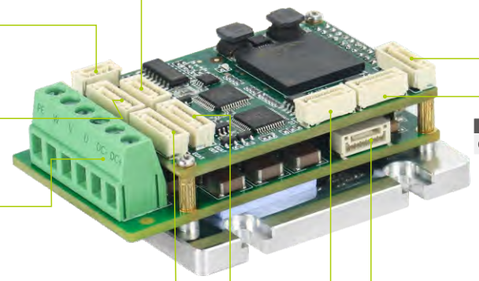


High Power Density Low-voltage Servo Drive

The MDV series is a high-performance bus controlled servo motor drive that integrates intelligent motion control function of the device. The MDV series EtherCAT drives can operate as standard EtherCAT slave stations and support CoE (CANopen over EtherCAT).

- Supports CSP, PP, PV, and Homing modes
- Minimum synchronization cycle 500us
- Encoder type: Tamagawa protocol, incremental ABZ
- Digital IO port: 4-channel digital input interface, 4-channel digital output interface

Drive Interface & Connection



ABS Port

1	2	3	4	5	6
GND	+5V	DATA_P	DATA_N	CLK+	CLK-

A Port

4	3	2	1
AI1+	AI1-	AI2+	AI2-

ABZ Port

1	2	3	4	5	6	7	8
GND	+5V	A+	A-	B+	B-	Z+	Z-

Power Supply Port

1	2	3	4	5	6
PE	W	V	U	DC-	DC+

EtherCAT In Port

1	2	3	4	5	6	7	8
PE	TXM1_N	TXM1_P	PXM1_N	PXM1_P	RS485_N	RS485_P	GND

EtherCAT Out Port

1	2	3	4	5	6	7	8
PE	TXM2_N	TXM2_P	PXM2_N	PXM2_P	RS485_N	RS485_P	GND

JTAG

DO Port

1	2	3	4	5	6
GND	DO4	DO3	DO2	DO1	+5V

STO

1	2	3	4	5	6
STO1	STO2	GND	GND	Temp	GND

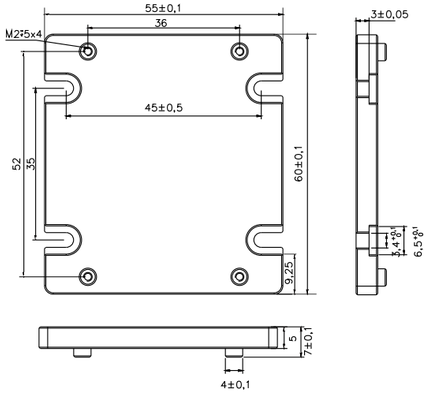
DI Port

1	2	3	4	5	6
DI1	DI2	GND	DI3	DI4	GND

Technical Specifications

Model	MDV100E	MDV200E	MDV400E	MDV750E
Maximum output current (A)	5A	10A	20A	40A
Supply voltage	24-48VDC			
Matching motor	100W	200W	400W	750W
Encoder interface	Tamagawa			
Encoder resolution	17-23Bit			
Optoelectronic isolation input	4 DI			
Optoelectronic isolation output	4 DO			

Installation Dimension



General Integrated Low-voltage Servo Motor

The IDV series is a general integrated low-voltage servo motor developed by Rtelligent. Equipped with position/ speed/torque control mode, support 485 communication to achieve communication control of the integrated motor.

- Working voltage: 18-48VDC, recommended the rated voltage of the motor as working voltage
- 5V dual ended pulse/direction command input, compatible with NPN and PNP input signals.
- The built-in position command smoothing filtering function ensures smoother operation and significantly reduces equipment operating noise.
- Adopting FOC magnetic field positioning technology and SVPWM technology.
- Built-in 17-bit high-resolution magnetic encoder.
- With multiple position/speed/torque command application modes.
- Three digital input interfaces and one digital output interface with configurable functions.

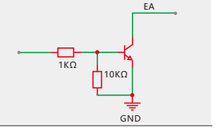
Connection

Wiring Definition

Power supply input

Identification	Function description
VDC	48V power supply positive pole, when braking resistor is required, connect one end of the braking resistor here at the same time
GND	48V power supply negative pole
RB	When a braking resistor is required, connect the other end of the braking resistor here at the same time
PE	Grounding

Control signal

Identification	Function description
PUL24V	PUL control signal 24V input
PUL5V	PUL control signal 5V input
PUL-	PUL external command pulse input 0V common terminal
DIR24V	DIR control signal 24V input
DIR5V	DIR control signal 5V input
DIR-	DIR external command direction input 0V common terminal
EN24	External enable 24V input terminal
EN	External enable input terminal input 0V common terminal
ALM	Alarm output port
COM-	Alarm output port external GND terminal
GND	Integrated motor internal power GND signal
EA	ABZ is a collector output, taking EA as an example: 
EB	
EZ	

RS485 Communication

Station ID	SW1	SW2	SW3	SW4	SW5
Default	on	on	on	on	on
1	off	on	on	on	on
2	on	off	on	on	on
3	off	off	on	on	on
4	on	on	off	on	on
...	...	...	...	...	...
28	on	off	off	on	on
29	off	off	off	on	on
30	on	on	on	off	on
31	off	on	on	off	on

Baud Rate Setting

BDR	SW5	SW6
9600	on	on
19200	off	on
38400	on	off
115200	off	off

Effective Status of Terminal Resistor Connection

SW8	
on	Valid
off	Invali

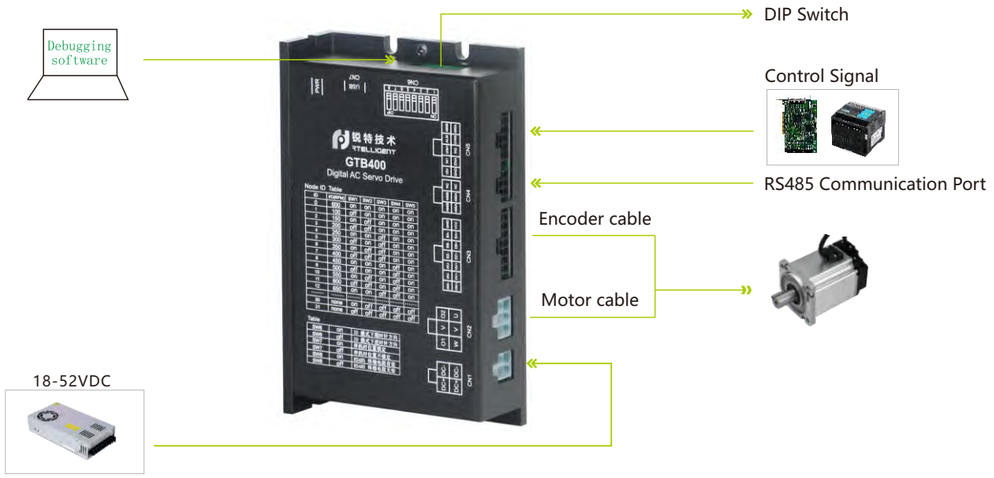
Note: Except for SW8, the change of the switch takes effect after restarts

Specialized Low-voltage Servo Drive

The GTB series low-voltage servo drive is a specialized low-voltage servo drive developed by Rtelligent, with position/speed/torque control mode, supports RS485 communication to achieve communication control of the drive.

- Adopting FOC magnetic field positioning technology and SVPWM technology
- Optional 5V/24V single ended pulse/direction command input
- Control command maximum pulse frequency 500KHz
- DC input voltage: 18-52VDC, recommended working voltage 24-48VDC

Drive Interface & Connection



RS485 Communication

ID	I/O(RPM)	SW1	SW2	SW3	SW4	SW5
0	600	on	on	on	on	on
1	100	off	on	on	on	on
2	150	on	off	on	on	on
3	200	off	off	on	on	on
4	250	on	on	off	on	on
5	300	off	on	off	on	on
6	350	on	off	off	on	on
7	400	off	off	off	on	on
8	450	on	on	on	off	on
9	500	off	on	on	off	on
10	550	on	off	on	off	on
11	600	off	off	on	off	on
12	650	on	on	off	off	on
…	…	…	…	…	…	…
30	none	on	off	off	off	off
31	none	off	off	off	off	off

Function Setting

SW6	
on	Clockwise in IO mode
off	Counter clockwise in IO mode

SW7	
on	Position locked during shutdown
off	Position not locked during shutdown

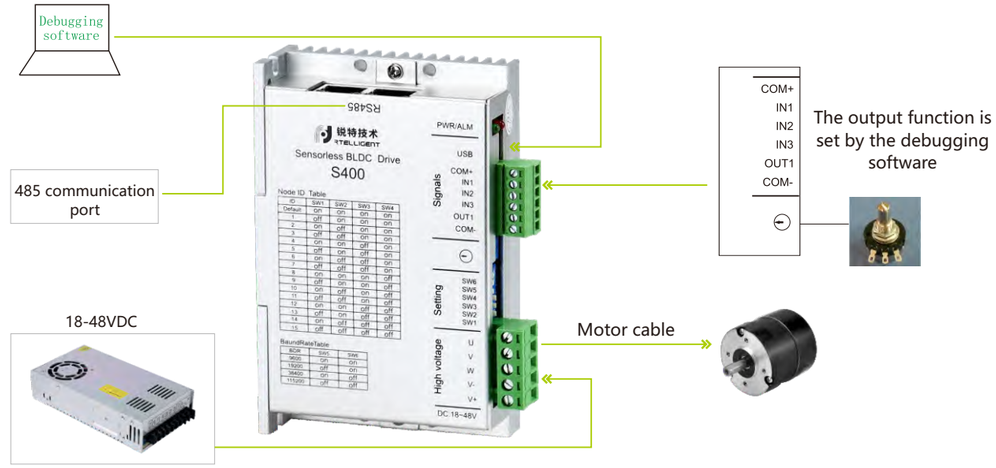
SW8	
on	RS485 terminal resistor effective
off	RS485 terminal resistor invalid

Inductive Speed Regulation Brushless Drive

S series Inductive speed regulation brushless Drives, based on Hallless FOC control technology, can drive various brushless motors. The drive automatically tunes and matches the corresponding motor, supports PWM and potentiometer speed regulation functions, and can also run through 485 networking, which is suitable for high-performance brushless motor control occasions.

- Using FOC magnetic field positioning technology and SVPWM technology
- Support potentiometer speed regulation or PWM speed regulation
- 3 digital input/1 digital output interface with configurable function
- Power supply voltage: 18VDC~48VDC; Recommended 24VDC~48VDC

Interface & Connection



Baud Rate Setting

BDR	SW5	SW6
9600	on	on
19200	off	on
38400	on	off
115200	off	off

The baud rate of the slave station must correspond to the baud rate set by the master station

When adjusting the dial code,it is necessary to power off and restart the drive to take effect.

Function Description

Identification	Function description
COM+	Control signal input common terminal:24V
IN1	External command pulse input port
IN2	External command direction input port
IN3	External enable input port
OUT1	Alarm output port
COM-	Control signal output common torminal:0V

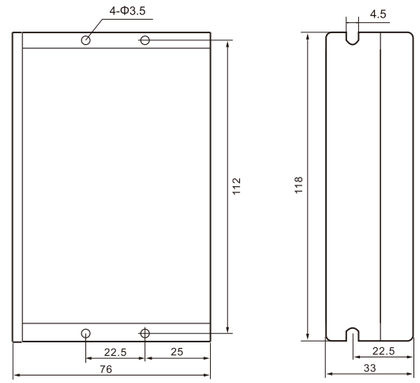
ID Setting

SW1-SW4 Set drive ID address, on=0, off=1

ID=SW1+SW2*2+SW3*4+SW4*8

Make sure the ID number is set correctly before powering on

Installation Dimension



STEPPER SYSTEM

Be more intelligent in motion control

EtherCAT

CANopen

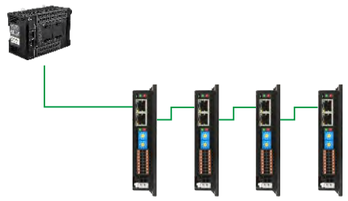
Modbus

RTELLIGENT

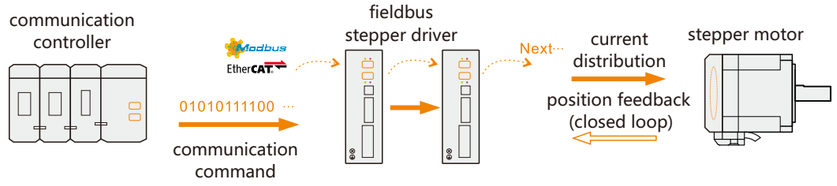
Fieldbus Stepper System

The control method of the traditional stepper motor is that the drive receives pulses to control the operation of the motor. At present, for some applications with high requirements, the pulse type control method can no longer meet the demand, and the fieldbus type control is required.

Compared with the pulse type, the fieldbus type is not only much easier in wiring, but also relatively simple to write the control program. Moreover, it can also monitor the running state of the motor and change the motor current and micro-stepping at any time, and simple control of acceleration and deceleration, analogue synchronous command, offline control, etc.



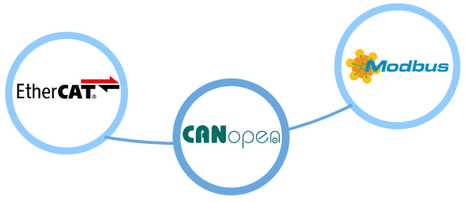
Block Diagram



Features

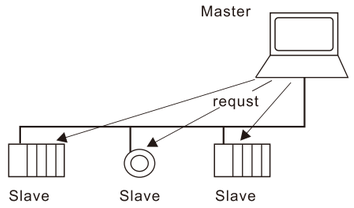
Various communication modes

Includes a variety of filedbus communication methods,which are suitable for various applications.



More flexible control

The fieldbus realizes the distributed control, and for the distributed control system, the fieldbus is an indispensable part.

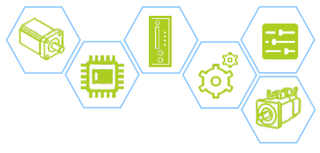


Stronger anti-interference ability

Since the fieldbus control method adopts digital serial communication method and the cable adopts shielded twisted pair, it has stronger anti-interference ability than the traditional discrete control method.

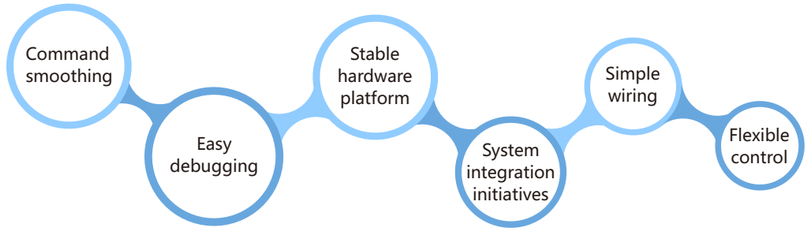
More accurate and reliable

Due to the intelligence and digitization of fieldbus devices, compared with traditional discrete control systems, the accuracy of measurement and control is fundamentally improved, and transmission errors are reduced. At the same time, due to the simplified structure of the system, the connection cables of the equipment are reduced, and the working reliability of the system is improved.



Fieldbus Stepper Drive

Our fieldbus series high-performance stepper drive has better design and stability, supports 485, EtherCAT, Modbus TCP, CANopen and other fieldbus communication methods, can be connected to multi-axis networking, and is easy to use.



Naming Rule

EC T 60 – □

1. Fieldbus type
   - N: 485 communication
   - EC: EtherCAT communication
2. Series code
   - R: open loop
   - T: closed loop
3. Matching motor frame size
4. Non-standard code

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Product Series

Modbus RTU NT Series

- Matching motor frame below 86mm
- Integrated motion controller function
- Built-in T-shaped acceleration and deceleration command
- Support various internal homing
- Communication control/pulse control/ switch control

Modbus TCP EP Series

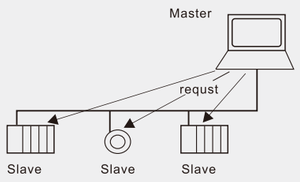
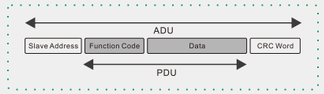
- Matching motor frame below 60mm
- Integrated motion controller function
- Built-in T-shaped
- Support various internal homing
- Compatible with 10M/100Mbps network interface

EtherCAT EC Series

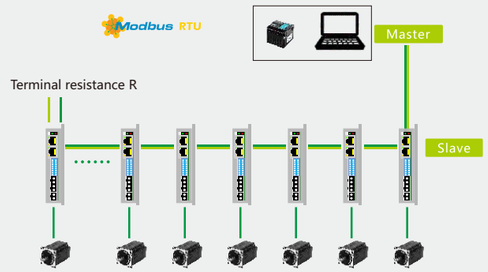
- Matching motor frame below 86mm
- Comply with CiA402 specification
- CSP/CSV/HM/PP/PV
- Support various internal homing
- The minimum synchronization period in CSP mode is 500us

485 Communication Type Stepper Drive

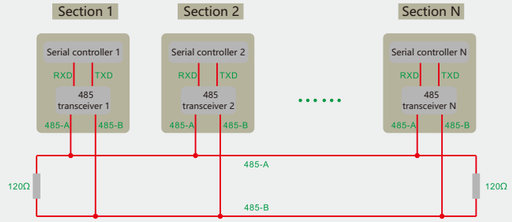
Modbus RTU Rotocol Overview

Schematic	Command format	Features
 Modbus broadcast mode block diagram	 Command format: Slave address + function code + data + CRC check Function code: 0X03 Read holding register 0X06 Write a single register 0X10 Write multiple registers	• Broadcast mode • One master multiple slaves • Host query and slave response • Slaves have no priority arbitration rights • Simple hardware • Reliable serial communication

Networking Diagram



Two-wire Half-duplex Wiring Diagram



Technical Specifications

Model	Peak current A	Weight kg	Power voltage	Dimensions mm	Communication mode	Maximum baud rate	Matching motor
NT60	6	0.3	18-50VDC	118×76×33	485	115200	Open loop or closed loop below 60mm
NT86	8	0.6	18-80VAC	151×97×52	485	115200	Open loop or closed loop below 86mm

LED Indication

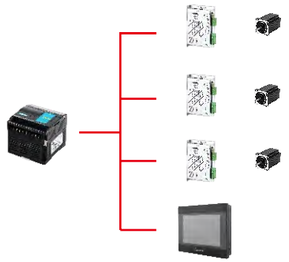
LED status	Drive status	Fault handling
● Steady green light	Drive not enabled	
● ● Flashing green light	Drive works fine	
● ● 1 green 1 red	Drive overcurrent	Check wiring、repair drive
● ● ● 1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
● ● ● ● 1 green 3 red	Drive internal voltage error	Drive failure
● ● ● ● 1 green 4 red	Encoder out-of-tolerance alarm	
● ● ● ● ● 1 green 5 red	Encoder phase error	
● ● ● ● ● ● 1 green 6 red	Parameter storage error	

NT Series Application

PLC Master Station + NT Drive Slave Station

Master+Slave: PLC+NT drive

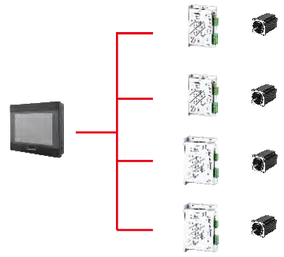
Convenient networking
PLC with 485 communication
Support up to 31 slave stations
Optional touch screen for slave station, quick interaction



Touch Screen Master + NT Drive Slave

Master+Slave: Touch screen+NT driver

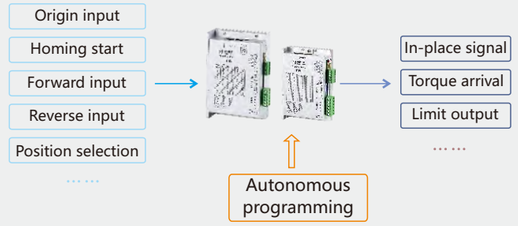
Convenient networking
Streamline cost control
Commonly used macro instruction programming mode
For simple logic loop control



NT Series Drive Automatic Programming Mode

Drive automatic programming mode

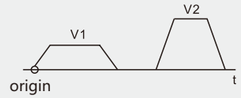
No networking required
Use the internal integrated motion control instructions
With external IO control
Fixed speed/positioning/multi-stage position/ auto-homing etc.



Function in Self-programming Mode

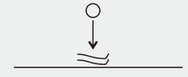
IO positioning operation

IO forward and revers
One or more target position
Support torque homing



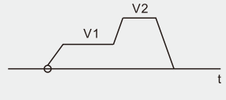
IO torque mode

IO forward and reverse
Target torque switching
Support torque homing



IO speed control operation

IO forward and reverse
One or more target position



IO torque mode

IO forward and reverse
Target torque and position switching
Support torque homing

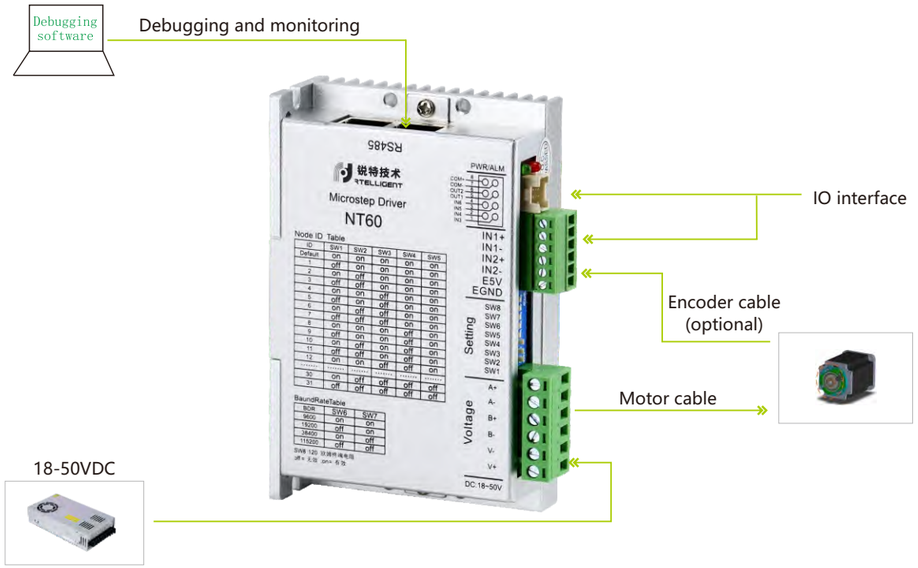
NT60

485 fieldbus stepper drive NT60 is based on RS-485 network to run Modbus RTU protocol. The intelligent motion control function is integrated, and with external IO control, it can complete functions such as fixed position/fixed speed/multi-position/auto-homing.

NT60 matches open loop or closed loop stepper motors below 60mm.

- Control mode: fixed length/fixed speed/homing/multi-speed/multi-position
- Debugging software: RTConfigurator (multiplexed RS485 interface)
- Power voltage: 24-50V DC
- Typical applications: single axis electric cylinder, assembly line, connection table, multi-axis positioning platform, etc

Drive Interface & Connection



Function Setting

ID setting		
on=0,off=1		
ID=sw1+sw2*2+sw3*4+sw4*8+sw5*16		
Ensure the ID number is set correctly before powering on		

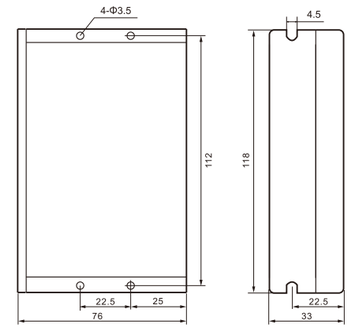
Baud rate setting		
BDR	SW6	SW7
9600	on	on
19200	off	on
38400	on	off
115200	off	off

The baud rate of the slave station must correspond to the baud rate set by the master station

When adjusting the dial code,it is necessary to power off and restart the drive to take effect.

Input interface		
Input 1	IN1+ IN1-	Differential input or encoder input interface
Input 2	IN2+ IN2-	
Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	Common input
Output interface		
Output 1	OUT1	
Output 2	OUT2	
	COM-	Common output

Installation Dimension



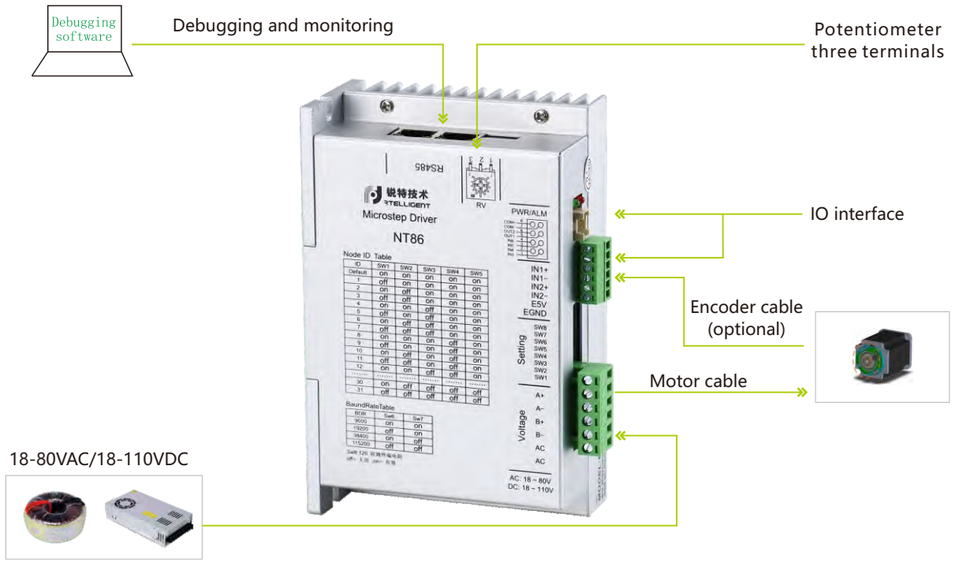
NT86

485 fieldbus stepper drive NT60 is based on RS-485 network to run Modbus RTU protocol. The intelligent motion control function is integrated, and with external IO control, it can complete functions such as fixed position/fixed speed/multi-position/auto-homing.

NT86 matches open loop or closed loop stepper motors below 86mm.

- Control mode: fixed length/fixed speed/homing/multi-speed/multi-position/potentiometer speed regulation
- Debugging software: RTConfigurator (multiplexed RS485 interface)
- Power voltage: 18-110VDC, 18-80VAC
- Typical applications: single axis electric cylinder, assembly line, multi-axis positioning platform, etc

Drive Interface & Connection



Function Setting

ID setting		
on=0,off=1		
ID=sw1+sw2*2+sw3*4+sw4*8+sw5*16		
Ensure the ID number is set correctly before powering on		

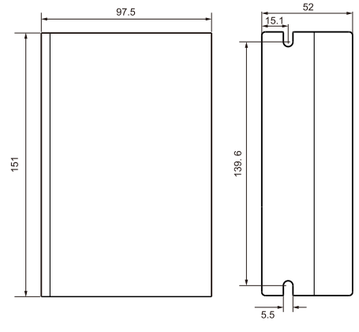
Baud rate setting		
BDR	SW6	SW7
9600	on	on
19200	off	on
38400	on	off
115200	off	off

The baud rate of the slave station must correspond to the baud rate set by the master station

When adjusting the dial code,it is necessary to power off and restart the drive to take effect.

Input interface		
Input 1	IN1+ IN1-	Differential input or encoder input interface
Input 2	IN2+ IN2-	
Input 3	IN3	Single-ended common anode input
Input 4	IN4	
Input 5	IN5	
Input 6	IN6	
	COM+	Common input
Output interface		
Output 1	OUT1	
Output 2	OUT2	
	COM-	Common output

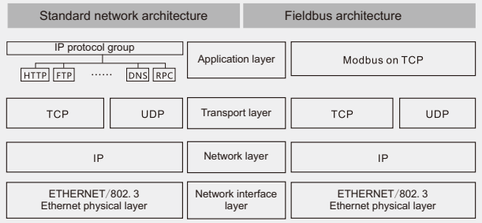
Installation Dimension



Modbus TCP Communication Type Stepper Drive

Protocol Overview

Schematic

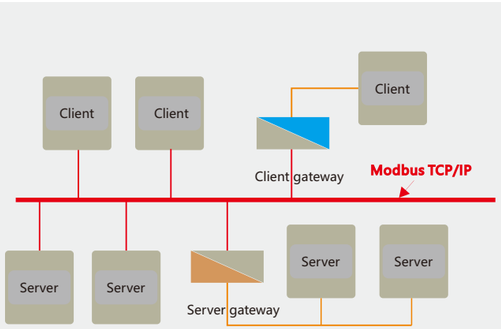


Modbus TCP is the same as the standard network bottom layer
Implement Modbus protocol only at the application layer

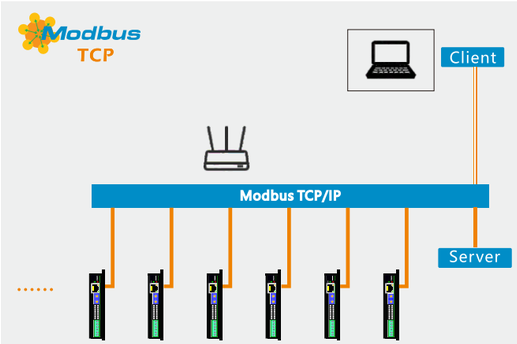
Features

- Compatible with standard Ethernet
- Cost effective of network implementation
- Easy to interconnect with various systems
- High-speed data transfer rate
- Mature supporting equipment
- Convenient for remote debugging and monitoring

TCP Network Connection Diagram



EP Series Network Connection Diagram



Technical Specifations

Model	Peak current A	Weight kg	Power voltage	Dimensions mm	Communication mode	Maximum baud rate	Matching motor
EPR60	6.0	0.4	18-50VDC	134×82×29	TCP/IP	10M/100M	Open loop below 60mm
EPT60	6.0	0.4	18-50VDC	134×82×29	TCP/IP	10M/100M	Closed loop below 60mm

LED Indication

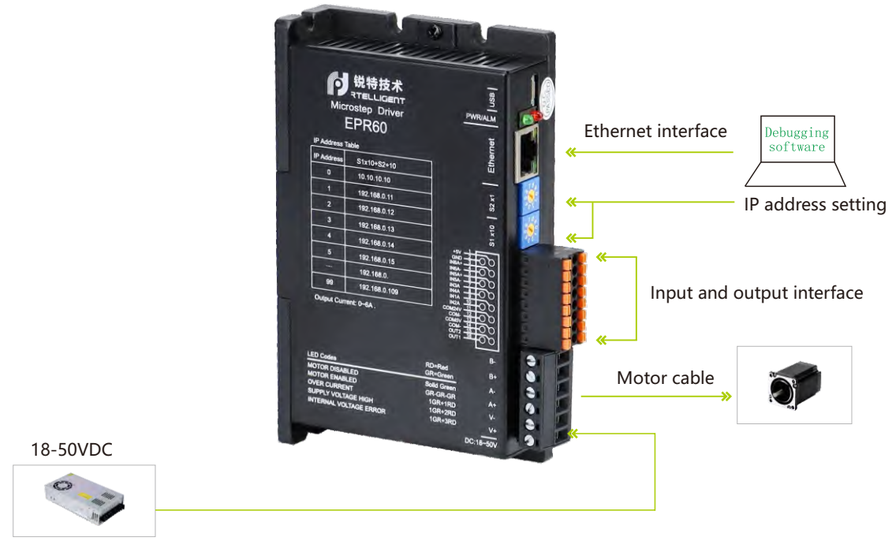
LED status	Drive status	Fault handling
● Steady green light	Drive not enabled	
● ● Flashing green light	Drive works fine	
● ● 1 green 1 red	Drive overcurrent	Check wiring、repair drive
● ● ● 1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
● ● ● 1 green 3 red	Drive internal voltage error	Drive failure
● ● ● ● 1 green 4 red	Encoder out-of-tolerance alarm	
● ● ● ● ● 1 green 5 red	Encoder phase error	
● ● ● ● ● ● 1 green 6 red	Parameter storage error	
● ● ● ● ● ● ● 1 green 7 red	Motor phase loss	Check the wiring terminal and confirm the extension cable connector

EPR60

The Ethernet fieldbus-controlled stepper drive EPR60 runs the Modbus TCP protocol based on standard Ethernet interface and integrates a rich set of motion control functions. EPR60 adopts standard 10M/100M bps network layout, which is convenient to build the Internet of Things for automation equipment.
EPR60 is compatible with open-loop stepper motors base below 60mm.

- Control mode: fixed length/fixed speed/homing/multi-speed/multi-position
- Debugging software: RTConfigurator (USB interface)
- Power voltage: 18-50VDC
- Typical applications: assembly lines, warehousing logistics equipment, multi-axis positioning platforms, etc

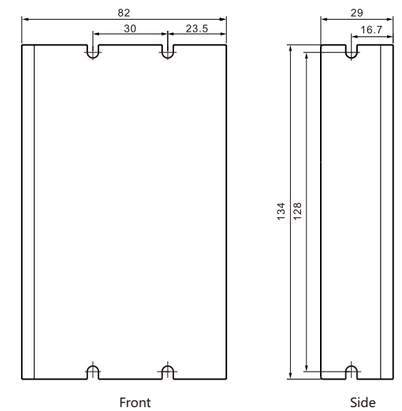
Drive Interface & Connection



Function Setting

Input interface		
3	IN6+	Differential input or encoder input interface
4	IN6-	
5	IN5+	
6	IN5-	
7	IN3	Single-ended common anode input
8	IN4	
9	IN1	
10	IN2	
11	COM+	Common input
Output interface		
16	OUT1	Single-ended common cathode input
15	OUT2	
12/14	COM-	Common output
IP setting		
IP Add =SI*10+S2+10		
Ensure the IP address is set correctly before powering on		

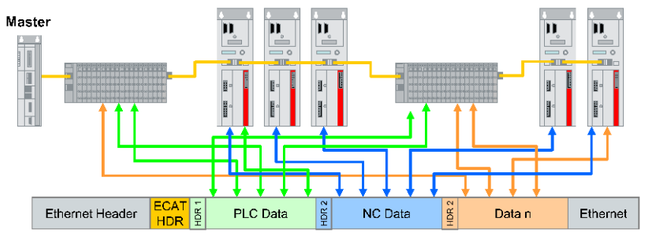
Installation Dimension



EtherCAT Protocol: Based on Industrial Ethernet Fieldbus communciation

EtherCAT Principle

ECAT principle

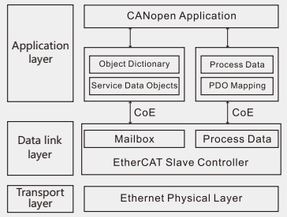


Features

- Efficient transmission mechanism and speed
- Flexible network topology
- Automatic node address configuration for easy maintenance
- Open technology
- Simple hardware, high cost performance
- Suitable for modular collaborative development

CANopen over EtherCAT Protocol Overview

CoE diagram



EtherCAT modifies the communication mechanism of Ethernet to ensure the real-time performance of the network

CiA402 control mode

Profile Position Mode (PP):
Set position, speed, acceleration and deceleration parameters, and execute relative or absolute position commands from the internal buffer of the drive.

Profile Velocity Mode (PV):
Set speed, acceleration and deceleration parameters, and execute the speed command by the internal buffer of the drive on commands from the internal buffer of the drive.

Cyclic Synchronous Position Mode (CSP)
The main controller generates a position trajectory and sends the target position (0x607A) to the drive in each PDO update cycle.

Homing Mode (HM)
Support No.17-30, No.35 homing modeThe relevant parameters need to be set according to the format.

PDO and SDO parameters

Process Data Object (PDO):

Process data object

Used to transmit real-time data

Configure the relevant parameters of the driver as PDO parameters, and realize real-time reading and writing of status and commands between the master station and the slave station in each synchronization cycle

For example, parameters such as target position in CSP mode

Service Data Object (SDO):

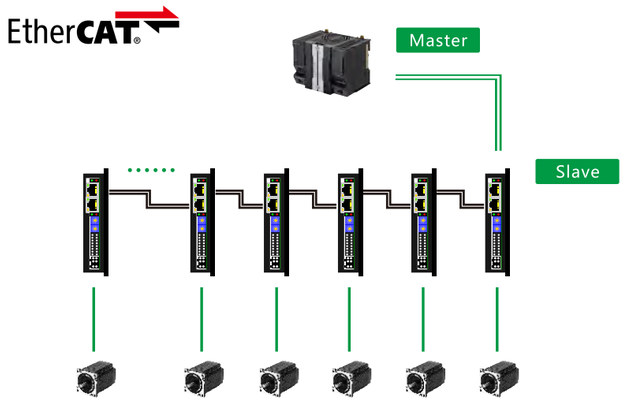
Service Data Objects

Used to configure static parameters,

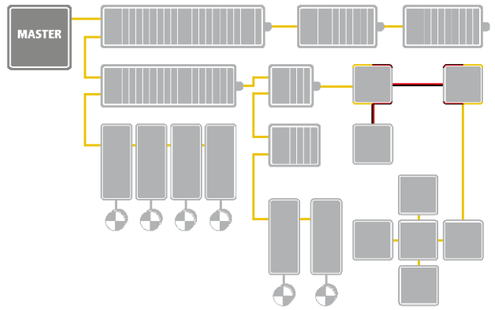
Configure the driver parameters that do not need to be changed in real time as SDO parameters, and set the relevant parameters of the slave driver on the master station.

For example, working current and other parameters.

EtherCAT Network Diagram



EtherCAT Topology



Flexible topology-support linear, tree, star

General Master Stations Supported

BECKHOFF · OMRON · KEYENCE 基恩士 · CODESYS · Zmotion 正运动技术 · INOVANCE · DELTA 台达 · XINJE · • • •

Technical Specifications

Model	Peak current A	Weight kg	Input voltage	Dimensions mm	Input and output	Matching motor
ECR42	6.0	0.4	18-80VDC	132×82×29	Six inputs, two outputs	open loop below 42mm
ECR60	6.0	0.4	18-80VDC	132×82×29	Six inputs, two outputs	open loop below 60mm
ECR86	7.2	0.6	18-80VAC	151×97×35	Six inputs, two outputs	open loop below 86mm
ECT42	6.0	0.4	18-80VDC	132×82×29	Four inputs, two outputs	closed loop below 42mm
ECT60	6.0	0.4	18-80VDC	132×82×29	Four inputs, two outputs	closed loop below 60mm
ECT86	7.2	0.6	18-80VAC	151×97×35	Four inputs, two outputs	closed loop below 86mm
ECR60X2A	6.0	0.5	18-80VDC	175×98×33	Eight inputs, four outputs	open loop below 60mm
ECT60X2	6.0	0.5	18-80VDC	175×98×33	Eight inputs, four outputs	closed loop below 60mm

LED Indication

LED status	Drive status	Fault handling
● Steady green light	Drive not enabled	
● ● Flashing green light	Drive works fine	
● ● 1 green 1 red	Drive overcurrent	Check wiring、repair drive
● ● ● 1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
● ● ● 1 green 3 red	Drive internal voltage error	Drive failure
● ● ● ● 1 green 4 red	Encoder out-of-tolerance alarm	
● ● ● ● ● 1 green 5 red	Encoder phase error	
● ● ● ● ● ● 1 green 6 red	Parameter storage error	
● ● ● ● ● ● ● 1 green 7 red	Motor phase loss	Check the wiring terminal and confirm the extension cable connector

Common Parameter

Function	Object dictionary	Subindex	Content	Remark
Peak current	0x2000	——	Modify the motor maximum current	The maximum motor current cannot be exceeded
Encoder resolution	0x2020	——	Set the motor encoder resolution after 4 times the frequency	Related to motor/default 400pulse/r
Motor resolution	0x2001	——	Set the resolution of one motor revolution	Initial value 10000
Selection of pulses per revolution	0x2057	——	Select the actual motor pulse per revolution parameter value	The default 0 is the encoder resolution value
Save parameters	0x1010:	1	Save all parameters(0→1)	Select 1 to set the value for 2001
The current position of the motor	0x6064	——	Display the current position value of the motor	Based on pulses per revolution
Input port status display	0x60FD	——	Display the actual status of the input port	
Input port function selection	0x2007:	1/2/3/4	Input port function selection/sub-index is IN port serial number	8bit binary/convert to decimal:
Input IO polarity	0x2008	——	Select IO port input polarity	

Note: The object dictionary address of axis 2 of ECT60X2/ECR60X2A is the address of the object dictionary of axis 1, plus 0x0800:

LED Indication

LED status			Communication status
GREEN	●	Not bright	initialization
	●	Slow flash	pre-operational
	●	Single flash	safe-operational
	●	Constant bright	operational
RED	●	Not bright	No error
	●	Slow flash	General error
	●	Single flash	Sync error
	●	Double flash	Watchdog error

Slow flash: on for 200ms, off for 200ms; repeat

Single flash: on for 200ms, off for 1s; repeat

Double flash: on for 200ms, off for 200ms, then on for 200ms, off for 1s; repeat

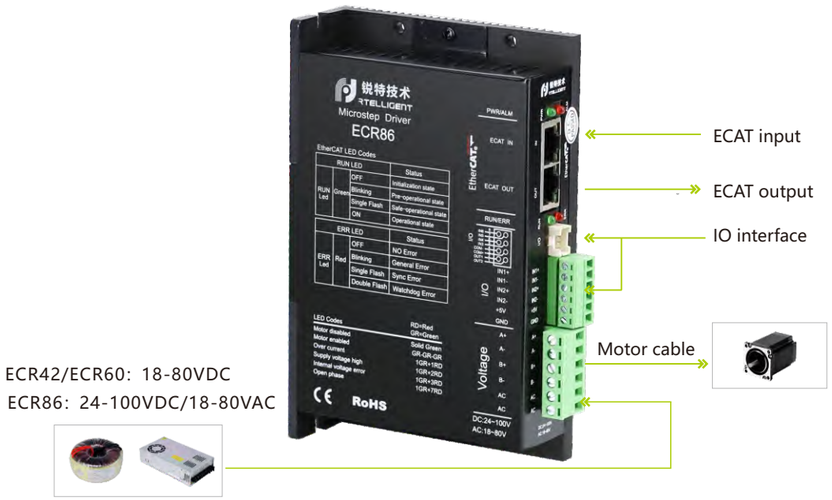
ECR Series

The EtherCAT fieldbus stepper drive is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate is up to 100Mb/s, and supports various network topologies.

ECR42 matches open loop stepper motors below 42mm.
ECR60 matches open loop stepper motors below 60mm.
ECR86 matches open loop stepper motors below 86mm.

- Control mode: PP, PV, CSP, HM, etc
- Power supply voltage: 18-80VDC (ECR60), 24-100VDC/18-80VAC (ECR86)
- Input and output: 2-channel differential inputs/4-channel 24V common anode inputs; 2-channel optocoupler isolated outputs
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc

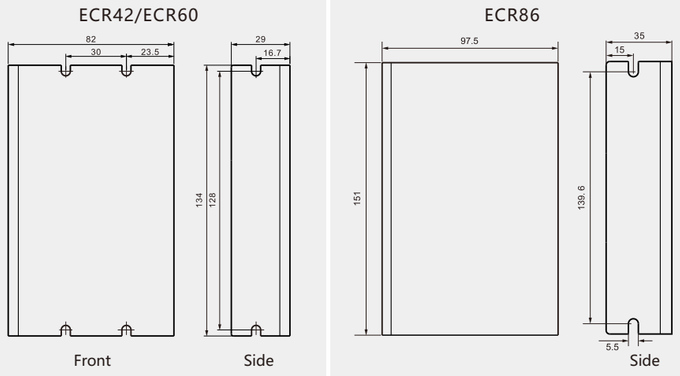
Drive Interface & Connection



Function Setting

Input interface		
Input1	IN1+	Differential input signal
	IN1-	
Input2	IN2+	5V level input
	IN2-	
Input3	IN3	Single-ended common anode input
Input4	IN4	Default function: IN3 positive limit IN4 negative limit IN5 origin
Input5	IN5	
Input6	IN6	
	COM+	Common input
Internal power output interface		
	+5V	Internal 5V/80mA power output
	GND	
Output interface		
Output1	OUT1	Single-ended common cathode output
Output2	OUT2	
	COM-	Common output

Installation Dimension



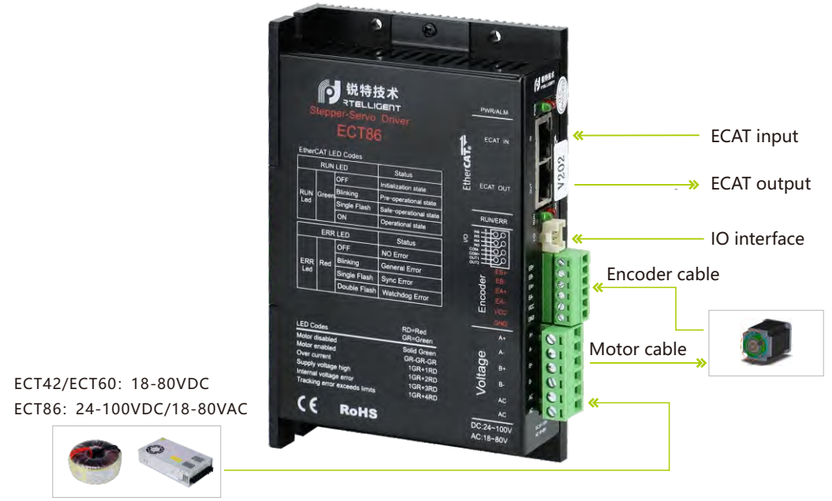
ECT Series

The EtherCAT fieldbus stepper drive is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate is up to 100Mb/s, and supports various network topologies.

ECT42 matches closed loop stepper motors below 42mm.
ECT60 matches closed loop stepper motors below 60mm.
ECT86 matches closed loop stepper motors below 86mm.

- Control mode: PP, PV, CSP, HM, etc
- Power supply voltage: 18-80VDC (ECT60), 24-100VDC/18-80VAC (ECT86)
- Input and output: 4-channel 24V common anode input; 2-channel optocoupler isolated outputs
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc

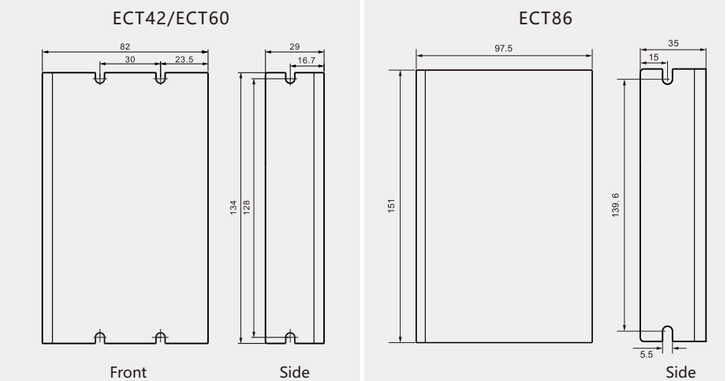
Drive Interface & Connection



Function Setting

Encoder interface		
	EB+	Encoder phase A/B signal
	EB-	
	EA+	
	EA-	
	VCC	Encoder 5V power supply Provided internally by the drive
	GND	
Input interface		
Input3	IN3	Single-ended common anode input
Input4	IN4	Default function: IN3 positive limit IN4 negative limit IN5 origin
Input5	IN5	
Input6	IN6	
	COM+	24V common input
Output interface		
Output1	OUT1	Single-ended common cathode output
Output2	OUT2	
	COM-	0V common output

Installation Dimension



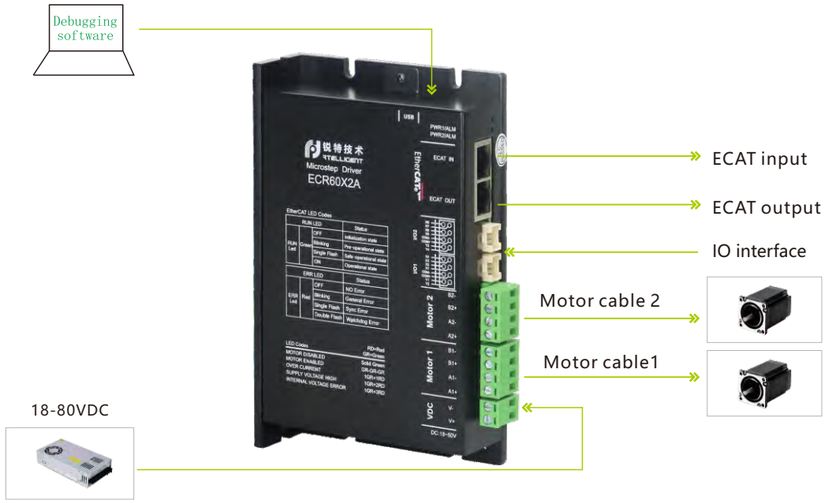
ECR60X2A

The EtherCAT fieldbus open loop stepper drive ECR60X2A is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate is up to 100Mb/s, and supports various network topologies.

ECR60X2A matches open loop stepper motors below 60mm.

- Control modes: PP, PV, CSP, CSV, HM, etc
- Power supply voltage: 18-80V DC
- Input and output: 8-channel 24V common positive input; 4-channel optocoupler isolation outputs
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc

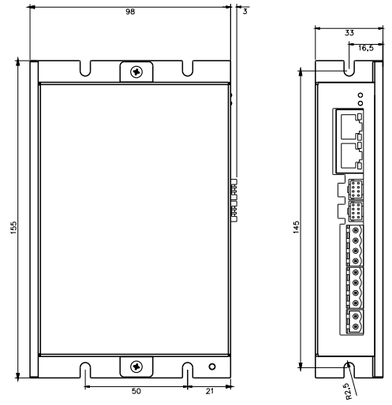
Drive Interface & Connection



Function Setting

Signal interface	ID	Default function
I/O 1	Y2	Axis 1 brake output
	Y1	Axis 1 alarm output
	COM+	Axis 1 input common : 24V
	COM-	Axis 1 output Common: 0V
	X1	Axis 1 negative limit input
	X2	Axis 1 positive limit input
	X3	Axis 1 zero input
	X4	Axis 1 emergency stop input
I/O 2	Y4	Axis 2 brake output
	Y3	Axis 2 alarm output
	COM+	Axis 2 input common : 24V
	COM-	Axis 2 output Common: 0V
	X5	Axis 2 negative limit input
	X6	Axis 2 positive limit input
	X7	Axis 2 zero input
	X8	Axis 2 emergency stop input

Installation Dimension



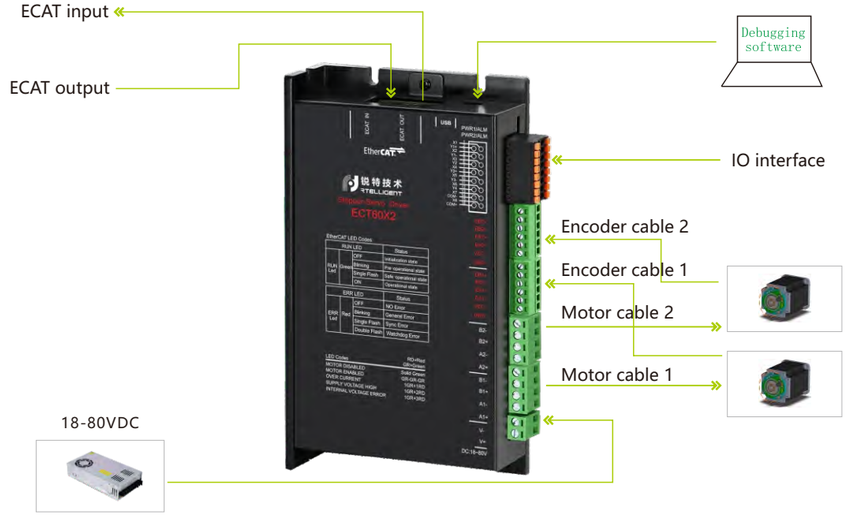
ECT60X2

The EtherCAT fieldbus stepper drive ECT60X2 is based on the CoE standard framework and complies with the CiA402 standard. The data transmission rate is up to 100Mb/s, and supports various network topologies.

ECT60X2 matches closed loop stepper motors below 60mm.

- Control mode: PP, PV, CSP, HM, etc
- Power supply voltage: 18-80VDC
- Input and output: 8-channel 24V common anode input; 4-channel optocoupler isolated outputs
- Typical applications: assembly lines, lithium battery equipment, solar equipment, 3C electronic equipment, etc

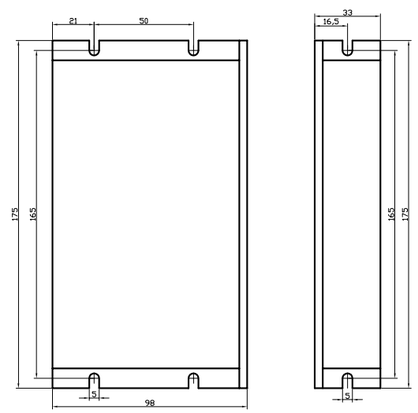
Drive Interface & Connection



Function Setting

Pin No	ID	Default function
1	X1	Axis 1 negative limit input
3	X2	Axis 1 positive limit input
5	X3	Axis 1 zero input
7	X4	Axis 1 emergency stop input
9	X5	Axis 2 negative limit input
11	X6	Axis 2 positive limit input
13	X7	Axis 2 zero input
15	X8	Axis 2 emergency stop input
2	Y1+	Axis 1 alarm output positive
4	Y1-	Axis 1 alarm output negative
6	Y2	Axis 1 brake output
8	Y3+	Axis 2 alarm output positive
10	Y3-	Axis 2 alarm output negative
12	Y4	Axis 2 brake output
14	COM-	Output common : 0V
16	COM+	Input Common: 24V

Installation Dimension

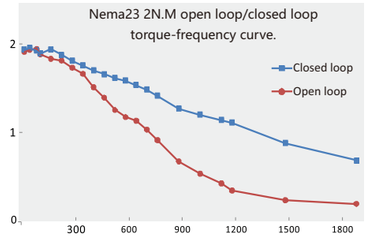


Closed Loop Stepper System

Closed loop stepper system is a control motor solution featuring high speed, high torque, high precision, low vibration, low heating and no loss of step, which is formed based on the common open loop stepper motor in combination with position feedback and servo algorithm.

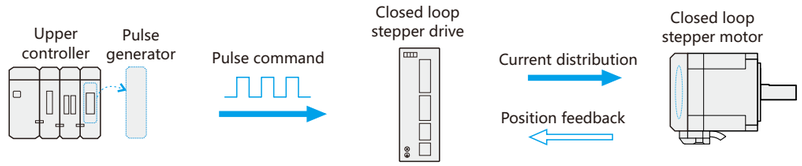
Closed loop stepper motor is equipped with a optical encoder on the rear shaft of the open-loop motor to form position feedback.

Closed loop stepper drive processes the encoder position feedback to achieve more precise current and position control.



As shown in the figure, the closed loop has a greater torque output at high speed

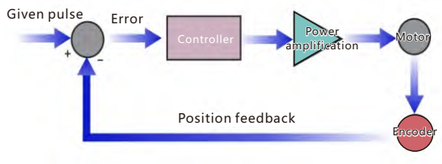
System Diagram



Features

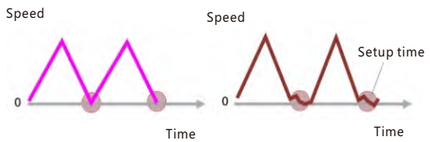
No loss of step

The position of the motor is fed back by the optical encoder and compared with the drive command. The current is adjusted according to the position error to prevent losing step.



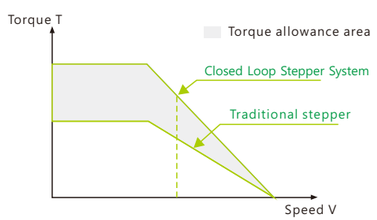
Fast response

The closed loop stepper motor rotor is synchronized with the given pulse, enabling fast positioning without rigidity adjustment without too long current settling time.



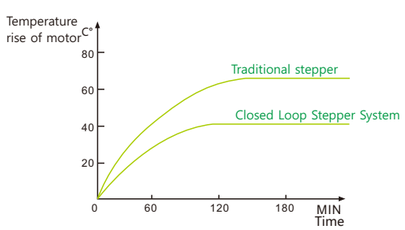
High torque

The closed loop stepper system has better torque-frequency characteristics, and the current decay speed is slow, which can improve the output torque of the motor at high speed.



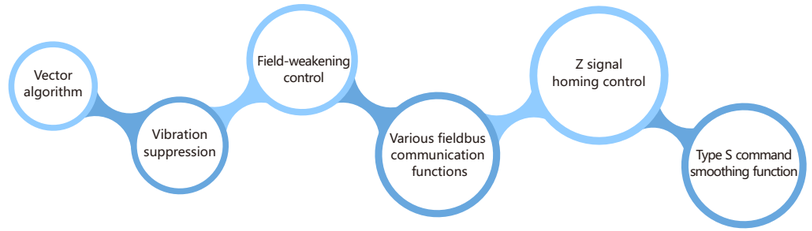
Low heating

The closed loop stepper system dynamically adjusts the current according to the load condition, which has a higher current utilization rate than the open loop system and reduces the heating of the motor.



Closed Loop Stepper Drive

T series closed loop stepper drive, based on the new DSP hardware platform, using magnetic field orientation (FOC) and field- weakening control algorithm, has all-round performance beyond ordinary stepper performance.



Naming Rule

T 60 PLUS - □

1. Series Name
   DS series digital display
2. Matching motor base size
3. Multi-function upgrade
4. Non-standard code

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

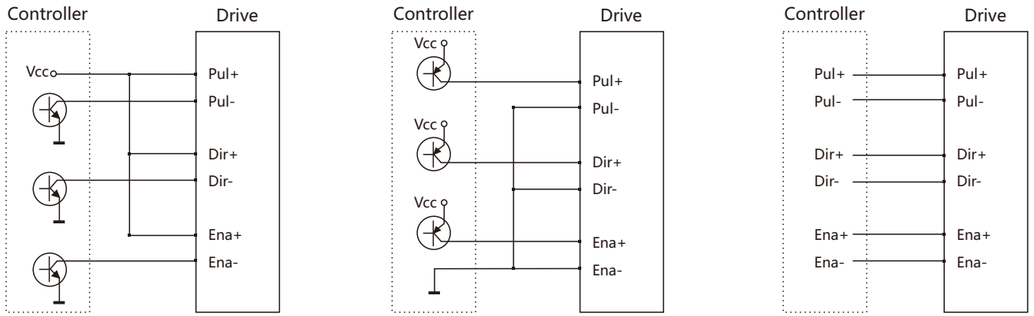
Features

General-purpose T series	Functional PLUS series	Digital display DS series
		
• Matching motor frame below 86mm • PUL&DIR or CW&CCW • Auto-tuning match motor function • Smoothing filter function optional • Debugging software to modify and monitor drive parameters and status	• Matching motor frame below 86mm • PUL&DIR or CW&CCW • Auto-tuning match motor function • Smoothing filter function optional • Debugging software to modify and monitor drive parameters and status	• Matching motor frame below 86mm • Real-time display of motor running status • Higher resolution encoders • Panel to modify and monitor drive parameters and status • Micro USB interface

Technical Specifications

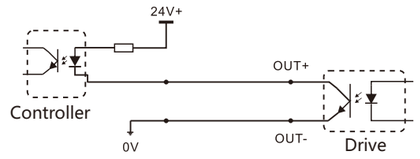
Model	Peak current A	Weight kg	Input voltage	Dimension mm	Number of micro-stepping	Pulse level	Matching motor
T42	3.0	0.2	18-68VDC	116×69×26.5	800-51200	3.3-24V	closed loop below 42mm
T60	6.0	0.2	18-68VDC	116×69×26.5	800-51200	3.3-24V	closed loop below 60mm
T60PLUS	6.0	0.3	18-48VDC	118×76×25	200-25600	5-24V	closed loop below 60mm
T86	7.0	0.6	18-80VAC	151×97×52	400-51200	3.3-24V	closed loop below 86mm
DS86	7.2	0.8	18-80VAC	151×141×47	400-60000	3.3-24V	closed loop below 86mm
NT110	8.0	1.3	110-230VAC	151×141×58	400-60000	3.3-24V	3-phase closed loop below 110mm

Control Signal Wiring Example



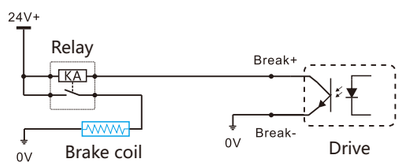
Output Signal Wiring Example

Alarm/Pend signal



OUT is ALM or Pend, pay attention to connecting current limiting resistor in series

Brake signal



Brake means brake control signal, which is set by software.
Do not connect the brake coil reversely (red +, black -)

LED Indication

LED status	Drive status	Fault handling
Steady green light	Drive not enabled	
Flashing green light	Drive works fine	
1 green 1 red	Drive overcurrent	Check wiring、repair drive
1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
1 green 3 red	Drive internal voltage error	Drive failure
1 green 4 red	Encoder out-of-tolerance alarm	
1 green 5 red	Encoder phase error	
1 green 6 red	Parameter storage error	
1 green 7 red	Motor phase loss	Check the wiring terminal and confirm the extension cable connector

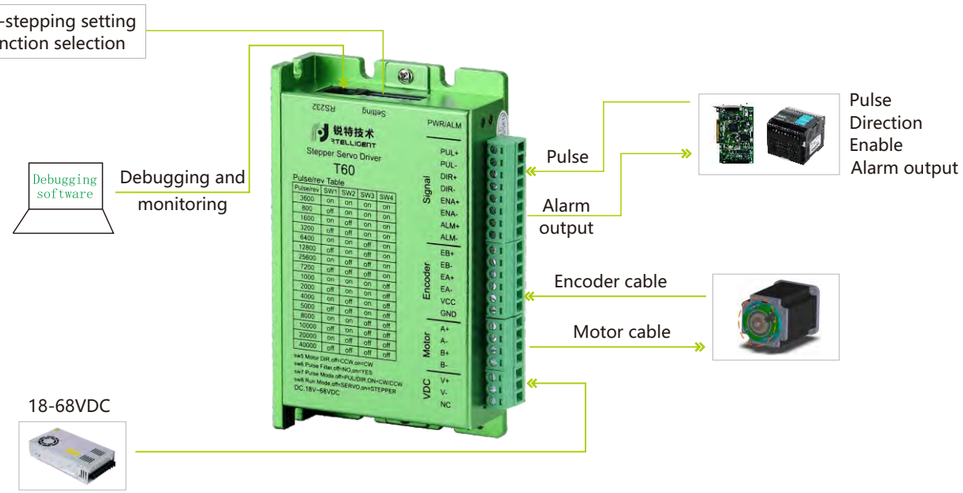
T60/T42

T60/T42 closed loop stepper drive, based on 32-bit DSP platform, built-in vector control technology and servo demodulation function, combined with the feedback of closed-loop motor encoder, makes the closed loop stepper system has the characteristics of low noise, low heat, no loss of step and higher application speed, which can improve the performance of intelligent equipment system in all aspects.

T60 matches closed- loop stepper motors below 60mm, and T42 matches closed- loop stepper motors below 42mm.

- Pulse mode: PUL&DIR/CW&CCW
- Signal level: 3.3-24V compatible; serial resistance not required for the application of PLC.
- Power voltage: 18-68VDC, and 36 or 48V recommended.
- Typical applications: Auto-screwdriving machine, servo dispenser, wire-stripping machine, labeling machine, medical detector, electronic assembly equipment etc.

Drive Interface & Connection



Function Selection

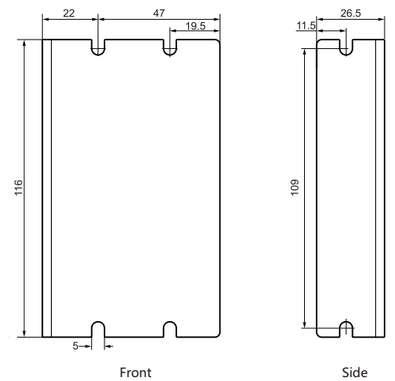
SW5	Running direction	on	Forward
		off	Backward
SW6	Command smoothing	on	S-type acceleration and deceleration take effect
		off	S-type acceleration and deceleration are invalid

SW7	Pulse mode	on	CW/CCW
		off	PUL&DIR
SW8	Open/closed loop	on	Open loop mode
		off	Closed loop mode

Micro-stepping Setting

Pulse/rev	SW1	SW2	SW3	SW4
3600	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
7200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

Installation Dimension



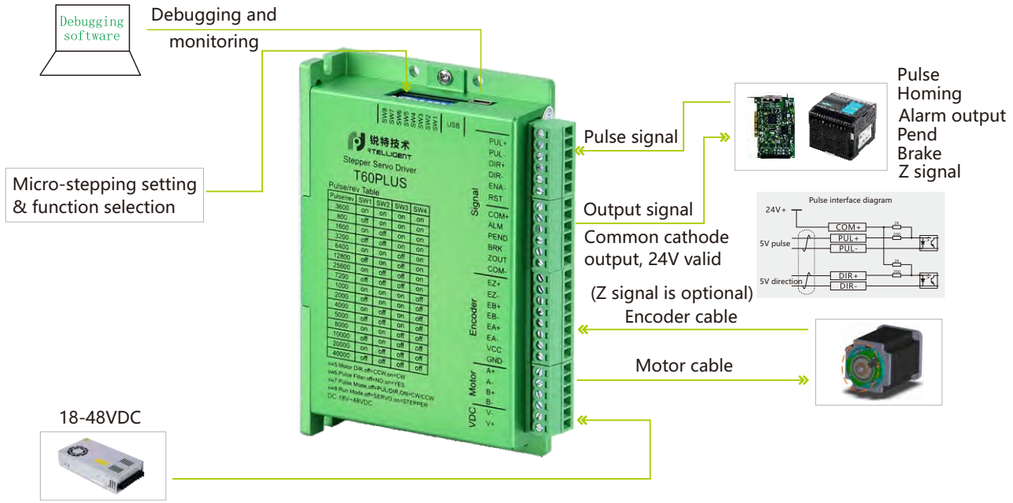
T60PLUS

T60PLUS closed loop stepper drive, with encoder Z signal input and output functions. It integrates a miniUSB communication port for easy debugging of related parameters.

T60PLUS matches closed loop stepper motors with Z signal below 60mm.

- Pulse mode: PUL&DIR/CW&CCW
- Signal level: 5V/24V
- Power voltage: 18-48VDC, and 36 or 48V recommended.
- Typical applications: Auto-screwdriving machine, servo dispenser, wire-stripping machine, labeling machine, medical detector, electronic assembly equipment etc.

Drive Interface & Connection



Function Selection

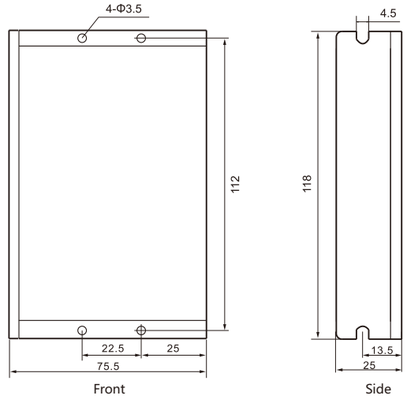
SW5	Running direction	on	Forward
		off	Backward
SW6	Command smoothing	on	S-type acceleration and deceleration take effect
		off	S-type acceleration and deceleration are invalid

SW7	Pulse mode	on	CW/CCW
		off	PUL&DIR
SW8	Open/closed loop	on	Open loop mode
		off	Closed loop mode

Micro-stepping Setting

Pulse/rev	SW1	SW2	SW3	SW4
3600	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
7200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

Installation Dimension



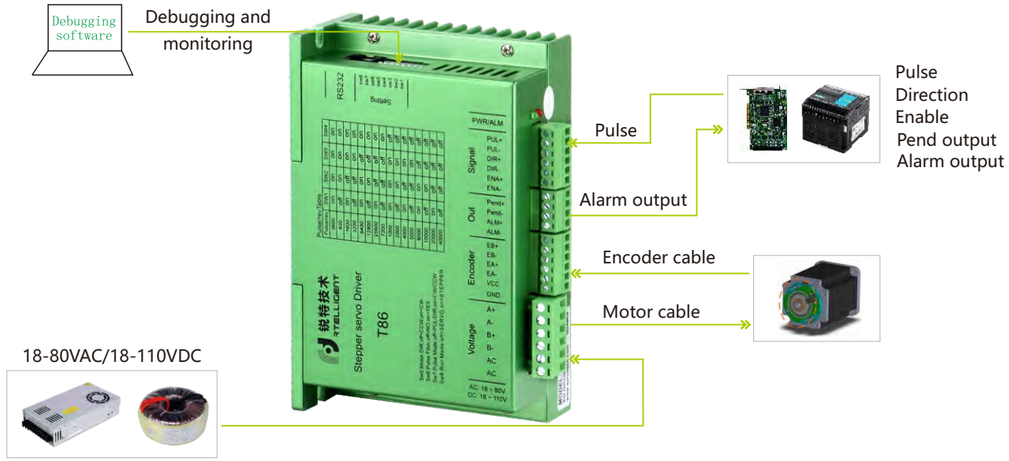
T86

T86 closed loop stepper drive, based on 32-bit DSP platform, built-in vector control technology and servo demodulation function, combined with the feedback of closed-loop motor encoder, makes the closed loop stepper system has the characteristics of low noise, low heat, no loss of step and higher application speed, which can improve the performance of intelligent equipment system in all aspects.

T86 matches closed- loop stepper motors below 86mm.

- Pulse mode: PUL&DIR/CW&CCW
- Signal level: 3.3-24V compatible; serial resistance not required for the application of PLC.
- Power voltage: 18-110VDC or 18-80VAC, and 48VAC recommended.
- Typical applications: Auto-screwdriving machine, servo dispenser, wire-stripping machine, labeling machine, medical detector, electronic assembly equipment etc.

Drive Interface & Connection



Function Selection

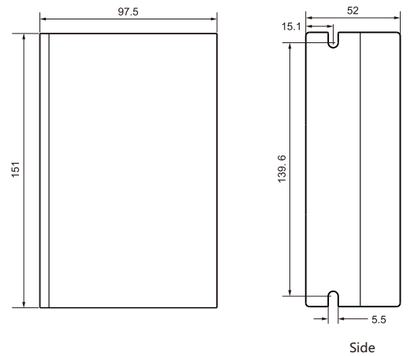
SW5	Running direction	on	Forward
		off	Backward
SW6	Command smoothing	on	S-type acceleration and deceleration take effect
		off	S-type acceleration and deceleration are invalid

SW7	Pulse mode	on	CW/CCW
		off	PUL&DIR
SW8	Open/closed loop	on	Open loop mode
		off	Closed loop mode

Micro-stepping Setting

Pulse/rev	SW1	SW2	SW3	SW4
3600	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
7200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

Installation Dimension



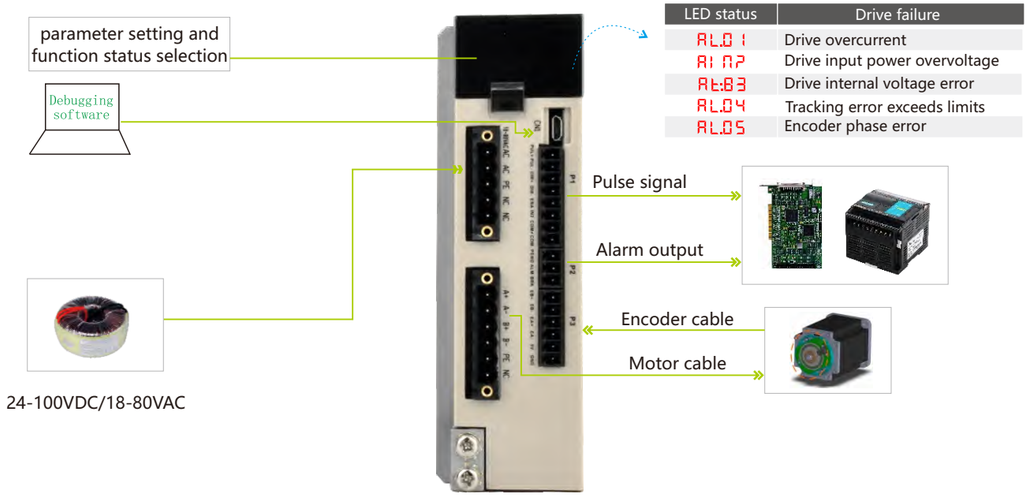
DS86

T86 closed loop stepper drive, based on 32-bit DSP platform, built-in vector control technology and servo demodulation function, combined with the feedback of closed-loop motor encoder, makes the closed loop stepper system has the characteristics of low noise, low heat, no loss of step and higher application speed, which can improve the performance of intelligent equipment system in all aspects.

T86 matches closed- loop stepper motors below 86mm.

- Pulse mode: PUL&DIR/CW&CCW
- Signal level: 3.3-24V compatible; serial resistance not required for the application of PLC.
- Power voltage: 24-100VDC or 18-80VAC, and 75VAC recommended.
- Typical applications: Auto-screwdriving machine, servo dispenser, wire-stripping machine, labeling machine, medical detector, electronic assembly equipment etc.

Drive Interface & Connection



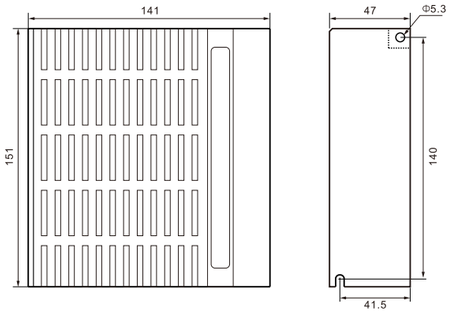
LED status	Drive failure
AL.01	Drive overcurrent
AL.02	Drive input power overvoltage
AL.03	Drive internal voltage error
AL.04	Tracking error exceeds limits
AL.05	Encoder phase error

Description

Parameter setting ways:
1.Connect with PC computer through USB interface.
Set parameter by debugging software.
2. Set parameter by the DS86 setting buttons.

Buttons	Description
Ⓜ	MOD :return to the previous menu, cancelation of operation
▲	UP: menu selection, data setting
▼	DOWN : menu selection, data setting
Ⓢ	SET : function confirm

Installation Dimension



Parameter Setting

The parameters that can be set by the drive are PA-00 to PA-40

No.	Name	Range	Default	Description
00	Control mode	[0,2]	1	0: Open loop operation 1: Servo mode one 2: Servo mode two
01	Micro-stepping	[200,65535]	1600	The pulse number that needed by motor running one round
02	Maximum current	[100,7000]	7000	The maximum current needs to match the corresponding motor
03	Basic current percentage	[1,100]	50	
04	Encoder resolution	[500,65535]	4000	
05	Tracking error alarm threshold	[100,65535]	4000	Set alarm threshold of tracking error
06	Reverse direction	[0,1]	0	0:Forward 1:Backward
07	Command filtering	[1,512]	128	Delay time=setting value*50us During interpolation movement, set to 1
08	Pulse mode	[0,1]	0	0: Pulse + direction 1: CW + CCW
09	Pulse effective edge	[1,512]	128	0: Rising edge 1: Falling edge
10	Enable level	[0,1]	0	0: NO 1: NC

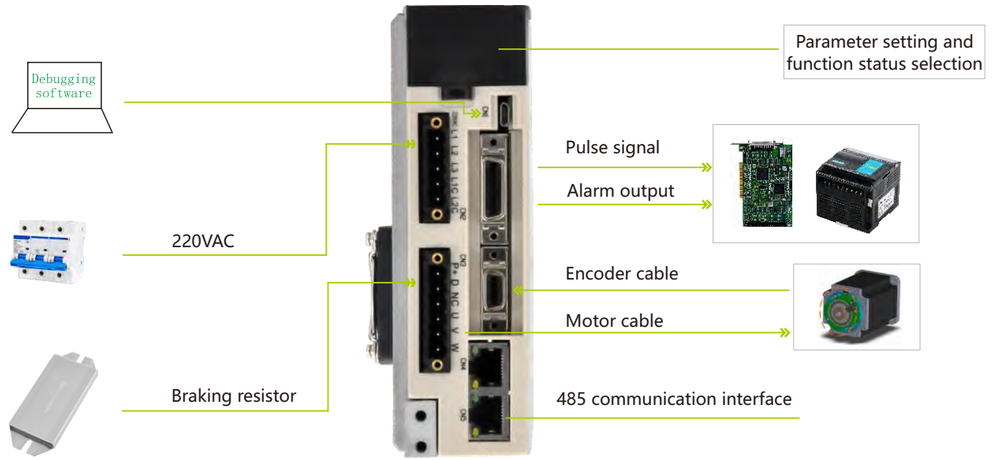
NT110

Nt110 digital display 3 phase closed loop stepper drive, based on 32-bit digital DSP platform, built-in vector control technology and servo demodulation function, makes the closed loop stepper system have the characteristics of low noise and low heat.

NT110 is used to drive 3 phase 110mm and 86mm closed loop stepper motors,RS485 communication is available.

- Pulse mode: PUL&DIR/CW&CCW
- Signal level: 3.3-24V compatible; serial resistance not required for the application of PLC.
- Power voltage: 110-230VAC, and 220VAC is recommended.
- Typical applications: welding machine, wire-stripping machine, labeling machine, carving machine, electronic assembly equipment etc.

Drive Interface & Connection

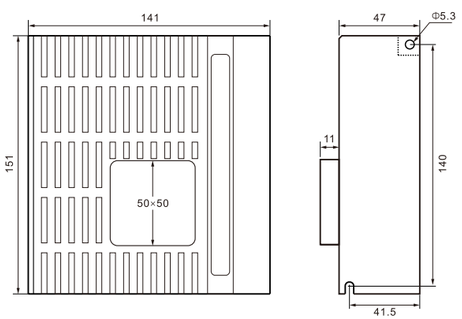


Description

Parameter setting ways:
1.Connect with PC computer through USB interface.
Set parameter by debugging software.
2. Set parameter by the NT110 setting buttons.

Buttons	Description
Ⓜ	MOD :return to the previous menu, cancelation of operation
▲	UP: menu selection, data setting
▼	DOWN : menu selection, data setting
Ⓢ	SET : function confirm

Installation Dimension



Parameter Setting

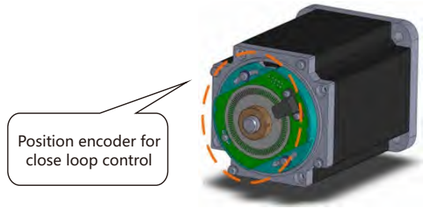
The parameters that can be set by the drive are PN000-PN499

No.	Name	Range	Default	Description
PN022	Control mode	[0,2]	1	0: Open loop operation 1: Servo mode one 2: Servo mode two
PN024	Micro-stepping	[200,65535]	4000	The pulse number that needed by motor running one round
PN045	Maximum current	[100,7000]	7000	The maximum current needs to match the corresponding motor
PN046	Basic current percentage	[1,100]	50	
PN040	Encoder resolution	[500,65535]	4000	
PN041	Tracking error alarm threshold	[100,65535]	4000	Set alarm threshold of tracking error
PN023	Reverse direction	[0,1]	0	0:Forward 1:Backward
PN028	Command filtering	[1,512]	128	Delay time=setting value*50us During interpolation movement, set to 1
PN017	Pulse source	[0,1]	1	0: Internal pulse control 1: External pulse input
PN019	Input pulse mode	[0,1,2,3]	0	0: Pulse + direction/↑ 1: Pulse + direction/↓ 2: CW + CCW 3: Orthogonal pulse
PN060	Input port setting	[0~63]	36	36：Enable control is effective at low level

Closed Loop Stepper Motor

New AM series closed loop stepper motors are based on Cz optimized magnetic circuit design and the latest compact M-shaped molds. The motor body uses high magnetic density stator and rotor materials with high energy efficiency.

- Built-in high-resolution encoder, optional Z signal.
- The lightweight design of the AM series reduces the installation space of the motor.
- Permanent magnet brake is optional, Z-axis brake is faster.



Naming Rule

57 A M 23 E D Z – □

1 2 3 4 5 6 7 8

1. Base size
2. Step angle type code
   A: 1.8 degrees B: 1.2 degrees
   C: 0.72 degrees
3. Motor series code
   M: M series
4. Motor torque
   06:0.6Nm 30:3.0Nm
   120:12Nm
5. Encoder type
   E: 1000 line photoelectric encoder
6. Type of plug:
   C: Encoder AMP6 plug outlet
   D: Encoder DB9 plug outlet
   X: Encoder DB9/Motor AMP4 plug
   T: Encoder AMP6/Motor AMP4 plug
   H: Encoder AMP9/Motor AMP4 plug (high voltage)
7. Supplementary code
   Z:Encoder with Z signal
8. Non-standard code
   Z2: with brake

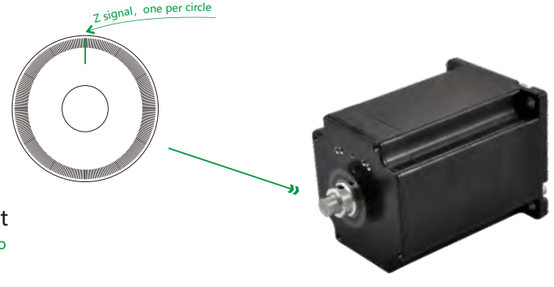
*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page

Motor with Brake

- Closed loop stepper motor with brake
  Suitable for Z-axis application environment.
  When the drive is powered off or alarms, the brake is applied to protect the workpieceand lock it to avoid free sliding
- □ Permanent magnet brake
  Start/stop quickly, low heating.
- □ 24V DC power supply
  Can use drive brake output port control.
  The outlet port can directly drive the relay to control the brake on /off.

Motor with Z Signal Encoder

- Closed loop stepper motor with Z signal
  Suitable for precision homing applications,
  Avoid the problem that the homing of the general sensor is biased due to the difference in the homing speed.
- □ Z signal differential output
  Z signal is 5V differential output, strong anti-interference ability
- □ PLUS driver with Z signal collector output
  PLUS drive adds Z signal reading and conversion output to realize Z signal output to PLC.

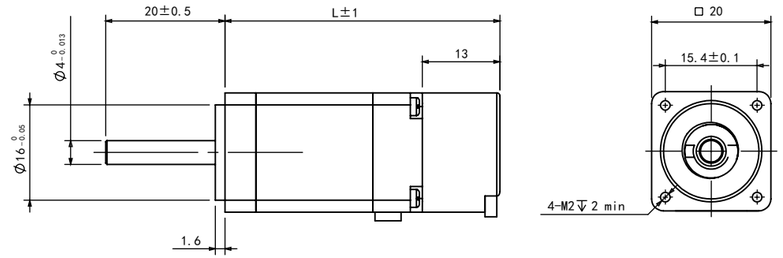


2-phase Stepper Motor 20/28mm Series Technical Specifications

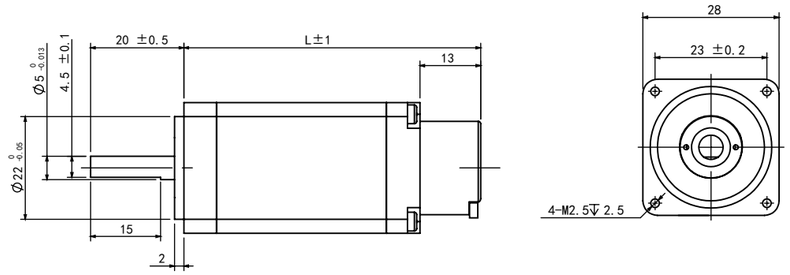
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
20AM003EC	1.8	0.03	0.6	5.7	2.6	3	4	20	46.0	0.09
28AM006EC	1.8	0.06	1.2	1.4	1.0	90	5	20	44.7	0.13
28AM013EC	1.8	0.13	1.2	2.2	2.3	180	5	20	63.6	0.22

*NEMA 8 (20mm), NEMA 11 (28mm)

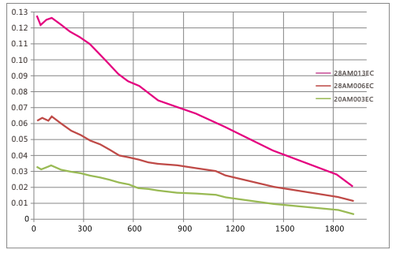
20 Series Dimension (mm)



28 Series Dimension (mm)



Torque-frequency Curve



Drive: T42 Current: Rated
Voltage: 24VDC Micro-stepping: 1600

Wiring Definition

A+	A-	B+	B-
Red	Blue	Green	Black

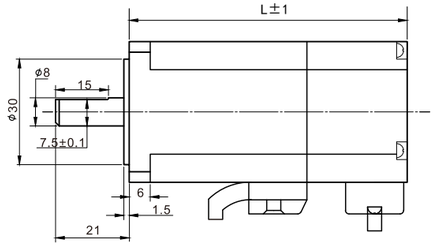
EB+	EB-	EA+	EA-	5V	GND
Yellow	Green	Black	Brown	Red	White

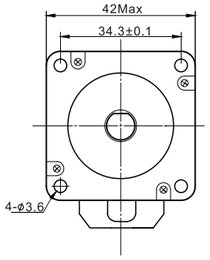
2-phase Stepper Motor 42mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
42A03EC	1.8	0.3	2.0	1.6	1.9	77	8	21	69	0.5
42A08EC	1.8	0.8	2.8	2.7	2.3	115	8	21	85	0.6
42AM06ED	1.8	0.6	2.0	1.1	1.5	82	5	24	67	0.4
42AM08ED	1.8	0.8	2.0	1.9	5.0	114	5	24	79	0.6

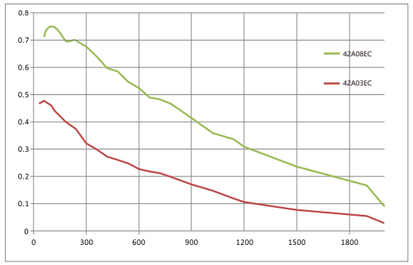
*NEMA 17 (42mm)

42A Series Dimension (mm)





Torque-frequency Curve



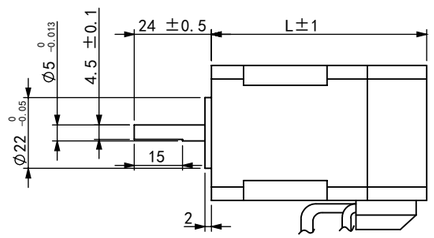
Drive: T42 Current: Rated
Voltage: 24VDC Micro-stepping: 1600

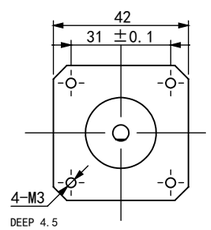
Wiring Definition

A+	A-	B+	B-
Red	Black	Yellow	Blue

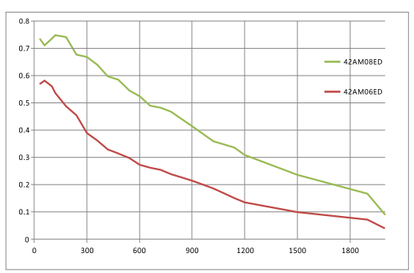
EB+	EB-	EA+	EA-	5V	GND
Green	Yellow	Brown	White	Red	Blue

42A Series Dimension (mm)





Torque-frequency Curve



Drive: T42 Current: Rated
Voltage: 24VDC Micro-stepping: 1600

Wiring Definition

A+	A-	B+	B-
Red	Blue	Green	Black

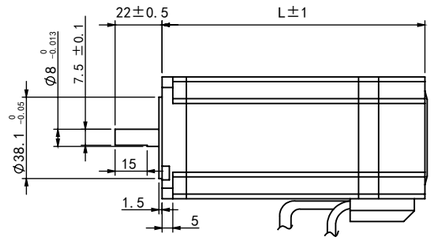
EB+	EB-	EA+	EA-	5V	GND
Green	Yellow	Brown	White	Red	Blue

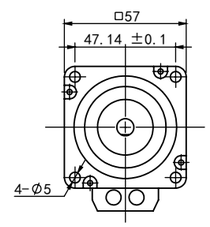
2-phase Stepper Motor 57mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
57AM13ED	1.8	1.3	4.0	0.4	1.6	260	8	22	77	0.8
57AM23ED	1.8	2.3	5.0	0.6	2.4	460	8	22	98	1.2
57AM26ED	1.8	2.6	5.0	0.5	2.1	520	8	22	106	1.4
57AM30ED	1.8	3.0	5.0	0.8	3.7	720	8	22	124	1.5
D57AM30ED	1.8	3.0	5.0	0.5	2.2	690	8	22	107	1.5

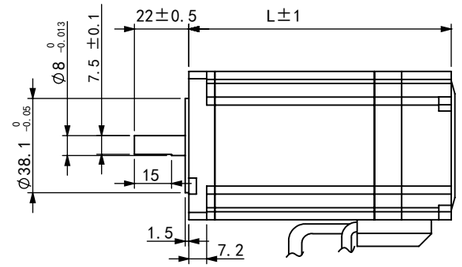
*NEMA 23 (57mm)

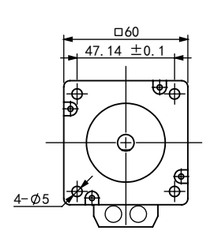
57 Series Dimension (mm)



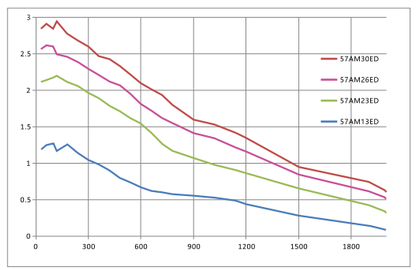


D57 Series Dimension (mm)





Torque-frequency Curve



Drive: T60 Current: Rated
Voltage: 36VDC Micro-stepping: 1600

Wiring Definition

A+	A-	B+	B-
Red	Blue	Green	Black

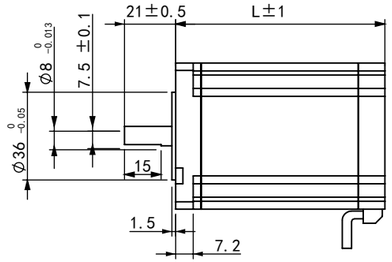
EB+	EB-	EA+	EA-	5V	GND
Green	Yellow	Brown	White	Red	Blue

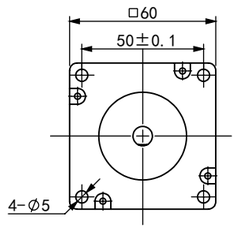
2-phase Stepper Motor 60mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
60AM22ED	1.8	2.2	5.0	0.4	1.3	330	8	22	79	1.1
60AM30ED	1.8	3.0	5.0	0.5	2.2	690	8	22	107	1.5
60AM40ED	1.8	4.0	5.0	0.9	3.5	880	10	30	123	2.1

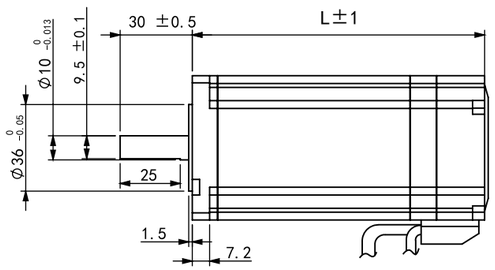
*NEMA 24 (60mm)

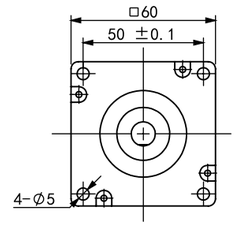
60 Series Dimension (mm)



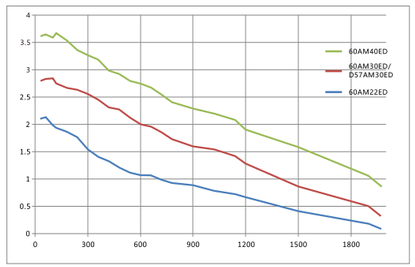


60AM40ED Dimension (mm)





Torque-frequency Curve



Drive: T60 Current: Rated
Voltage: 48VDC Micro-stepping: 1600

Wiring Definition

A+	A-	B+	B-
Red	Blue	Green	Black

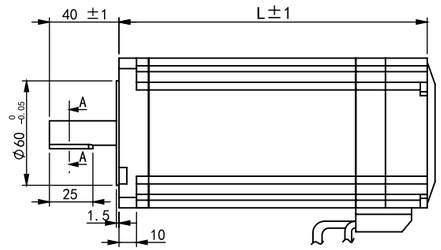
EB+	EB-	EA+	EA-	5V	GND
Green	Yellow	Brown	White	Red	Blue

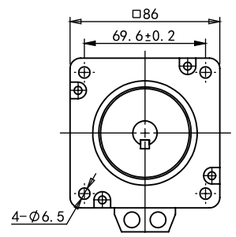
2-phase Stepper Motor 86mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
86AM45ED	1.8	4.5	6.0	0.4	2.8	1400	14	40	105	2.5
86AM65ED	1.8	6.5	6.0	0.5	4.2	2300	14	40	127	3.3
86AM85ED	1.8	8.5	6.0	0.5	5.5	2800	14	40	140	3.9
86AM100ED	1.8	10	6.0	0.8	5.3	3400	14	40	157	4.3
86AM120ED	1.8	12	6.0	0.7	8.3	4000	14	40	182	5.3

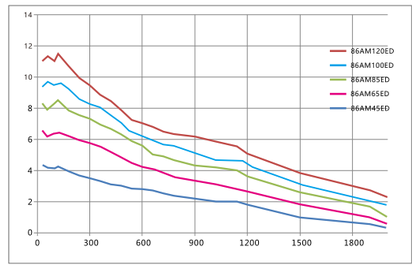
*NEMA 34 (86mm)

60 Series Dimension (mm)





Torque-frequency Curve



Drive: T86 Current: Rated
Voltage: 60VAC Micro-stepping: 1600

Wiring Definition

A+	A-	B+	B-
Red	Blue	Green	Black

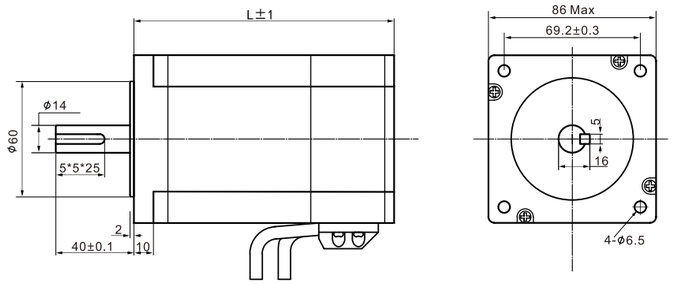
EB+	EB-	EA+	EA-	5V	GND
Green	Yellow	Brown	White	Red	Blue

3-phase Stepper Motor 86/110mm Series Technical Specifications

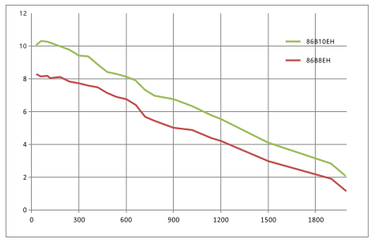
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
86B8EH	1.2	8.0	6.0	2.6	17.4	2940	14	40	150	5.0
86B10EH	1.2	10	6.0	2.7	18.9	4000	14	40	178	5.8
110B12EH	1.2	12	4.2	1.2	13.0	10800	19	40	162	9.0
110B20EH	1.2	20	5.2	1.9	18.0	17000	19	40	244	11.8

*NEMA 34 (86mm)，NEMA 42 (110mm)

86 Series Dimension (mm)



Torque-frequency Curve



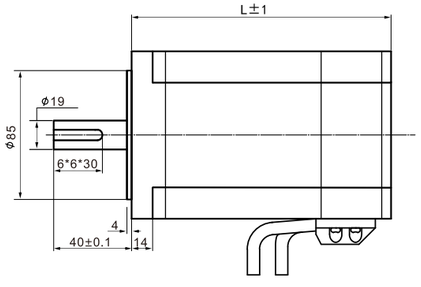
Drive：NT110　　Current：Rated
Voltage：220VAC　　Micro-stepping：1600

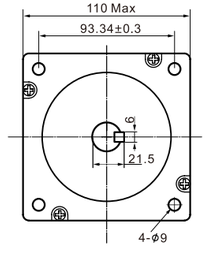
Wiring Definition

U	V	W
Black	Blue	Brown

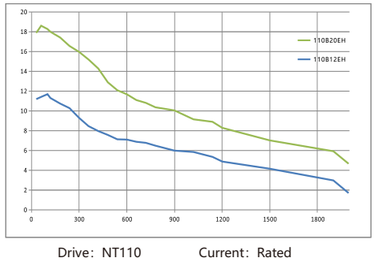
EB+	EB-	EA+	EA-	VCC	GND
Yellow	Green	Brown	Blue	Red	Black

110 Series Dimension (mm)





Torque-frequency Curve



Drive：NT110　　Current：Rated
Voltage：220VAC　　Micro-stepping：1600

Wiring Definition

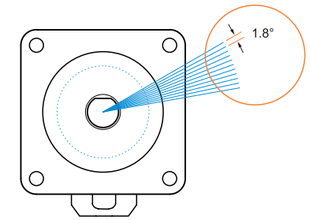
U	V	W	PE
Red	Blue	Black	Yellow

EB+	EB-	EA+	EA-	VCC	GND
Yellow	Green	Black	Blue	Red	White

Open Loop Stepper System

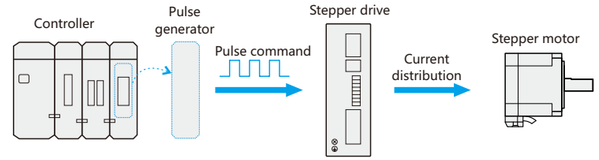
Stepper motor is a control motor whose operating speed and position can be determined. It operates step by step at a fixed angle (step angle) in rotation. Control switching pace of the step angle of stepper motor to control its operating speed and position.

The stepper drive is used for switching the pace of step angle of the stepper motor according to the specified sequence.



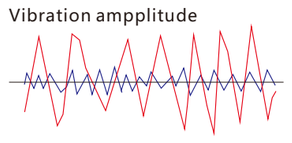
Schematic diagram of the step angle of a two-phase hybrid stepper motor.

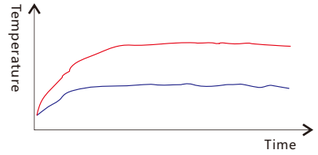
System Diagram

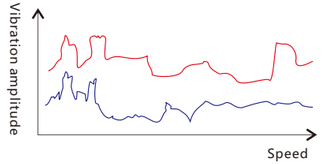


Features

Low resonance	Low temperature rise	Low noise
lowering down the vibration amplitude of motor low speed resonance area , with Low speed anti-resonance algorithm.	Under the same conditions, the digital drive features smoother current waveform, smaller current fluctuation and low temperature rise.	Built-in S-shaped command smoothing and low-speed micro-stepping technology, reduce the vibration amplitude of each speed range.







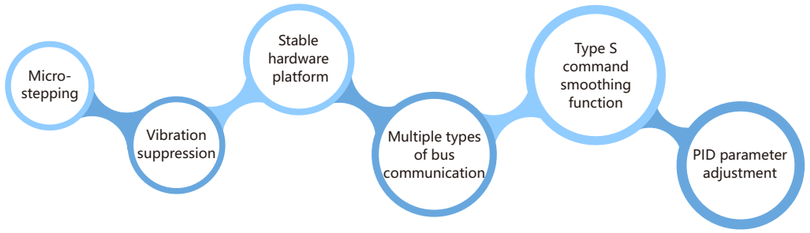
Traditional analog drive　　Rtelligent digital drive

Function Description

- Input mode
  - Pulse mode
    - Pulse + direction
    - Double pulse (compatible with the pulse level of 3.3-24V)
    - Orthogonal pulse
  - IO mode
    - Fixed speed of IO
    - Fixed length of IO (compatible with the switch level of 3.3-24V)
    - Speed regulation with a potentiometer
- Internal processing
  - Digital filtering of input pulse --enhance anti-interference ability
  - Pulse command smoothing-- making motor acceleration and deceleration smoother
  - Anti-jittering of IO switching input-- making the IO command more stable and reliable
  - Internal micro-stepping--enable the current to be controlled better
  - Low speed anti-resonance-- reduce the low speed vibration of the motor
  - Current loop PID control-- reduce heating and increase the high speed torque
  - Parameter self-adaptation of the matching motor--enable the motor to perform better

Open Loop Stepper Drive

Based on the new 32-bit DSP platform and adopting the micro-stepping technology and PID current control algorithm design, Rtelligent R series stepper drive surpasses the performance of common analog stepper drive comprehensively.



Naming Rule

3 R 110 PLUS – □

① 2 phase(omitted)
3: 3 phase
5: 5 phase

② Serial Name

③ Match the motor flange size

④ Upgraded version
X2：Two-in-one
X3：Three-in-one

⑤ Function code
IO：Switch
D：One-drive-two

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

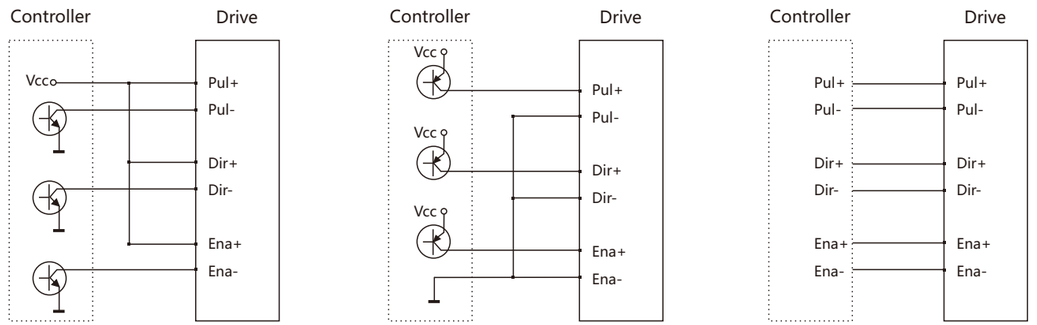
Product Series

R Series	R-IO/R-IR Series	Multi-axis Series
		
R series pulse-controlled stepper motor drive • Matching motor base in 20mm-130mm • Full digital Micro-stepping technology • Pulse compatible with 5-24V • Smooth motion & low vibration • Auto- tuning of motor parameters • Optimized anti-interference ability • Better hardware design and reliablility	**R-IO series switching stepper drive** • Matching motor base in 20-130mm • 5-24V switch control • 16 speed adjustable **R-IR series potentiometer speed-control stepper drive** • Matching motor base below 86mm • 5-24V switch control • Regulate speed online via potentiometer	**R-D series one-drive-two switch speed-control drive** • Matching motors base below 60mm • 5-24V switch control • Regulate speed online via potentiometer **R-X2/X3 series multi-axis pulse stepper drive** • Matching motors base below 60mm • Pulse control • Smaller size

Technical Specifications

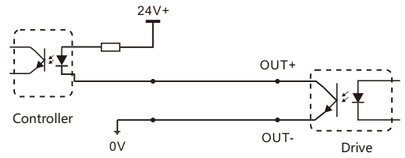
Model	Peak current A	Weight kg	Input voltage range	Dimension mm	Micro-stepping	Pulse level	Matching motor
R42	2.2	0.1	18-48VDC	92.6×56×21	200-25600	3.3-24V	Open loop below 42mm
R60	5.6	0.3	18-50VDC	118×76×33	200-25600	3.3-24V	Open loop below 60mm
R60-AL	5.6	0.2	18-50VDC	116×69×26.5	200-25600	24V/5V	Open loop below 60mm
R86	7.2	0.6	18-80VAC	151×97×52	400-51200	3.3-24V	Open loop below 86mm
R86mini	7.2	0.3	18-80VAC	119×77×35	400-25600	3.3-24V	Open loop below 86mm
R110PLUS	8.0	0.9	110-230VAC	178×109×68	400-60000	3.3-24V	Open loop below 110mm
R130	8.0	1.3	110-230VAC	203×147×78	200-25600	3.3-24V	Open loop below 130mm
3R60	8.0	0.3	18-50VDC	118×76×33	400-51200	3.3-24V	Open loop 3 phase below 60mm
3R110PLUS	7.2	0.9	110-230VAC	178×109×68	500-60000	3.3-24V	Open loop 3 phase below 110mm
3R130	8.0	1.3	110-230VAC	203×147×78	400-60000	3.3-24V	Open loop 3 phase below 130mm

Control Signal Wiring Example



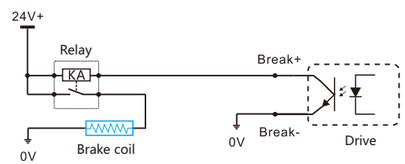
Output Signal Wiring Example

Alarm/Pend signal wiring example



OUT is ALM or Pend, pay attention to connecting current limiting resistor in series

Alarm/Pend signal wiring example



Brake is the brake control signal, which is set by software.
Do not connect the brake coil reversely (red +, black -)

LED Indication

LED status	Drive status	Fault handling
● Steady green light	Drive not enabled	
●● Flashing green light	Drive works fine	
●● 1 green 1 red	Drive overcurrent	Check wiring、repair drive
●●● 1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
●●●● 1 green 3 red	Drive internal voltage error	Drive failure
●●●●●●●● 1 green 7 red	Motor phase loss	Check the wiring terminal and confirm the extension cable connector

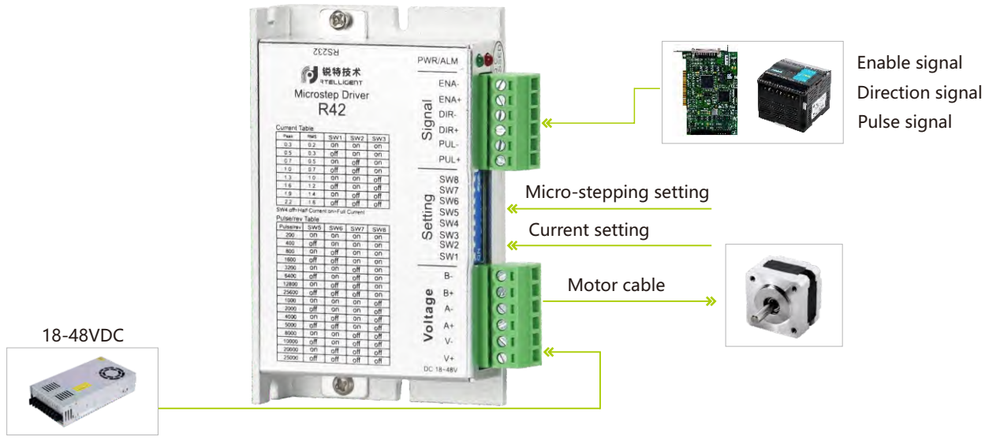
R42

The R42 digital 2-phase stepper drive is based on 32-bit DSP platform,with built-in micro-stepping technology& auto tuning of parameters. The drive features low noise, low vibration and low heating.

It is used to drive two-phase stepper motors base below 42mm.

- Pulse mode: PUL&DIR
- Signal level: 3.3~24V compatible; series resistance not required for the application of PLC.
- Power voltage: 18-48V DC supply; 24 or 36V recommended.
- Typical applications: marking machine, soldering machine, laser, 3D printing, visual localization, automatic assembly equipment, etc.

Drive Interface & Connection



Working Current Setting

Output current peak	Output cunent RMS	SW1	SW2	SW3
0.3A	0.2A	on	on	on
0.5A	0.3A	off	on	on
0.7A	0.5A	on	off	on
1.0A	0.7A	off	off	on
1.3A	1.0A	on	on	off
1.6A	1.2A	off	on	off
1.9A	1.4A	on	off	off
2.2A	1.6A	off	off	off

Semi-/full Current Selection

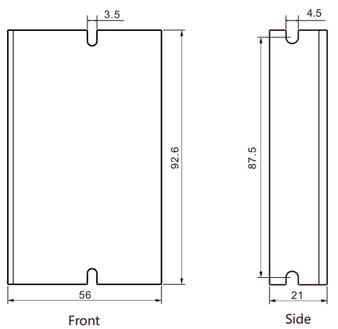
		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
200	on	on	on	on
400	off	on	on	on
800	on	off	on	on
1600	off	off	on	on
3200	on	on	off	on
6400	off	on	off	on
12800	on	off	off	on
25600	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
25000	off	off	off	off

When SW5, SW6, SW7, SW8 are all on, any subdivision can be changed through the debugging software.

Installation Dimension



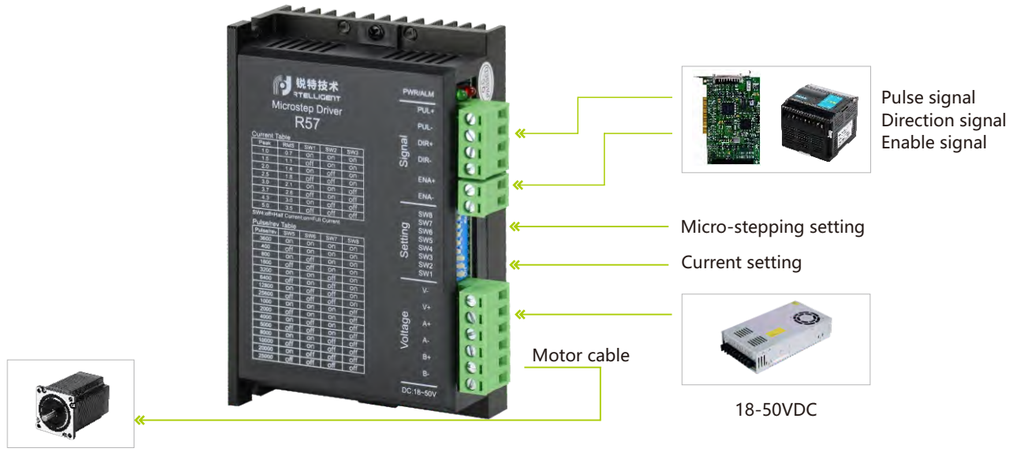
R57

The R57 digital 2-phase stepper drive is based on 32-bit DSP platform, with built-in micro-stepping technology & auto tuning of parameters. The drive features low noise, low vibration, low heating and high-speed high torque output.

It is used to drive two-phase stepper motors base below 57mm.

- Pulse mode: PUL&DIR
- Signal level: 3.3~24V compatible; series resistance not required for the application of PLC
- Power voltage: 18-50V DC supply; 36 or 48V recommended
- Typical applications : engraving machine , marking machine, cutting machine, plotter, laser, auto assembly equipment, etc

Drive Interface & Connection



Working Current Setting

Ouput current peak	Output current RMS	SW1	SW2	SW3
1.0A	0.7A	on	on	on
1.5A	1.1A	off	on	on
2.0A	1.4A	on	off	on
2.5A	1.8A	off	off	on
3.0A	2.1A	on	on	off
3.7A	2.6A	off	on	off
4.3A	3.0A	on	off	off
5.0A	3.5A	off	off	off

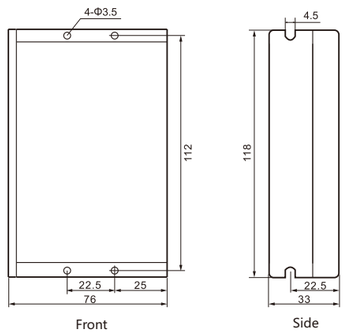
Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
3600	on	on	on	on
400	off	on	on	on
800	on	off	on	on
1600	off	off	on	on
3200	on	on	off	on
6400	off	on	off	on
12800	on	off	off	on
25600	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
25000	off	off	off	off

Installation Dimension



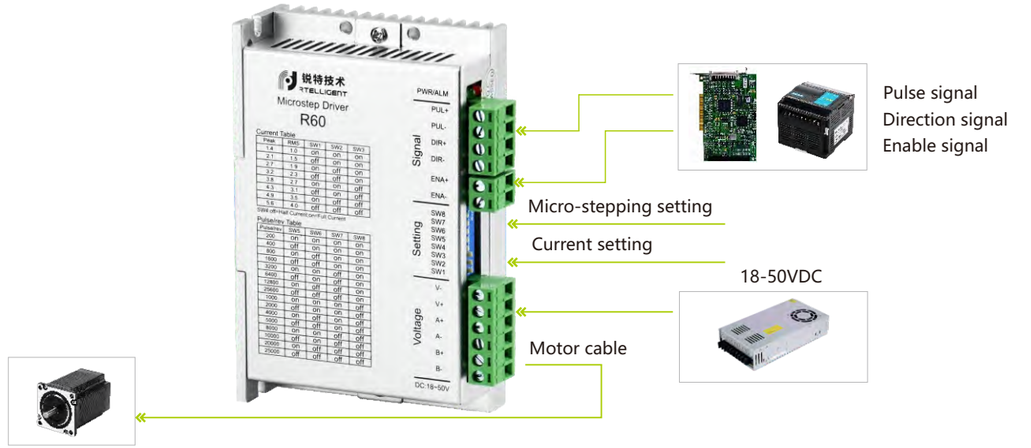
R60

The R60 digital 2-phase stepper drive is based on 32-bit DSP platform,with built-in micro-stepping technology & auto tuning of parameters. The drive features low noise, low vibration, low heating and high-speed high torque output.

It is used to drive two-phase stepper motors base below 60mm.

- Pulse mode: PUL&DIR
- Signal level: 3.3~24V compatible; series resistance not necessary for the application of PLC.
- Power voltage: 18-50V DC supply; 36 or 48V recommended.
- Typical applications : Engraving machine , marking machine, cutting machine, plotter, laser, auto assembly equipment, etc.

Drive Interface & Connection



Working Current Setting

Output current peak	Output cunent RMS	SW1	SW2	SW3
1.4A	1.0A	on	on	on
2.1A	1.5A	off	on	on
2.7A	1.9A	on	off	on
3.2A	2.3A	off	off	on
3.8A	2.7A	on	on	off
4.3A	3.1A	off	on	off
4.9A	3.5A	on	off	off
5.6A	4.0A	off	off	off

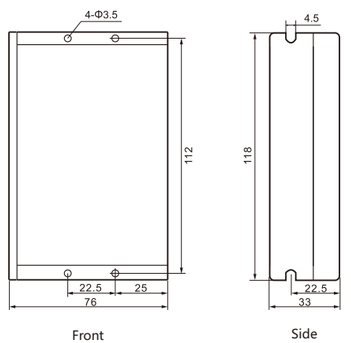
Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
200	on	on	on	on
400	off	on	on	on
800	on	off	on	on
1600	off	off	on	on
3200	on	on	off	on
6400	off	on	off	on
12800	on	off	off	on
25600	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
25000	off	off	off	off

Installation Dimension



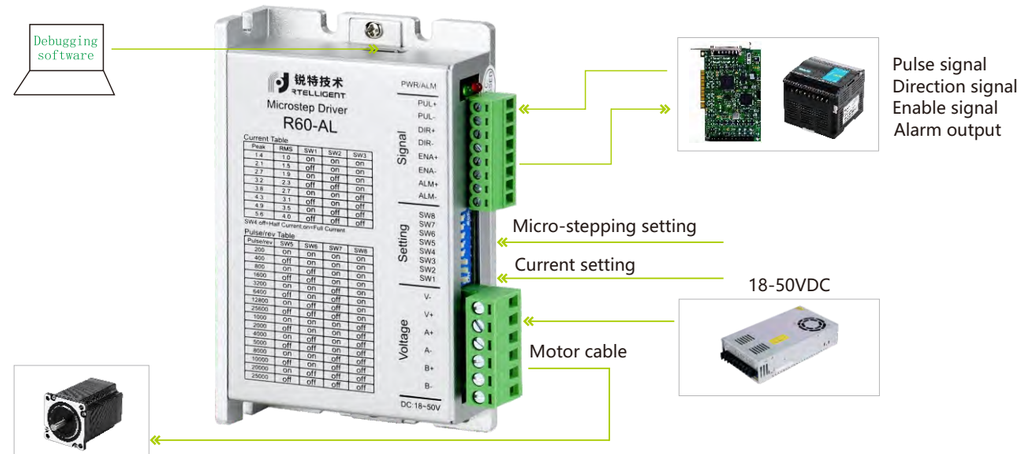
R60-AL

The R60-AL digital 2-phase stepper drive is based on 32-bit DSP platform, with built-in micro-stepping technology & auto tuning of parameters. The drive features low noise, low vibration, low heating and high-speed high torque output.

It is used to drive two-phase stepper motors base below 60mm.

- Pulse mode: PUL&DIR
- Signal level: Default 24V, 5V model R60-AL-5V
- Power voltage: 18-50V DC supply; 36 or 48V recommended.
- Typical applications: engraving machine, marking machine, cutting machine, plotter, laser, auto assembly equipment, etc.

Drive Interface & Connection



Working Current Setting

Output current peak	Output cunent RMS	SW1	SW2	SW3
1.4A	1.0A	on	on	on
2.1A	1.5A	off	on	on
2.7A	1.9A	on	off	on
3.2A	2.3A	off	off	on
3.8A	2.7A	on	on	off
4.3A	3.1A	off	on	off
4.9A	3.5A	on	off	off
5.6A	4.0A	off	off	off

Semi-/full Current Selection

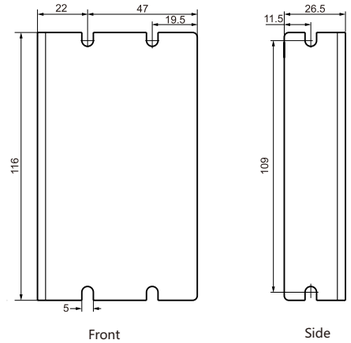
		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
200	on	on	on	on
400	off	on	on	on
800	on	off	on	on
1600	off	off	on	on
3200	on	on	off	on
6400	off	on	off	on
12800	on	off	off	on
25600	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
25000	off	off	off	off

When SW5, SW6, SW7, SW8 are all on, any subdivision can be changed through the debugging software.

Installation Dimension



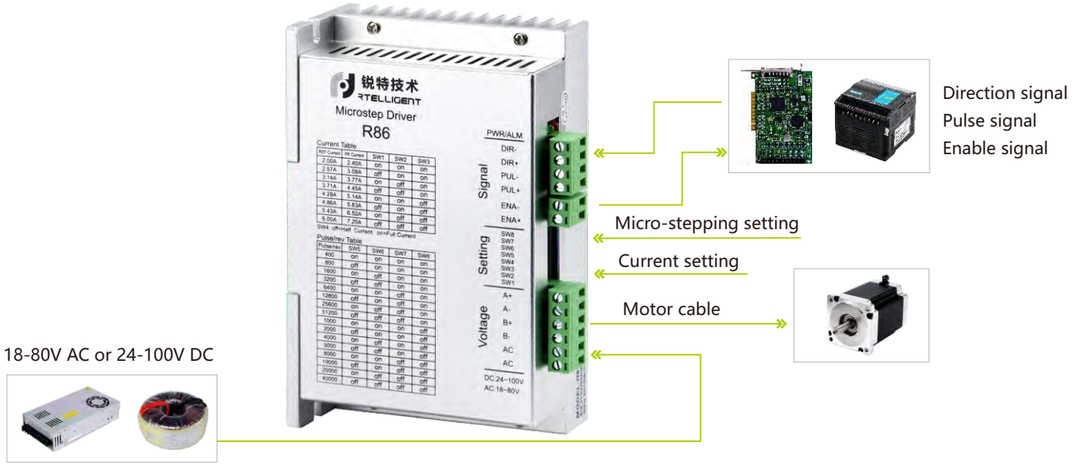
R86

The R86 digital 2-phase stepper drive is based on 32-bit DSP platform,with built-in micro-stepping technology & auto tuning of parameters. The drive features low noise, low vibration, low heating and high-speed high torque output.

It is used to drive two-phase stepper motors base below 86mm.

- Pulse mode: PUL&DIR
- Signal level: 3.3~24V compatible; series resistance not required for the application of PLC.
- Power voltage: 24~100V DC or 18~80V AC; 60V AC recommended.
- Typical applications: engraving machine, labeling machine, cutting machine, plotter, laser, automatic assembly equipment, etc.

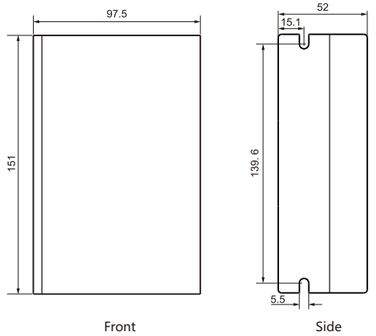
Drive Interface & Connection



Working Current Setting

Output current peak	Output cunent RMS	SW1	SW2	SW3
2.40A	2.00A	on	on	on
3.08A	2.57A	off	on	on
3.77A	3.14A	on	off	on
4.45A	3.71A	off	off	on
5.14A	4.28A	on	on	off
5.83A	4.86A	off	on	off
6.52A	5.43A	on	off	off
7.20A	6.00A	off	off	off

Installation Dimension



Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
400	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
51200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

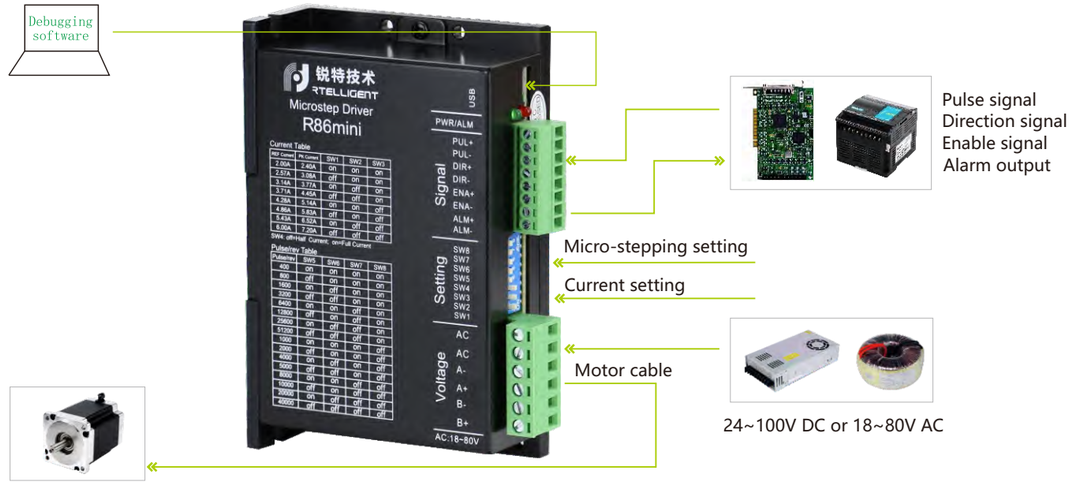
R86MINI

Compared with R86, the R86mini digital two-phase stepper drive adds alarm output and USB debugging ports. smaller size, easier to use.

R86mini is used to drive two-phase stepper motors base below 86mm.

- Pulse mode: PUL & DIR
- Signal level: 3.3~24V compatible; series resistance not required for the application of PLC.
- Power voltage: 24~100V DC or 18~80V AC; 60V AC recommended.
- Typical applications: engraving machine, labeling machine, cutting machine, plotter, laser, automatic assembly equipment, etc.

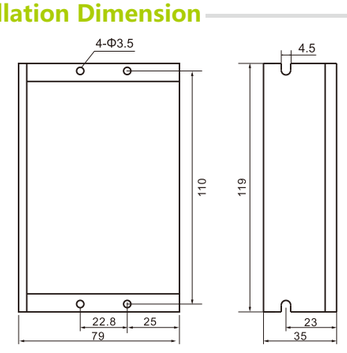
Drive Interface & Connection



Working Current Setting

Output current peak	Output cunent RMS	SW1	SW2	SW3
2.40A	2.00A	on	on	on
3.08A	2.57A	off	on	on
3.77A	3.14A	on	off	on
4.45A	3.71A	off	off	on
5.14A	4.28A	on	on	off
5.83A	4.86A	off	on	off
6.52A	5.43A	on	off	off
7.20A	6.00A	off	off	off

Installation Dimension



Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
400	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
51200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

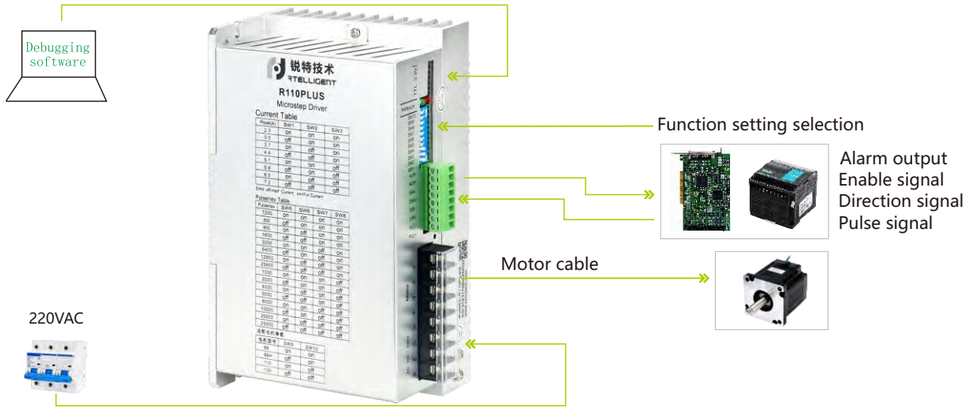
R110PLUS

The R110PLUS digital 2-phase stepper drive is based on 32-bit DSP platform, with built-in micro-stepping technology & auto tuning of parameters, featuring of low noise,low vibration, low heating and high-speed high torque output.It can fully play the performance of two-phase high-voltage stepper motor.

R110PLUS V3.0 version added the DIP matching motor parameters function, can drive 86/110 two-phase stepper motor.

- Pulse mode: PUL & DIR
- Signal level: 3.3~24V compatible; series resistance not necessary for the application of PLC.
- Power voltage: 110~230V AC; 220V AC recommended, with superior high-speed performance.
- Typical applications: engraving machine, labeling machine, cutting machine, plotter, laser, automatic assembly equipment, etc.

Drive Interface & Connection



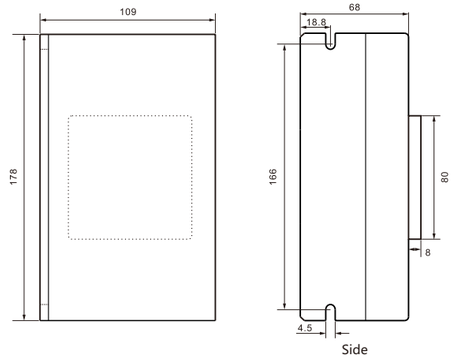
WorkingCurrent Setting

Output current	SW1	SW2	SW3
2.3A	on	on	on
3.0A	off	on	on
3.7A	on	off	on
4.4A	off	off	on
5.1A	on	on	off
5.8A	off	on	off
6.5A	on	off	off
7.2A	off	off	off

Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Installation Dimension



Function Selection

R110PLUS V3.0

Motor specification	SW9	SW10
86	on	on
86H	off	on
110	on	off
130	off	off

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
7200	on	on	on	on
400	off	on	on	on
800	on	off	on	on
1600	off	off	on	on
3200	on	on	off	on
6400	off	on	off	on
12800	on	off	off	on
25600	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
25000	off	off	off	off

When SW5, SW6, SW7, SW8 are all on, any subdivision can be changed through the debugging software.

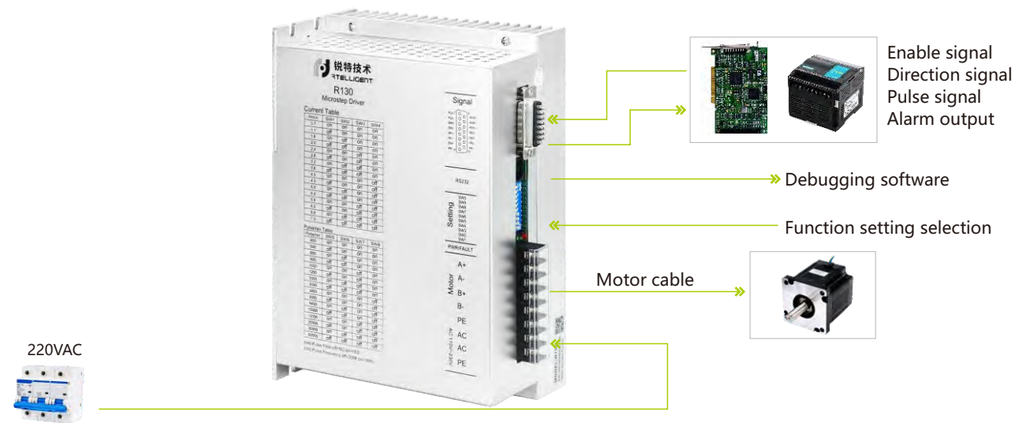
R130

The R130 digital 2-phase stepper drive is based on 32-bit DSP platform, with built-in micro-stepping technology & auto tuning of parameters, featuring of low noise,low vibration, low heating and high-speed high torque output. It can be used in most applications of stepper motor.

R130 is used to drive two-phase stepper motors base below 130mm.

- Pulse mode: PUL & DIR
- Signal level: 3.3~24V compatible; series resistance not required for the application of PLC.
- Power voltage: 110~230V AC;
- Typical applications: engraving machine, cutting machine, screen printing equipment, CNC machine, automatic assembly equipment, etc.

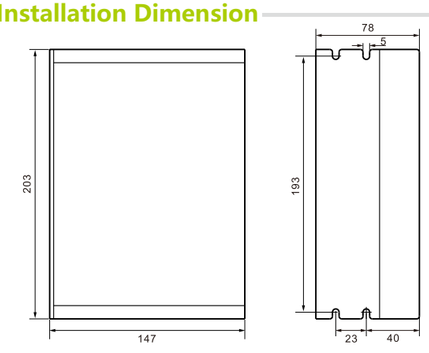
Drive Interface & Connection



Working Current Setting

RMS(A)	SW1	SW2	SW3	SW4
0.7	on	on	on	on
1.1	off	on	on	on
1.6	on	off	on	on
2.0	off	off	on	on
2.4	on	on	off	on
2.8	off	on	off	on
3.2	on	off	off	on
3.6	off	off	off	on
4.0	on	on	on	off
4.5	off	on	on	off
5.0	on	off	on	off
5.4	off	off	on	off
5.8	on	on	off	off
6.2	off	on	off	off
6.6	on	off	off	off
7.0	off	off	off	off

Installation Dimension



Function Selection

Filter selection			SW9
off	No filtering	Command smooth close	
on	With filtering	Command smooth open	

Max pulse frequency selection			SW0
off	Max frequency 200KHz	on	Max frequency 1MHz

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
400	on	on	on	on
500	off	on	on	on
600	on	off	on	on
800	off	off	on	on
1000	on	on	off	on
1200	off	on	off	on
2000	on	off	off	on
3000	off	off	off	on
3600	on	on	on	off
5000	off	on	on	off
6400	on	off	on	off
10000	off	off	on	off
12000	on	on	off	off
20000	off	on	off	off
30000	on	off	off	off
60000	off	off	off	off

When SW5, SW6, SW7, SW8 are all on, any subdivision can be changed through the debugging software.

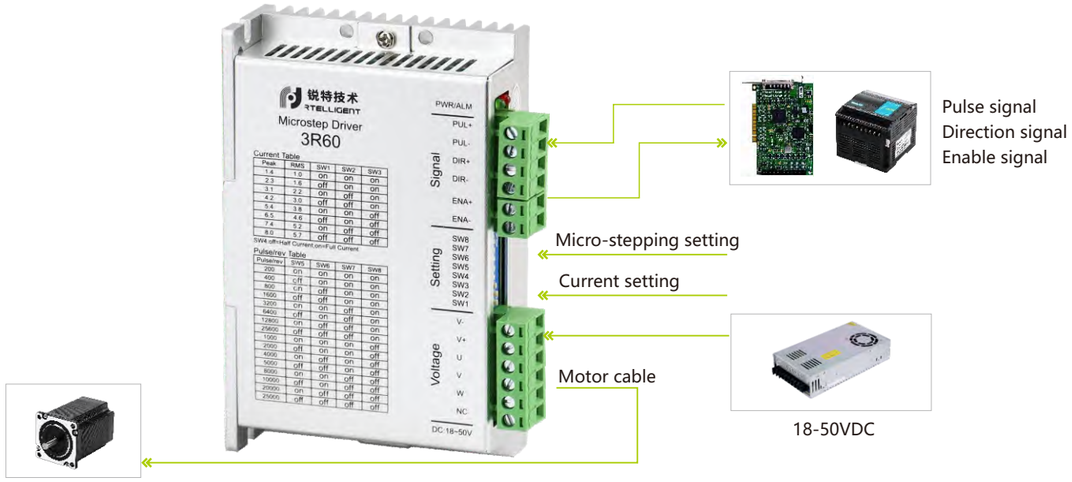
3R60

The 3R60 digital 3-phase stepper drive is based on patented three-phase demodulation algorithm, with built-in micro-stepping technology, featuring low speed resonance, small torque ripple. It can fully play the performance of three-phase stepper motor.

3R60 is used to drive three-phase stepper motors base below 60mm.

- Pulse mode: PUL & DIR
- Signal level: 3.3~24V compatible; Series resistance not required for the application of PLC.
- Power voltage: 18-50V DC; 36 or 48V recommended.
- Typical applications: dispenser, soldering machine, engraving machine, laser cutting machine,3D printer, etc.

Drive Interface & Connection



Working Current Setting

Output current peak	Output cunent RMS	SW1	SW2	SW3
1.4A	1.0A	on	on	on
2.3A	1.6A	off	on	on
3.1A	2.2A	on	off	on
4.2A	3.0A	off	off	on
5.4A	3.8A	on	on	off
6.5A	4.6A	off	on	off
7.4A	5.2A	on	off	off
8.0A	5.7A	off	off	off

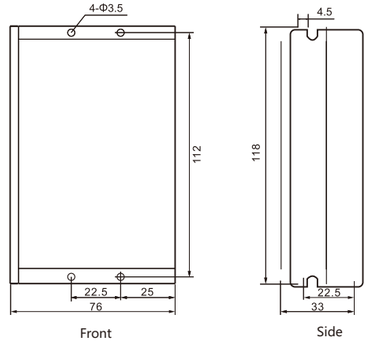
Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
200	on	on	on	on
400	off	on	on	on
800	on	off	on	on
1600	off	off	on	on
3200	on	on	off	on
6400	off	on	off	on
12800	on	off	off	on
25600	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
25000	off	off	off	off

Installation Dimension



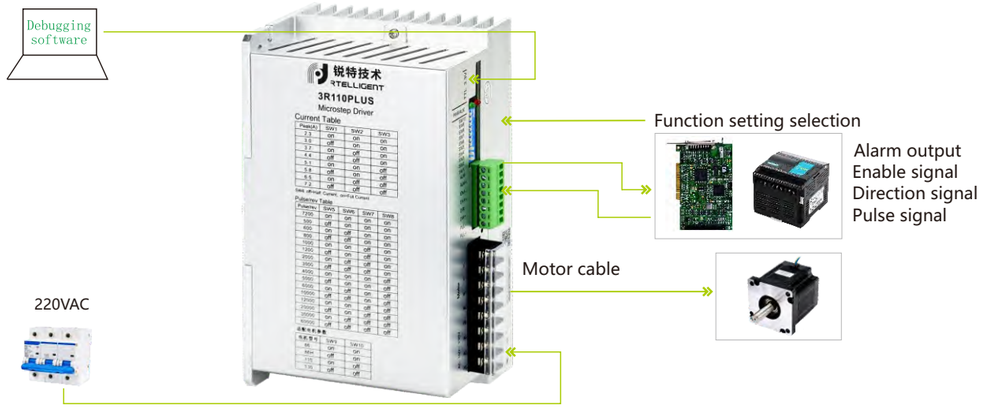
3R110PLUS

The 3R110PLUS digital 3-phase stepper drive is based on patented three-phase demodulation algorithm. with built-in micro-stepping technology, featuring low speed resonance, small torque ripple and high torque output. It can fully play the performance of three-phase stepper motors.

3R110PLUS V3.0 version added the DIP matching motor parameters function, can drive 86/110 two-phase stepper motor.

- Pulse mode: PUL & DIR
- Signal level: 3.3~24V compatible; series resistance not necessary for the application of PLC.
- Power voltage: 110~230V AC; 220V AC recommended, with superior high-speed performance.
- Typical applications: engraving machine, labeling machine, cutting machine, plotter, laser, automatic assembly equipment, etc.

Drive Interface & Connection



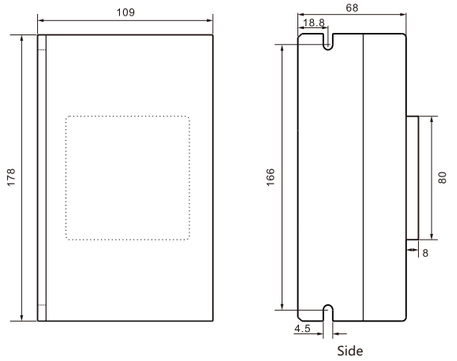
Working Current Setting

Output current	SW1	SW2	SW3
2.3A	on	on	on
3.0A	off	on	on
3.7A	on	off	on
4.4A	off	off	on
5.1A	on	on	off
5.8A	off	on	off
6.5A	on	off	off
7.2A	off	off	off

Semi-/full Current Selection

		SW4
off	Semi-current	The idle current is half of the operating current
on	Full Current	The idle current is equal to the operating current

Installation Dimension



Function Selection

3R110PLUS V3.0

Motor specification	SW9	SW10
86	on	on
86H	off	on
110	on	off
130	off	off

Micro-stepping Setting

Pulse/rev	SW5	SW6	SW7	SW8
7200	on	on	on	on
500	off	on	on	on
600	on	off	on	on
800	off	off	on	on
1000	on	on	off	on
1200	off	on	off	on
2000	on	off	off	on
3000	off	off	off	on
4000	on	on	on	off
5000	off	on	on	off
6000	on	off	on	off
10000	off	off	on	off
12000	on	on	off	off
20000	off	on	off	off
30000	on	off	off	off
60000	off	off	off	off

When SW5, SW6, SW7, SW8 are all on, any subdivision can be changed through the debugging software.

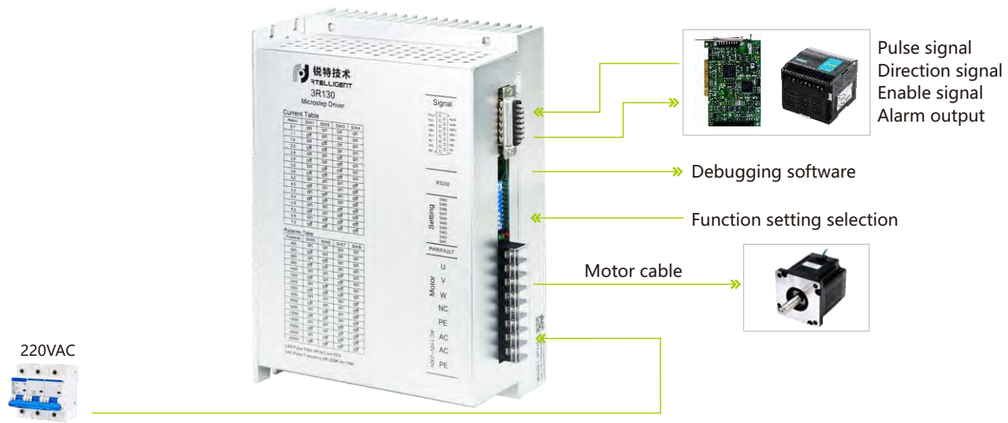
3R130

The 3R130 digital 3-phase stepper drive is based on patented three-phase demodulation algorithm, with built-in micro-stepping technology, featuring low speed resonance, small torque ripple. It can fully play the performance of three-phase stepper motors.

3R130 is used to drive three-phase stepper motors base below 130mm.

- Pulse mode: PUL & DIR
- Signal level: 3.3~24V compatible; series resistance not necessary for the application of PLC.
- Power voltage: 110~230V AC;
- Typical applications: engraving machine, cutting machine, screen printing equipment, CNC machine, automatic assembly equipment, etc.

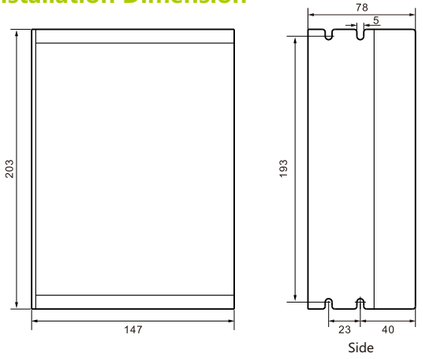
Drive Interface & Connection



Working Current Setting

RMS(A)	SW1	SW2	SW3	SW4
0.7	on	on	on	on
1.1	off	on	on	on
1.6	on	off	on	on
2.0	off	off	on	on
2.4	on	on	off	on
2.8	off	on	off	on
3.2	on	off	off	on
3.6	off	off	off	on
4.0	on	on	on	off
4.5	off	on	on	off
5.0	on	off	on	off
5.4	off	off	on	off
5.8	on	on	off	off
6.2	off	on	off	off
6.6	on	off	off	off
7.0	off	off	off	off

Installation Dimension



Function Selection

Filter selection			SW9
off	No filtering	Command smooth close	
on	With filtering	Command smooth open	

Max pulse frequency selection			SW0
off	Max frequency 200KHz	on	Max frequency 1MHz

Micro-stepping Setting

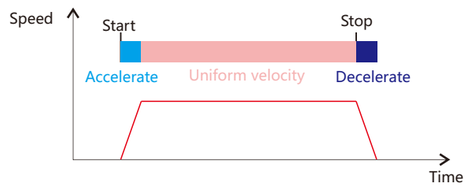
Pulse/rev	SW5	SW6	SW7	SW8
400	on	on	on	on
500	off	on	on	on
600	on	off	on	on
800	off	off	on	on
1000	on	on	off	on
1200	off	on	off	on
2000	on	off	off	on
3000	off	off	off	on
3600	on	on	on	off
5000	off	on	on	off
6400	on	off	on	off
10000	off	off	on	off
12000	on	on	off	off
20000	off	on	off	off
30000	on	off	off	off
60000	off	off	off	off

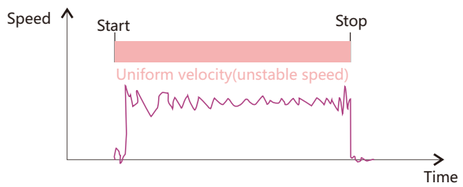
When SW5, SW6, SW7, SW8 are all on, any subdivision can be changed through the debugging software.

Switch Stepper Drive

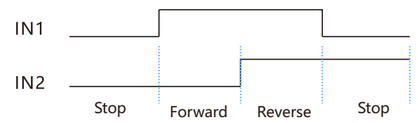
Comparision between Switch Stepper Motor and AC speed regulating motor

IO Speed-regulating stepper motor	AC Speed regulating motor
The switch speed motor control stepper comes with S-type acceleration and deceleration, stable start and stop, low noise, and precise adjustable speed. The motor self-locks when the IO speed stepper stops.	The AC speed regulating motor has no acceleration or deceleration, the start and stop jitters are large, and the running noise is loud. The speed is adjustable but not accurate. The ordinary speed regulating motor has no self-locking force, and the stopping state is not stable.





Control Timing Diagram

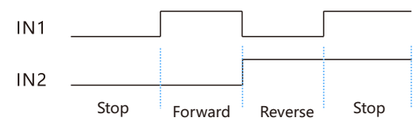


0 Mode (Mode 0 by default)

At IN1 on and IN2 off, the motor is triggered to rotate reverse.

At IN1 on and IN2 on, the motor is triggered to rotate reverse.

At IN1 off, the motor stops.



1 Mode (Mode 1 optional)

At IN1 on and IN2 off, the motor is triggered to rotate forward.

At IN1 off and IN2 on, the motor is triggered to rotate reverse.

At both IN1 and IN2 on, the motor stops.

Note: IO drive defaults Mode 0; Please contact us if the mode needs to be adjusted.

Technical Specifications

		Model	Peak current A	Weight kg	Input voltage	Dimension mm	Matching motor
Single axis control	Switch speed regulating type	R42-IO	2.2	0.1	18-48VDC	92.6×56×21	open loop below 42mm
		R60-IO	5.6	0.3	18-50VDC	118×76×33	open loop below 60mm
		R86-IO	7.2	0.6	18-80VAC	151×97×52	open loop below 86mm
		R110PLUS-IO	8.0	0.9	110-230VAC	178×97×52	open loop below 110mm
		R130-IO	8.0	1.3	110-230VAC	203×147×78	open loop below 130mm
	Potentiometer speed - regulating type	R42-IR	2.2	0.1	18-48VDC	92.6×56×21	open loop below 42mm
		R60-IR	5.6	0.3	18-50VDC	118×76×33	open loop below 60mm
		R86-IR	7.2	0.6	18-80VAC	151×97×52	open loop below 86mm

LED Indication

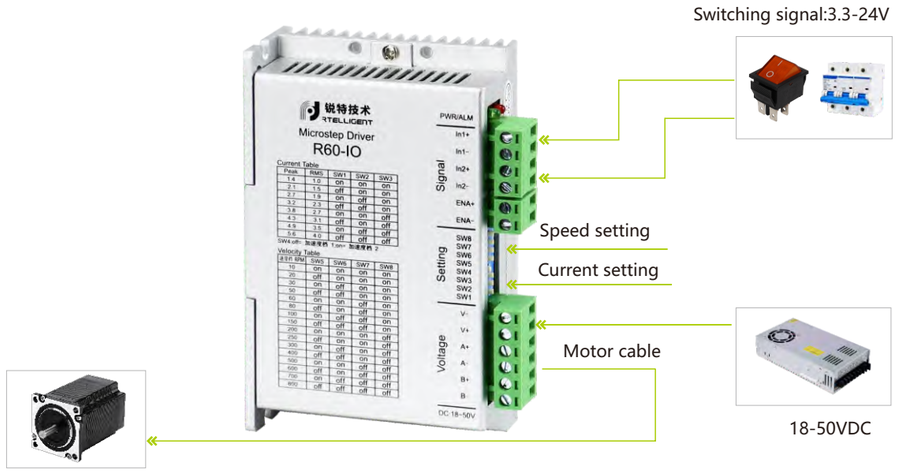
LED status	Drive status	Fault handling
Steady green light	Drive not enabled	
Flashing green light	Drive works fine	
1 green 1 red	Drive overcurrent	Check wiring、repair drive
1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
1 green 3 red	Drive internal voltage error	Drive failure

R60-IO

IO series switch stepper drive, with built-in S-type acceleration and deceleration pulse train, only need switch to trigger motor start and stop. Compared with speed regulating motor, IO series of switching stepper drive has the characteristics of stable start and stop, uniform speed, which can simplify the electrical design of engineers.

- Control mode: IN1.IN2
- Speed setting: DIP SW5-SW8
- Signal level: 3.3-24V Compatiable
- Typical appications: conveying equipment, inspection converyor, PCB loader

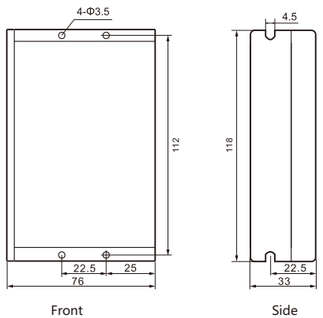
Drive Interface & Connection



Working Current Setting

Output current peak	Output current RMS	SW1	SW2	SW3
1.4A	1.0A	on	on	on
2.1A	1.5A	off	on	on
2.7A	1.9A	on	off	on
3.2A	2.3A	off	off	on
3.8A	2.7A	on	on	off
4.3A	3.1A	off	on	off
4.9A	3.5A	on	off	off
5.6A	4.0A	off	off	off

Installation Dimension



Acceleration Selection

		SW4
Acceleration 1	Low acceleration/deceleration	off
Acceleration 2	High acceleration/deceleration	on

Speed Setting

Speed range(RPM)	SW5	SW6	SW7	SW8
10	on	on	on	on
20	off	on	on	on
30	on	off	on	on
50	off	off	on	on
60	on	on	off	on
80	off	on	off	on
100	on	off	off	on
150	off	off	off	on
200	on	on	on	off
250	off	on	on	off
300	on	off	on	off
400	off	off	on	off
500	on	on	off	off
600	off	on	off	off
700	on	off	off	off
800	off	off	off	off

Multi-axis Stepper Drive

Features

Multi control methods for customer choices

Multi-axis series drive support pulse or switch control, two axis motor can be independent or synchronous operation, suitable for a variety of applications

Save labor & shortening debugging time

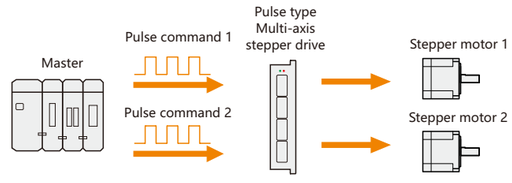
The number of drives that need to be debugged is halved, saving labor and time costs for debugging devices

Save space & facilitate customer design

Compared with traditional drives, the multi-axis series drive can save 40 to 60% of the installation space and facilitate customer layout

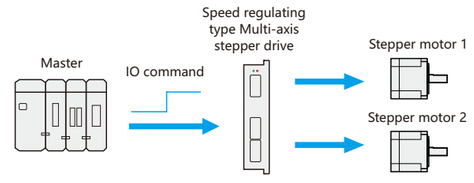
Save cost & improve equipment competitiveness

While saving space and labor, the multi-axis series can also save drive costs and improve the overall competitiveness of the equipment



Pulse Type

DIP setting of Micro-stepping & current
Two pulse signal control
The two motors work independently



Speed regulating type

DIP setting of speed & current
One switching signal control
The two motors work in sync

Note: X2 series drive receives 24V pulse signal by default, please refer to Rtelligent for 5V pulse signal.

Technical Specifications

		Model	Peak current A	Weight kg	Input voltage	Dimension mm	Matching motor
Multi-axis control series	Speed regulating	R42-D	2.2	0.2	18-50VDC	118×76×25	open loop below 42mm
		R60-D	5.6	0.3	18-50VDC	118×76×33	open loop below 60mm
	Pulse	R42X2	2.2	0.2	18-50VDC	118×76×25	open loop below 42mm
		R60X2	5.6	0.4	18-48VDC	132×82×29	open loop below 60mm
		R60X3	5.6	0.5	18-48VDC	175×97×31	open loop below 60mm
	Field bus	ECR60X2A	6.0	0.5	18-80VDC	175×98×33	open loop below 60mm
		ECT60X2	6.0	0.5	18-80VDC	175×98×33	closed loop below 60mm

LED Indication

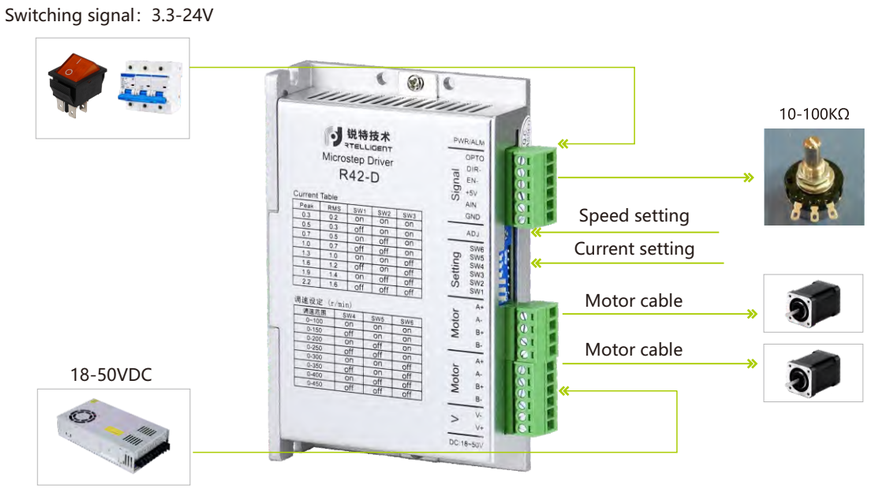
LED status	Drive status	Fault handling
Steady green light	Drive not enabled	
Flashing green light	Drive works fine	
1 green 1 red	Drive overcurrent	Check wiring、repair drive
1 green 2 red	Drive input power supply overvoltage	Check the input supply voltage
1 green 3 red	Drive internal voltage error	Drive failure

One-drive-two Stepper Drive R42-D

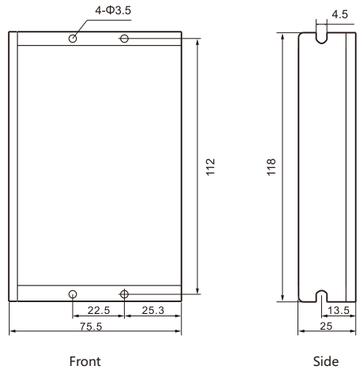
In conveying equipment, there are often two - axis synchronization application requirements.
R42-D is a customized drive for two-axis synchronization application.

- Speed control mode: the ENA switching signal controls the start-stop, and the potentiometer controls speed.
- Signal level: IO signals are connected to 24V externally
- Power supply: 18-50VDC
- Typical applications: conveying equipment, inspection conveyor, PCB loader

Drive Interface & Connection



Installation Dimension



Working Current Setting

Output current peak	Output current RMS	SW1	SW2	SW3
0.3A	0.2A	on	on	on
0.5A	0.3A	off	on	on
0.7A	0.5A	on	off	on
1.0A	0.7A	off	off	on
1.3A	1.0A	on	on	off
1.6A	1.2A	off	on	off
1.9A	1.4A	on	off	off
2.2A	1.6A	off	off	off

Speed Setting

Speed range	SW4	SW5	SW6
0~100	on	on	on
0~150	off	on	on
0~200	on	off	on
0~250	off	off	on
0~300	on	on	off
0~350	off	on	off
0~400	on	off	off
0~450	off	off	off

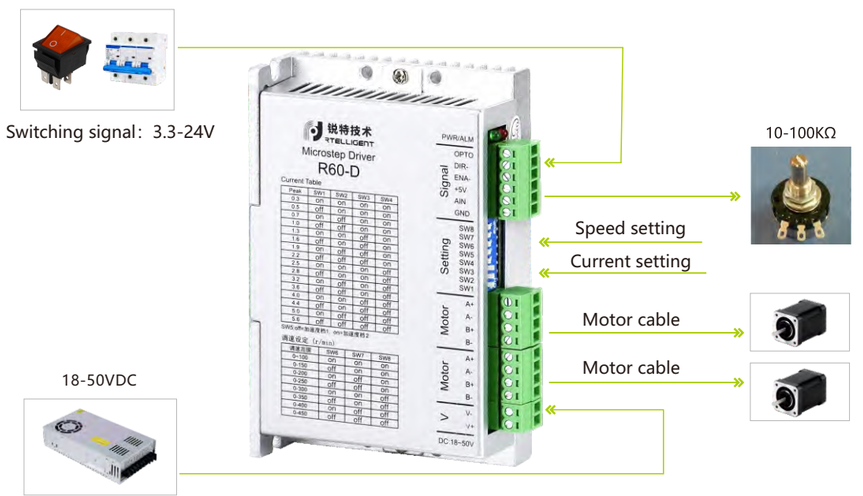
One-drive-two Stepper Drive R60-D

Two-axis synchronization appication is often required on the conveying equipment. R60-D is the two-axis synchronization specific drive customized by Rtelligent.

Using the TI delicated dual-core DSP chip, R60-D drives the two-axis motor independently to avoid the interference whthin the back electromotive force and achieve independent operation and synchronized movement.

- Speed control mode: the ENA switching signal controls the start-stop, and the potentiometer controls speed.
- Signal level: IO signals are connected to 24V externally
- Power supply: 18-50VDC
- Typical applications: conveying equipment, inspection conveyor, PCB loader

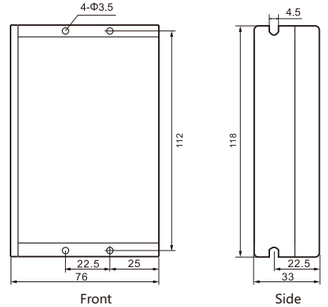
Drive Interface & Connection



Speed Setting

Speed range	SW6	SW7	SW8
0~100	on	on	on
0~150	off	on	on
0~200	on	off	on
0~250	off	off	on
0~300	on	on	off
0~350	off	on	off
0~400	on	off	off
0~450	off	off	off

Installation Dimension



Acceleration Selection

		SW5
Acceleration 1	Low acceleration/deceleration	off
Acceleration 2	High acceleration/deceleration	on

Working Current Setting

Peak	SW1	SW2	SW3	SW4
0.3	on	on	on	on
0.5	off	on	on	on
0.7	on	off	on	on
1.0	off	off	on	on
1.3	on	on	off	on
1.6	off	on	off	on
1.9	on	off	off	on
2.2	off	off	off	on
2.5	on	on	on	off
2.8	off	on	on	off
3.2	on	off	on	off
3.6	off	off	on	off
4.0	on	on	off	off
4.4	off	on	off	off
5.0	on	off	off	off
5.6	off	off	off	off

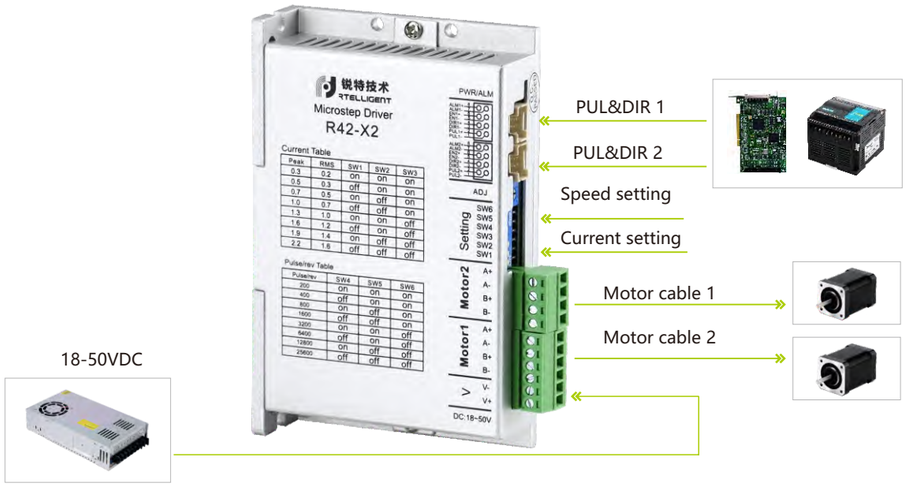
Two-in-one Drive R42X2

Multi-axis automation equipment is often required to reduce space and save the cost.R42X2 is the first two-axis special drive developed by Rtelligent in domesitic market.

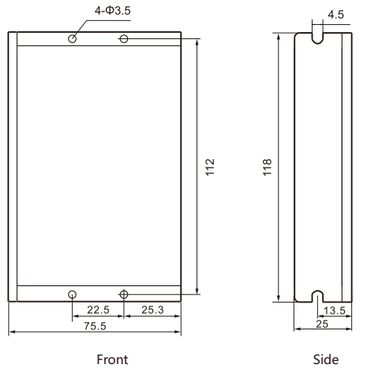
R42X2 can independently drive two 2-phase stepper motors up to 42mm frame size. The two-axis micro-stepping and current must be set to the same.

- Speed control mode: the ENA switching signal controls the start-stop, and the potentiometer controls speed.
- Signal level: IO signals are connected to 24V externally
- Power supply: 18-50VDC
- Typical applications: conveying equipment, inspection conveyor, PCB loader

Drive Interface & Connection



Installation Dimension



Working Current Setting

Output current peak	Output current RMS	SW1	SW2	SW3
0.3A	0.2A	on	on	on
0.5A	0.3A	off	on	on
0.7A	0.5A	on	off	on
1.0A	0.7A	off	off	on
1.3A	1.0A	on	on	off
1.6A	1.2A	off	on	off
1.9A	1.4A	on	off	off
2.2A	1.6A	off	off	off

Micro-stepping Setting

Pulse/rev	SW4	SW5	SW6
200	on	on	on
400	off	on	on
800	on	off	on
1600	off	off	on
3200	on	on	off
6400	off	on	off
12800	on	off	off
25600	off	off	off

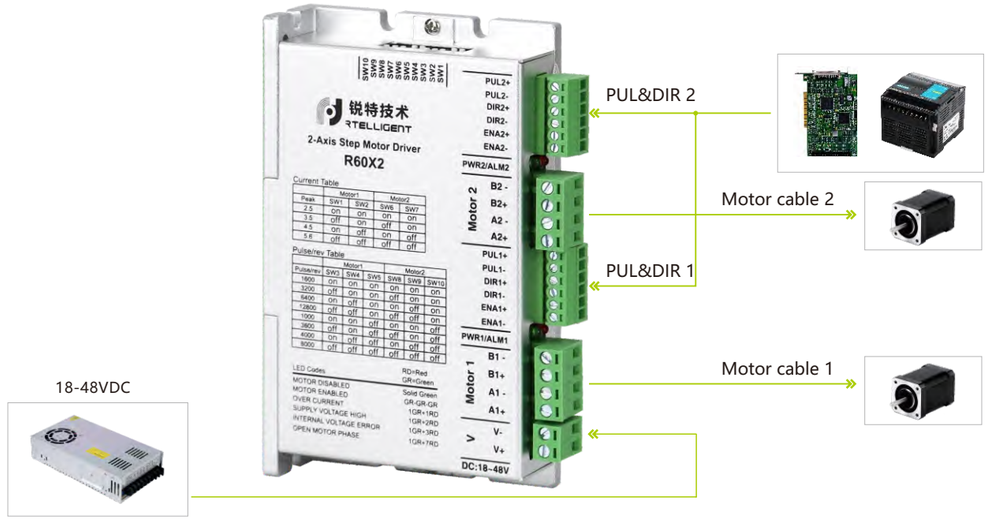
Two-in-one Drive R60X2

Multi-axis automation equipment is often required to reduce space and save the cost. R60X2 is the first two-axis special drive developed by Rtelligent in domestic market.

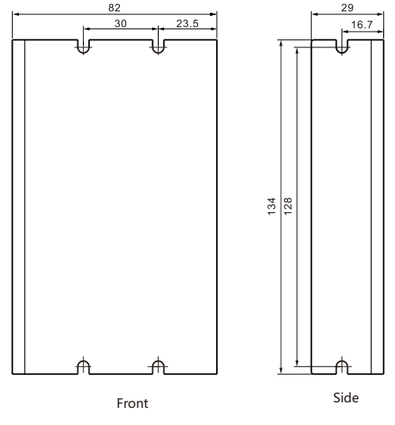
R60X2 can independently drive two 2-phase stepper motors up to 60mm frame size. The two-axis micro-stepping and current can be set separately.

- Pulse mode: PUL&DIR
- Signal level: 24V default, R60X2-5V is required for 5V
- Typical applications: dispenser, soldering machine, multi-axis test equipment.

Drive Interface & Connection



Installation Dimension



Working Current Setting

	Motor 1		Motor 2	
Output current peak	SW1	SW2	SW3	SW4
2.5A	on	on	on	on
3.5A	off	on	off	on
4.5A	on	off	on	off
5.6A	off	off	off	off

Micro-stepping Setting

	Motor 1(Motor 2)		
Pulse/rev	SW3(8)	SW4(9)	SW5(10)
1600	on	on	on
3200	off	on	on
6400	on	off	on
12800	off	off	on
1000	on	on	off
3600	off	on	off
4000	on	off	off
8000	off	off	off

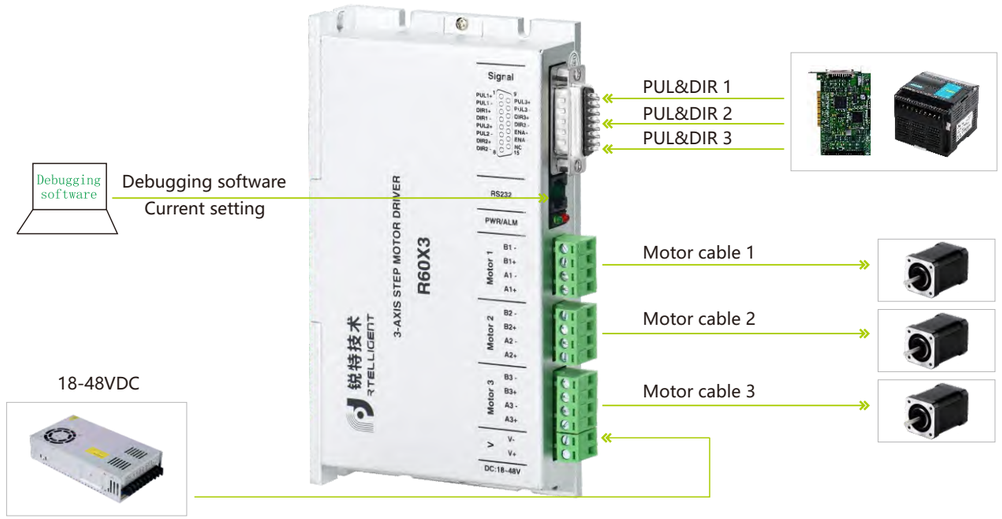
Three-in-one Drive R60X3

Three-axis platform equipment often has the need to reduce space and save cost. R60X3/3R60X3 is the first three-axis special drive developed by Rtelligent in dometic market.

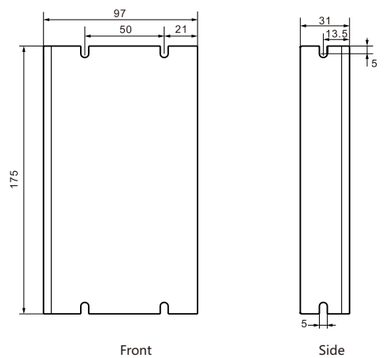
R60X3/3R60X3 can independently drive three 2-phase/3-phase stepper motors up to 60mm frame size. The three-axis micro-stepping and current are independently adjustable.

- Pulse mode: PUL&DIR
- Signal level: 3.3-24V compatible; serial resistance not required for the application of PLC.
- Typical applications: dispenser, soldering
- machine, engraving machine,multi-axis test equipment.

Drive Interface & Connection



Installation Dimension

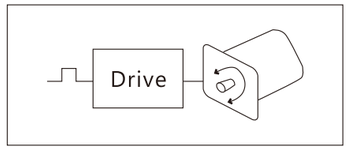


Parameter Debugging Interface

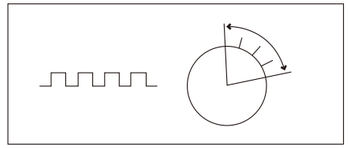
Open Loop Stepper Motor

The stepper motor is a special motor specially designed for accurate control of position and speed. The biggest characteristic of stepper motor is “digital”. For each pulse signal from the controller, the stepper motor driven by its drive runs at a fixed angle ("one step" for short), as shown in the following figure.

Rtelligent A/AM series stepper motor is designed based on the Cz optimized magnetic circuit and adopts stator and rotator materials of high magnetic density, featuring a high energy efficiency.



One pulse for one step



Number of pulses equals to that of steps

Naming Rule

57 A M 23 – □

1 Base size

2 Step angle type code
A: 1.8 degrees
B: 1.2 degrees
C: 0.72 degrees

3 Motor series code
M: M series

4 Motor torque
0.6: 0.6Nm
30: 3.0Nm
120: 12.0Nm

5 Non-standard code
D: Double shaft
Z2: With brake

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Application Guide

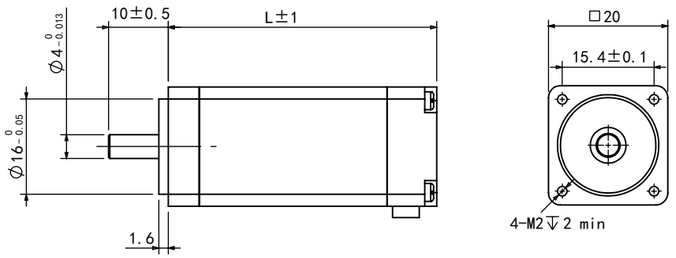
1. Stepper motor is generally used at the highest speed of 600-700rpm.
2. The low speed resonance zone of stepper motor is around 100rpm and 200rpm
   (The first resonance zone is about 100rpm, The second resonance zone is about 200rpm).
3. The 8-wire motor can be connected in series and parallel. Please connect the cables according to the motor label.
   (Series connection is suitable for low speed and high torque applications, while parallel is suitable for high speed applications)
4. If motor running jitter, stop shaking, there should be the inertia matching problem, clients need to consider the acceleration and deceleration.
5. If stepper motor can not start, please check wiring, micro-stepping setting, system acceleration and deceleration settings.
6. Vertical applications require stepper motors with brakes.

2-Phase Stepper Motor 20/28mm Series Technical Specifications

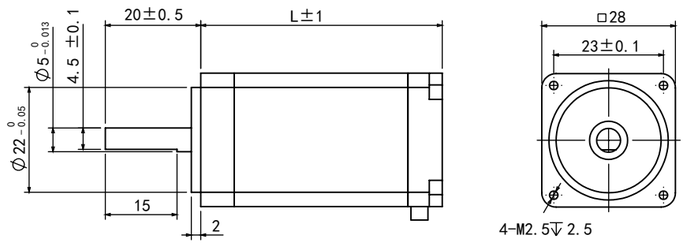
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
20AM003	1.8	0.03	0.6	5.7	2.6	3	4	10	33	0.07
20AM005	1.8	0.05	0.6	7.0	3.4	38	4	10	45	0.10
28AM006	1.8	0.06	1.2	1.4	1.0	90	5	20	32	0.11
28AM01	1.8	0.10	1.2	1.8	1.6	130	5	20	41	0.13
28AM013	1.8	0.13	1.2	2.2	2.3	180	5	20	51	0.18

*NEMA 8 (20mm)， NEMA 11 (28mm)

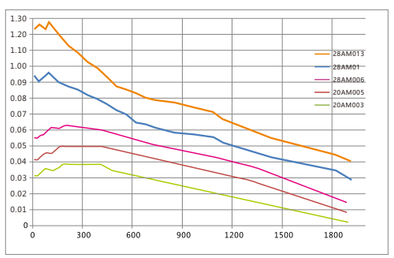
20AM Series Dimension (mm)



28AM Series Dimension (mm)

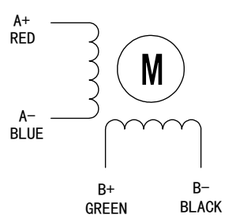


Torque-frequency Curve



Drive：R42 Current：Rated
Voltage：24VDC Micro-stepping：1600

Wiring

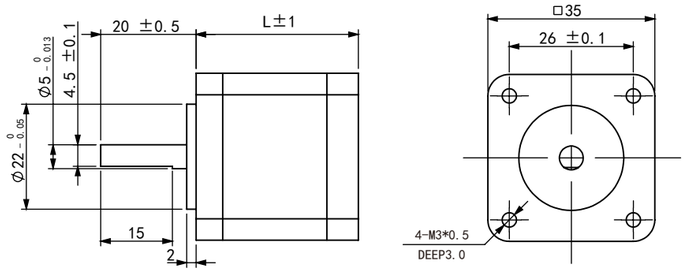


2-Phase Stepper Motor 35/39mm Series Technical Specifications

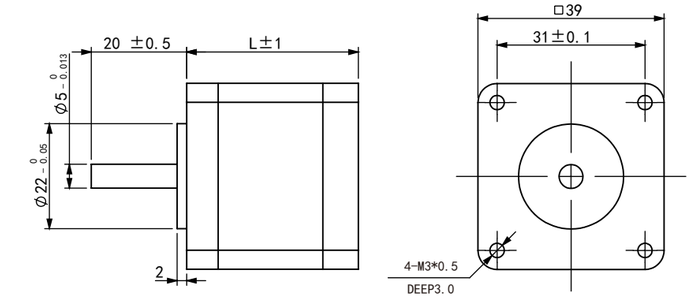
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
35A02	1.8	0.2	1.0	3.8	5.3	22	5	20	34	0.18
39A02	1.8	0.2	1.0	4.1	7.1	30	5	20	36	0.28

*NEMA 14 (35mm)， NEMA 16 (39mm)

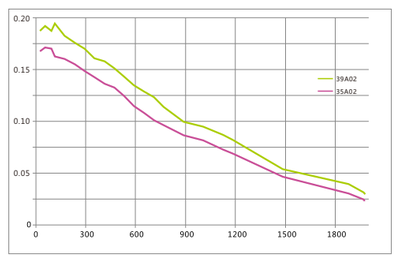
35A Series Dimension (mm)



39A Series Dimension (mm)

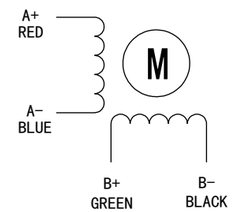


Torque-frequency Curve



Drive：R42 Current：Rated
Voltage：24VDC Micro-stepping：1600

Wiring

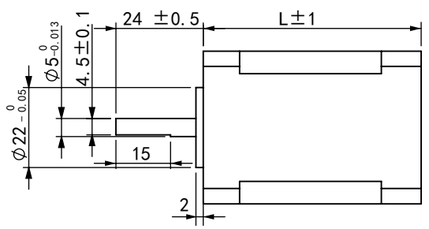


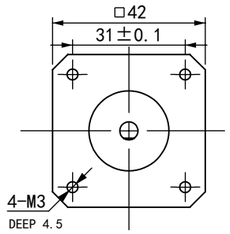
2-Phase Stepper Motor 42mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
42AM02	1.8	0.2	1.5	1.3	1.9	41	5	24	34	0.23
42AM04	1.8	0.4	1.5	2.6	5.1	57	5	24	40	0.29
42AM06	1.8	0.6	2.0	1.8	3.8	82	5	24	47	0.37
42AM08	1.8	0.8	2.0	1.9	5.0	114	5	24	60	0.48

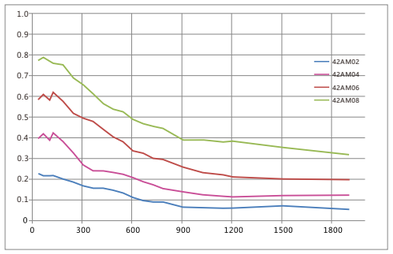
*NEMA 17 (42mm)

42AM Series Dimension (mm)





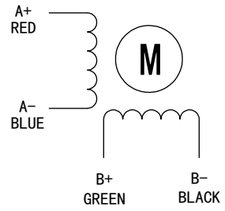
Torque-frequency Curve



Drive: R42
Voltage: 24VDC

Current: Rated
Micro-stepping: 1600

Wiring

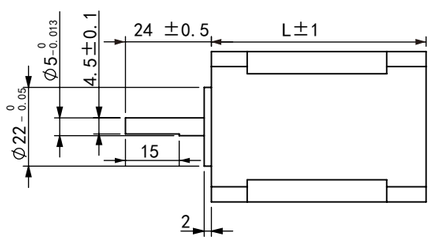


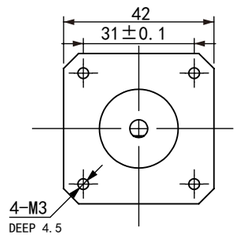
2-Phase Stepper Motor 42mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
42A01	1.8	0.15	1.0	1.3	1.9	41	5	24	34	0.23
42A02	1.8	0.2	1.2	2.6	5.1	57	5	24	40	0.29
42A03	1.8	0.3	2.0	1.8	3.8	82	5	24	47	0.37
42A08	1.8	0.8	2.0	1.9	5.0	114	5	24	60	0.48

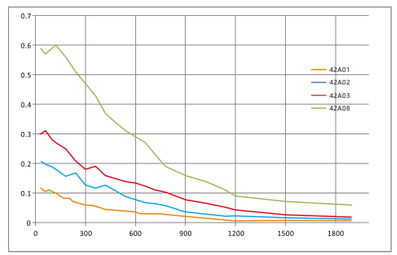
*NEMA 17 (42mm)

42A Series Dimension (mm)





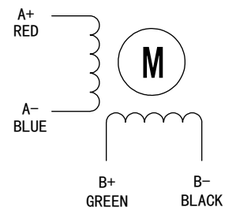
Torque-frequency Curve



Drive: R42
Voltage: 24VDC

Current: Rated
Micro-stepping: 1600

Wiring

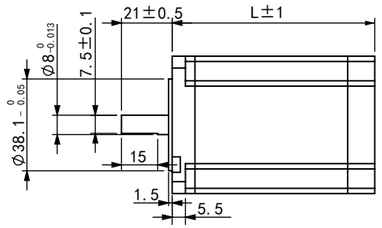


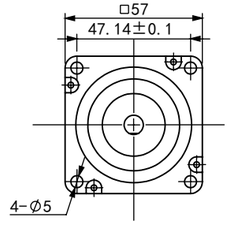
2-Phase Stepper Motor 57mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
57AM13	1.8	1.3	3.0	0.42	1.5	260	8	21	55	0.67
57AM23	1.8	2.3	5.0	0.64	2.7	460	8	21	76	1.03
57AM24	1.8	2.4	5.6	0.41	2.0	460	8	21	80	1.11
57AM26	1.8	2.6	5.0	0.47	2.1	520	8	21	84	1.20
57AM30	1.8	3.0	5.0	0.82	3.7	720	8	21	102	1.48
D57AM30	1.8	3.0	5.0	0.50	2.2	690	8	21	86	1.39

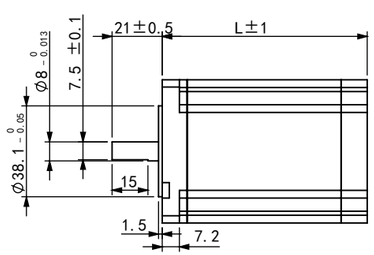
*NEMA 23 (57mm)

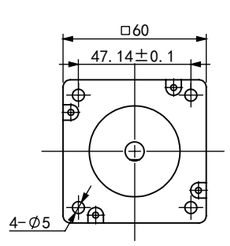
57AM Series Dimension (mm)



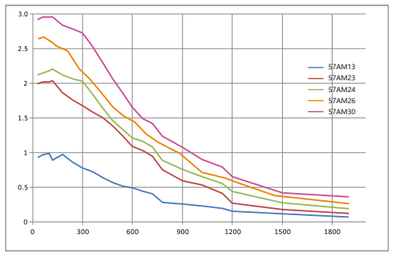


D57AM Series Dimension (mm)



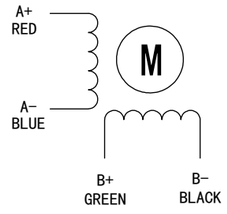


Torque-frequency Curve



Drive: R60 Current: Rated
Voltage: 36VDC Micro-stepping: 1600

Wiring

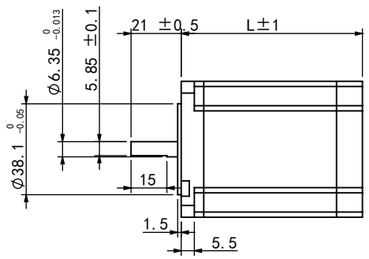


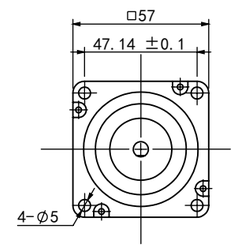
2-Phase Stepper Motor 57mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
57A09	1.8	0.9	2.8	0.42	1.53	260	6.35	21	55	0.67
57A1	1.8	1.3	2.8	0.64	2.65	460	6.35	21	76	1.03
57A2	1.8	2.2	4.0	0.41	2.00	460	8.00	21	80	1.11
57A3	1.8	3.0	5.0	0.82	3.73	720	8.00	21	102	1.48

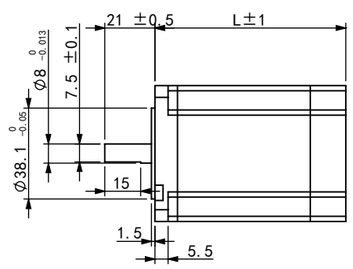
*NEMA 23 (57mm)

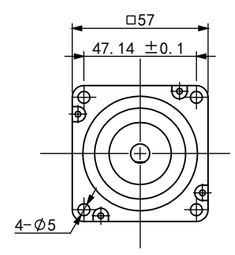
57A09/57A1 Dimension (mm)



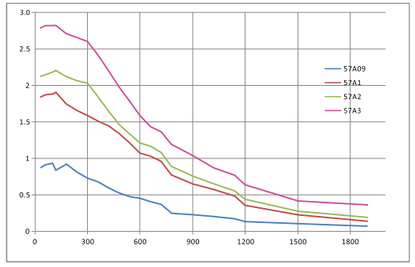


57A2/57A3 Dimension (mm)



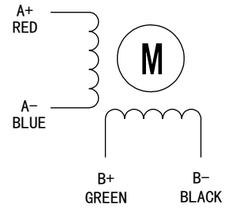


Torque-frequency Curve



Drive: R60 Current: Rated
Voltage: 36VDC Micro-stepping: 1600

Wiring

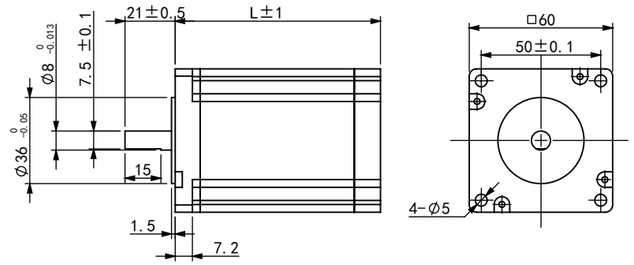


2-Phase Stepper Motor 60mm Series Technical Specifications

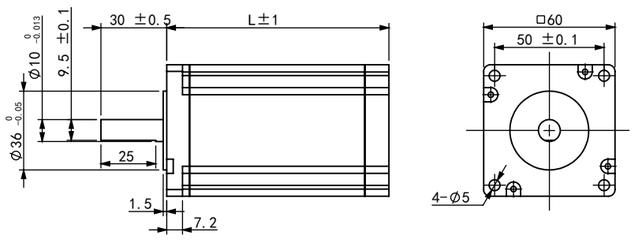
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
60AM21	1.8	2.1	5.0	0.35	1.3	330	8	21	58	0.87
60AM30	1.8	3.0	5.0	0.50	2.2	690	8	21	86	1.39
60AM40	1.8	4.0	5.0	0.86	3.5	880	10	30	102	2.05

*NEMA 24 (60mm)

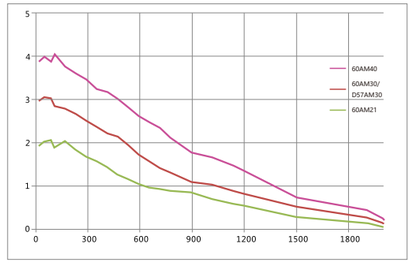
60AM21/60AM30 Dimension (mm)



60AM40 Dimension (mm)

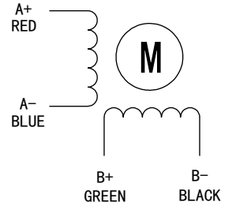


Torque-frequency Curve



Drive: R60 Current: Rated
Voltage: 48VDC Micro-stepping: 1600

Wiring

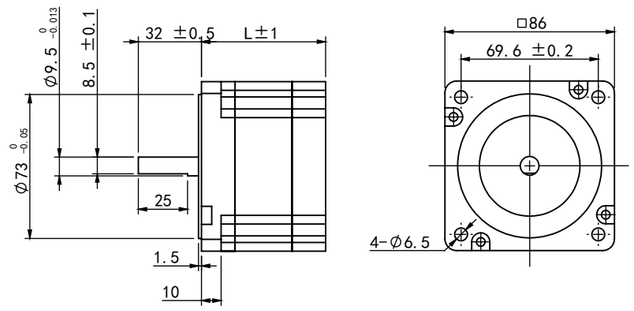


2-Phase Stepper Motor 86mm Series Technical Specifications

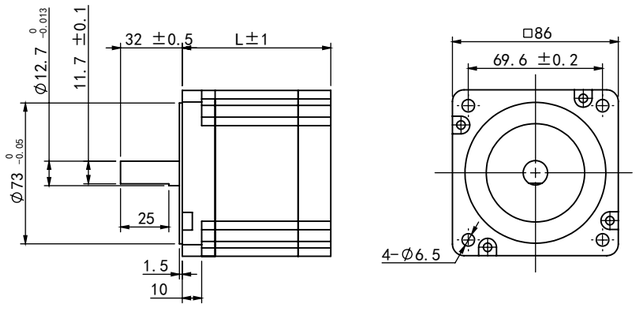
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
86AM35	1.8	3.5	4.0	0.81	3.87	800	9.5	32	64	1.70
86AM45	1.8	4.5	6.0	0.41	2.82	1400	12.7	32	78	2.25
86AM65	1.8	6.5	6.0	0.47	4.18	2300	12.7	32	98	2.95
86AM85	1.8	8.5	6.0	0.53	5.54	2800	12.7	32	112	3.67
86AM120	1.8	12	6.0	1.72	8.30	4000	15.875	32	155	5.10
86AM45-14	1.8	4.5	6.0	0.41	2.82	1400	14	32	78	2.25
86AM65-14	1.8	6.5	6.0	0.47	4.18	2300	14	32	98	2.95
86AM85-14	1.8	8.5	6.0	0.53	5.54	2800	14	32	112	3.67
86AM100	1.8	10	6.0	0.75	5.30	3400	14	32	128	4.10
86AM120-14	1.8	12	6.0	1.72	8.30	4000	14	32	155	5.10

*NEMA 34 (86mm)

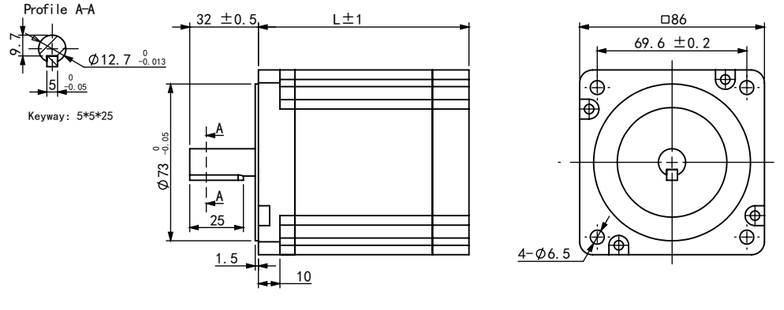
86AM35 Dimension (mm)



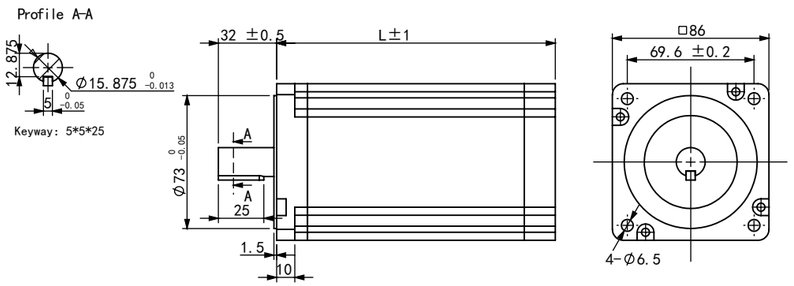
86AM45Dimension (mm)



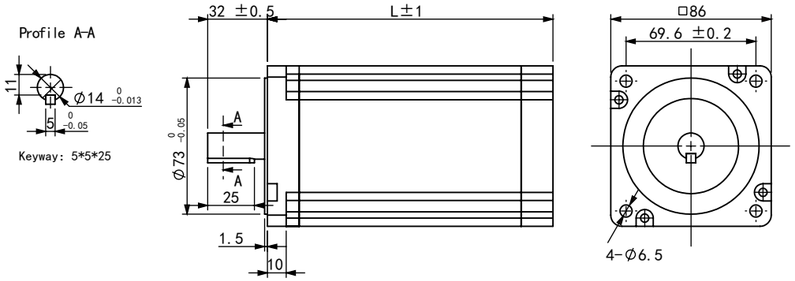
86AM65/86AM85 Dimension



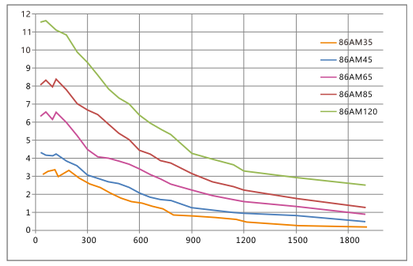
86AM120 Dimension (mm)



86AM-14 Dimension (mm)

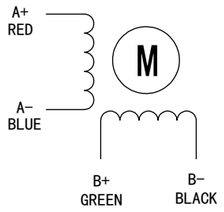


Torque-frequency Curve



Drive: R86 Current: Rated
Voltage: 60VDC Micro-stepping: 1600

Wiring

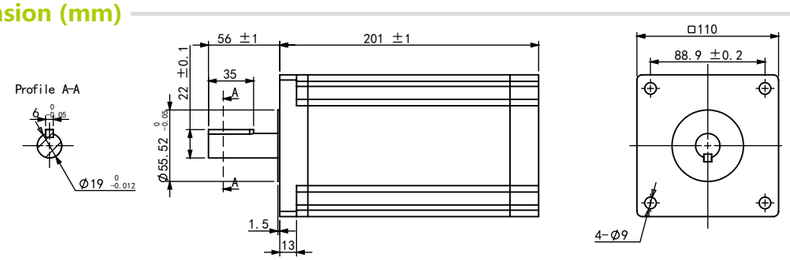


2-Phase Stepper Motor 110/130mm Series Technical Specifications

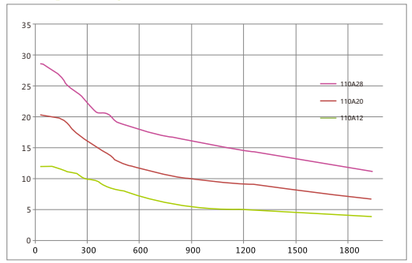
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
110A12	1.8	12	6.0	0.37	4.9	7200	19	56	115	6.0
110A20	1.8	20	6.0	0.80	15.0	11000	19	56	150	8.4
110A28	1.8	28	6.5	1.20	22.0	16200	19	56	201	11.7
130A27	1.8	27	6.0	0.65	13.8	35000	19	45	226	13.0
130A45	1.8	45	7.0	0.90	9.5	48400	19	45	283	19.0

*NEMA 42 (110mm), NEMA 52 (130mm)

110A series Dimension (mm)

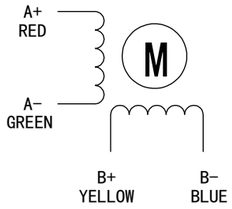


Torque-frequency Curve

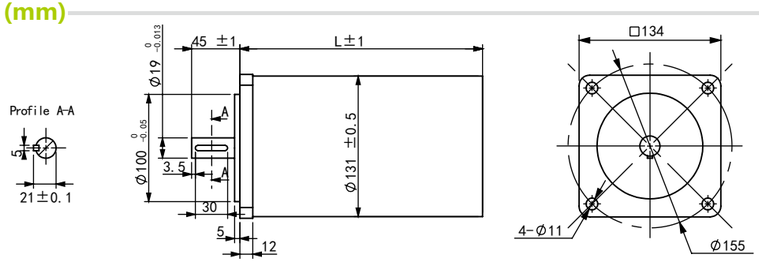


Drive: R110PLUS Current: Rated
Voltage: 220VDC Micro-stepping: 1600

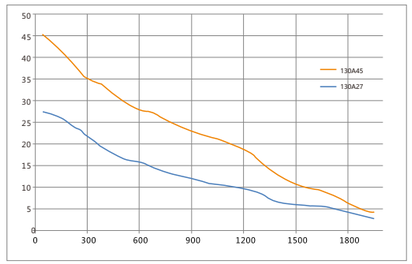
Wiring



130A Series Dimension (mm)

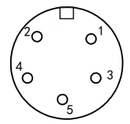


Torque-frequency Curve



Drive: R130 Current: Rated
Voltage: 220VAC Micro-stepping: 2000

Wiring



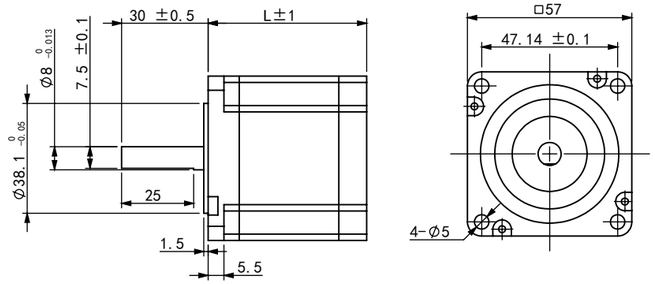
1	2	3	4	5
A+	A-	B+	B-	NC

3-Phase Stepper Motor 57mm Series Technical Specifications

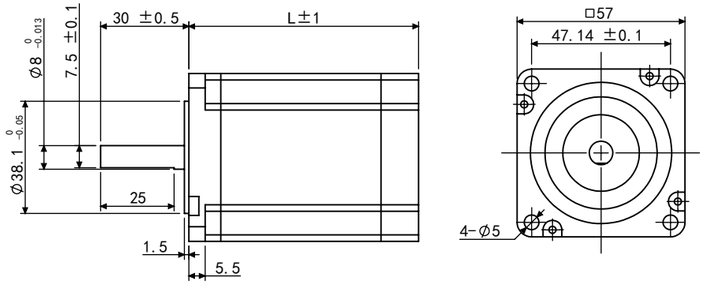
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
57BM09	1.2	0.9	3.5	0.50	1.2	260	8	30	55	0.67
57BM15	1.2	1.5	3.5	0.69	1.8	480	8	30	78	1.10

*NEMA 23 (57mm)

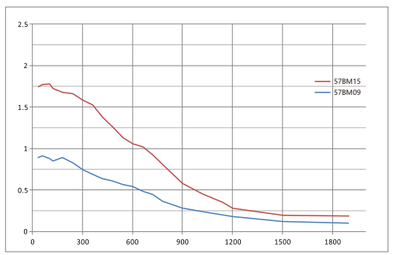
57BM09 Dimension (mm)



57BM15 Dimension (mm)

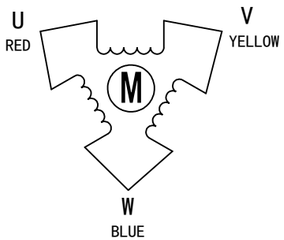


Torque-frequency Curve



Drive: 3R60 Current: Rated
Voltage: 36VDC Micro-stepping: 1600

Wiring

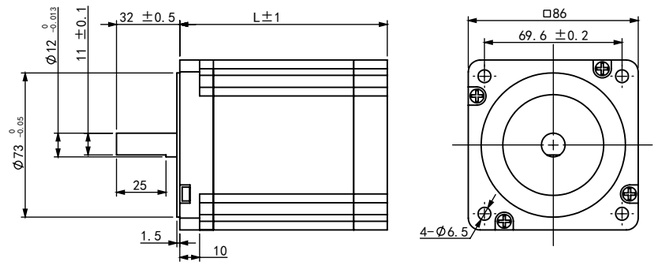


3-Phase Stepper Motor 86mm Series Technical Specifications

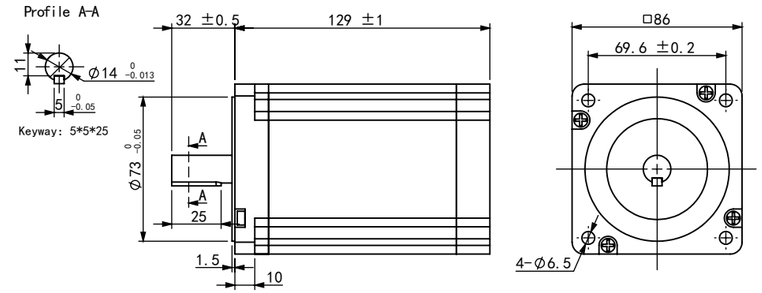
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
86BM20	1.2	2.3	3.0	2.1	7.7	1300	12	32	73	2.0
86BM40	1.2	4.3	4.5	1.1	4.5	2500	12	32	105	2.0
86BM70	1.2	7.0	3.0	4.4	20	3400	14	32	129	4.1
86BM90	1.2	9.0	3.0	5.7	29	4000	14	32	155	5.1

*NEMA 34 (86mm)

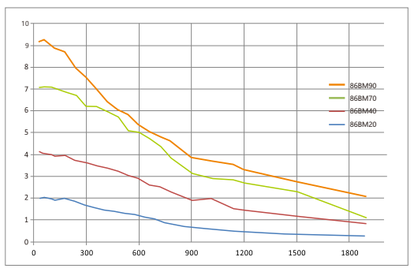
86BM20/86BM40尺寸(mm)



86BM70/86BM90尺寸(mm)

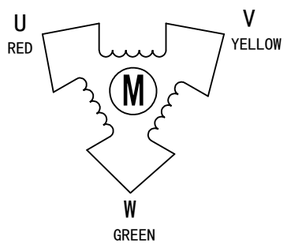


Torque-frequency Curve



Drive: 3R110PLUS V3.0 Current: Rated
Voltage: 220VAC Micro-stepping: 2000

Wiring

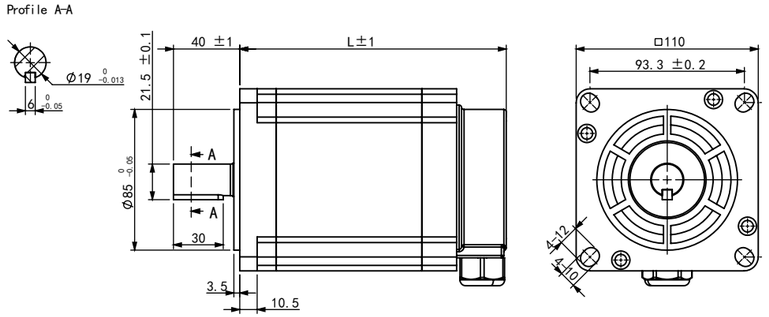


3-Phase Stepper Motor 110mm Series Technical Specifications

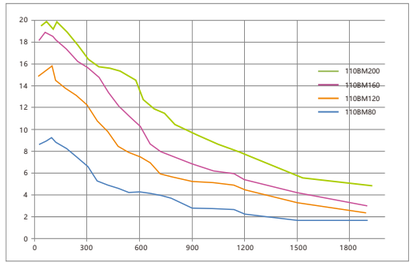
Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
110BM80	1.2	8.0	4.3	1.0	11.9	8600	19	40	137	5.5
110BM120	1.2	12	6.0	1.1	12.4	11900	19	40	161	7.1
110BM160	1.2	16	6.5	1.3	19.0	14800	19	40	185	10.7
110BM200	1.2	20	7.0	1.7	22.0	19800	19	40	220	11.0

*NEMA 42 (110mm)

110BM Series Dimension (mm)

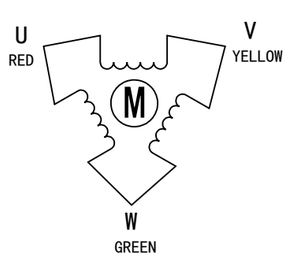


Torque-frequency Curve



Drive: 3R110PLUS Current: Rated
Voltage: 220VAC Micro-stepping: 2000

Wiring



PE: Yellow-Green

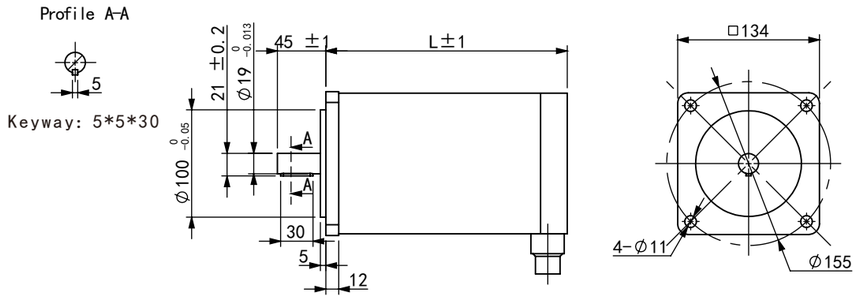
3-Phase Stepper Motor 130mm Series Technical Specifications

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
130B23	1.2	23	5.0	0.95	9.5	26800	19(K5)	45	170	13.7
130B36	1.2	36	5.0	1.30	13.1	35000	19(K5)	45	226	18.4
130B50**	1.2	50	5.0	1.70	18.0	45500	19(K5)	45	282	22.8
130B50**	1.2	50	6.0	0.99	18.3	42500	19(K6)	44	271	16.5

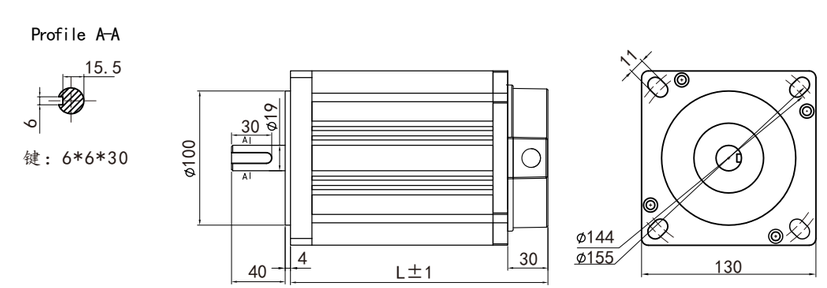
*NEMA 52 (130mm)

**We have two specifications of 130B50, Please confirm before ordering.

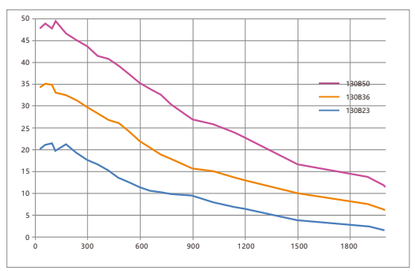
K5: 130B Series Dimension (mm)



K6: 130B50 Series Dimension (mm)

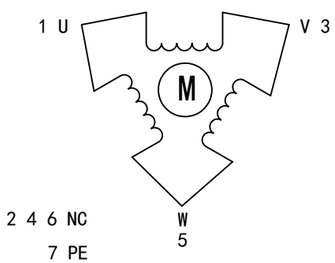


Torque-frequency Curve



Drive: 3R130 Current: Rated
Voltage: 220VAC Micro-stepping: 2000

Wiring



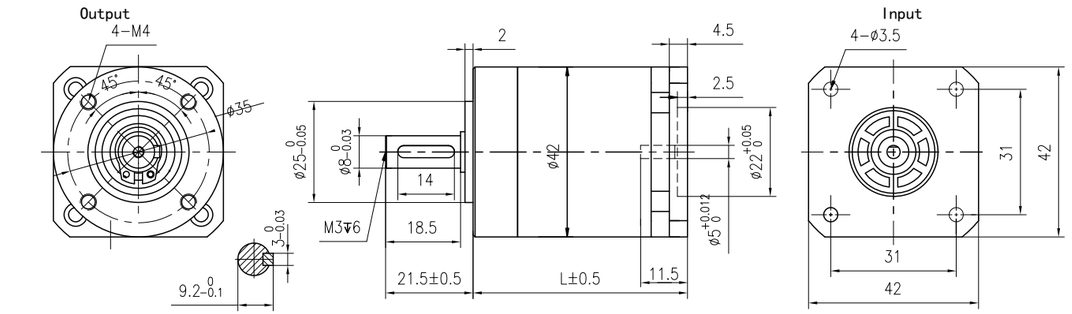
Reducer for Stepper Motor

Transmission Stepper Reducer

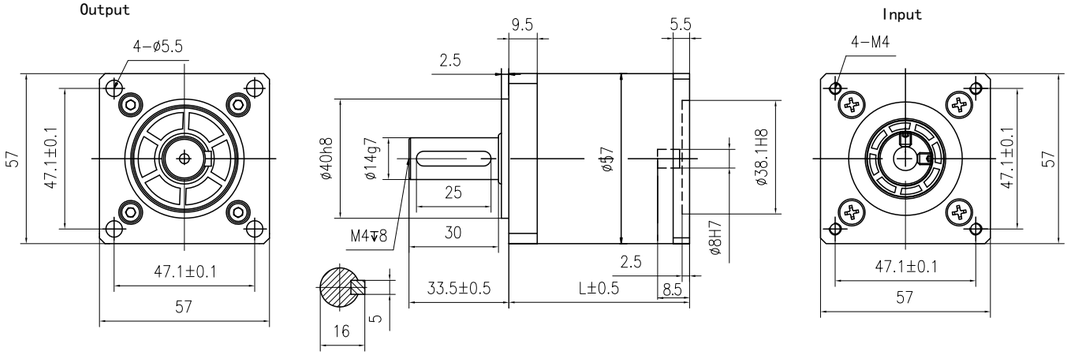
Model	Input dimension (Motor insertion end)				Output dimension (Client installation end)				Length	
	Shaft diameter	Boss diameter	Mounting hole distance	Mounting hole size	Shaft diameter	Boss diameter	Mounting hole distance	Mounting hole size	L1	L2
42PRF-□*	5	22	31.0	3.5	8	25	P.C.D.35	M4	43	53
57PLF-□*	8	38	47.1	M4	14	40	47.1	5.5	53	70
86PLF-□*	14	73	69.6	M6	14	73	69.6	M6	83	97

*PRF and PLF series reducer input terminal has size limitation, some stepper motors need to be cut shaft before assembly

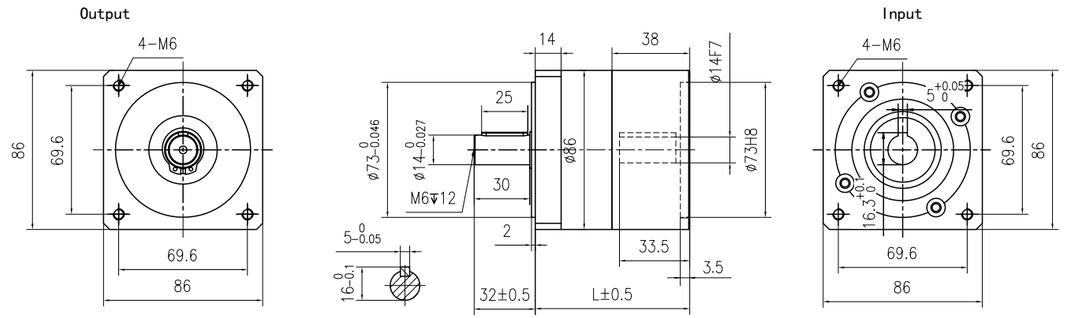
42PRF Series Dimensions (mm)



57PLF Series Dimensions (mm)



86PLF Series Dimensions (mm)

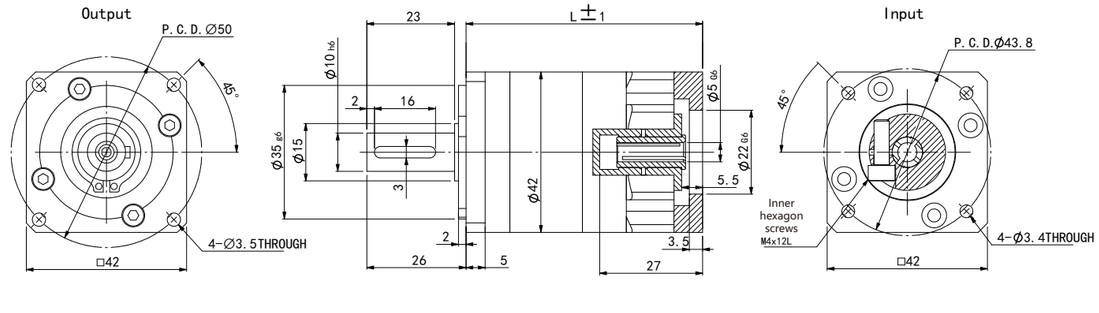


Precision Stepper Reducer

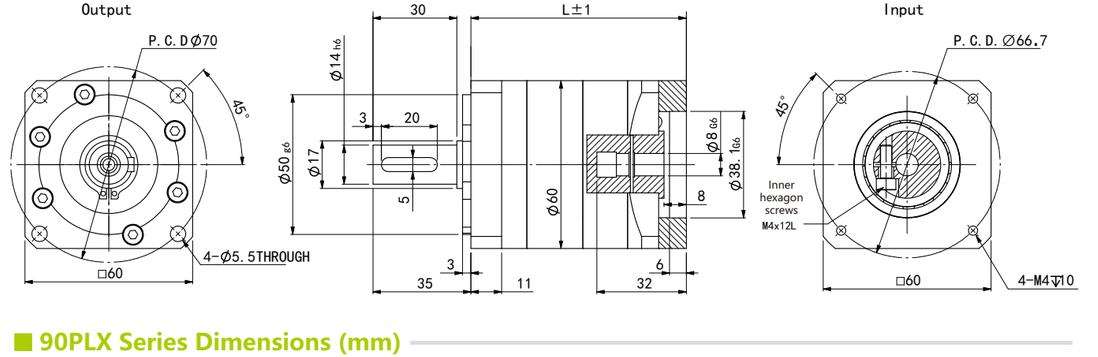
Model	Input dimension (Motor insertion end)				Output dimension (Client installation end)				Length	
	Shaft diameter	Boss diameter	Mounting hole distance	Mounting hole size	Shaft diameter	Boss diameter	Mounting hole distance	Mounting hole size	L1	L2
42PLX-□	5	22	31.0	3.5	10	35	P.C.D.50	3.5	62	77
60PLX-□	8	38	47.1	M4	14	50	P.C.D.70	5.5	77	95
90PLX-□	14	73	69.6	M6	20	80	P.C.D.100	6.5	110	130

*The L1 reducer can have a reduction ratio range of 3-10, the L2 reducer can have a reduction ratio range of 15-100.

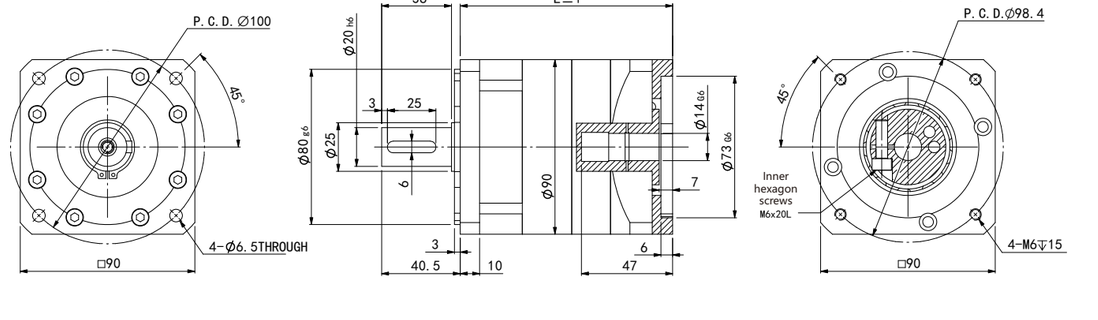
42PLX Series Dimensions (mm)



60PLX Series Dimensions (mm)



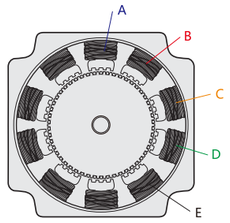
90PLX Series Dimensions (mm)



Five-phase Stepper System

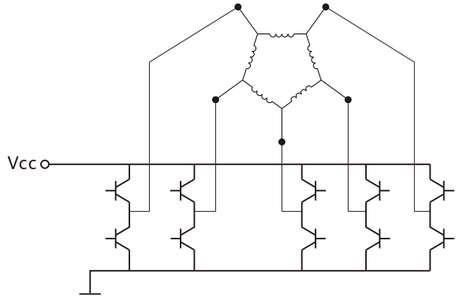
Compared with the ordinary two-phase stepper motor, the five-phase stepper motor has a smaller step angle. In the case of the same rotor structure, the five-phase structure of the stator has unique advantages for the performance of the system.

The technical difficulty of the corresponding five-phase stepper drive lies in the demodulation of the electrical angle of the five-phase winding. The five-phase stepper drive, developed by Rtelligent, is compatible with the new pentagonal connection motor and has excellent performance.



Five-phase hybrid stepper motor structure diagram

Stepper Motor Stator Structure & Drive Control Diagram

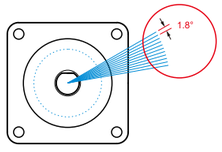


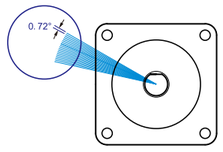
Features

Two-phase　　Five-phase

High precision

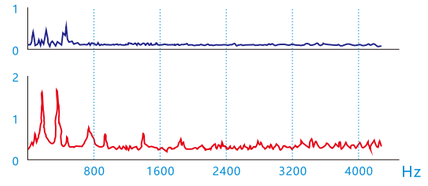
The step angle of the five-phase stepper motor is 0.72°, which has higher step angle accuracy than the two-phase/ three-phase stepper motor.





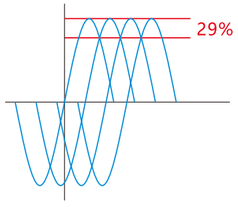
Low vibration

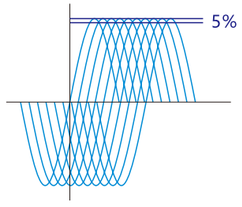
The stator of the five-phase stepper motor contains five pairs of windings. The decoupling algorithm of the drive makes the winding current of the five-phase stepper motor in a more reliable equilibrium state. The motor runs smoothly with little vibration.



Small torque ripple

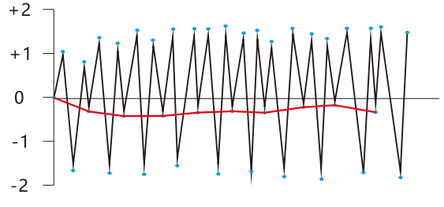
Because of its unique structure and current control algorithm, the five-phase stepper system has a smaller torque ripple in the same electrical cycle of the stepper motors. Therefore, the five-phase system has unique advantages in speed stability.





High repeat positioning accuracy

The step angle error of stepper motor depends on the manufacturing process, generally 3%-5% of the step angle. In each interval of 50 pairs of rotor cogging, the five-phase motor corresponds to 10 stable positions, which has better repeat positioning accuracy.

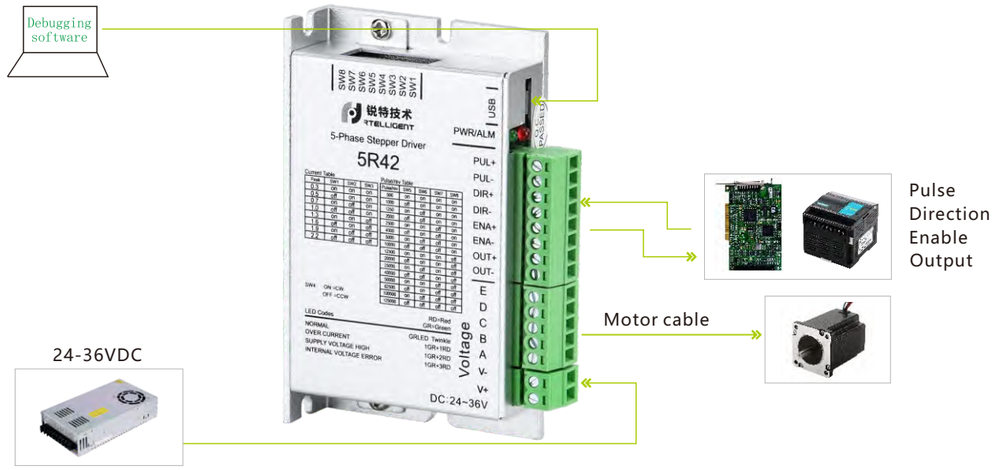


5R42

5R42 digital five-phase stepper drive is based on TI 32-bit DSP platform and integrated with the micro-stepping technology and the patented five-phase demodulation algorithm. With the features of low resonance at low speed, small torque ripple and high precision, it allows the five-phase stepper motor to deliver full performance benefits.

- Pulse mode: default PUL&DIR
- Signal level: 5V, PLC application requires string 2K resistor
- Power supply: 24-36VDC
- Typical applications：machanical arm, wire-cut electrical discharge machine, die bonder, laser cutting machine, semiconductor equipment, etc

Drive Interface & Connection



Working Current Setting

Output current	SW1	SW2	SW3
0.3A	on	on	on
0.5A	off	on	on
0.7A	on	off	on
1.0A	off	off	on
1.3A	on	on	off
1.6A	off	on	off
1.9A	on	off	off
2.2A	off	off	off

Initial Direction Setting

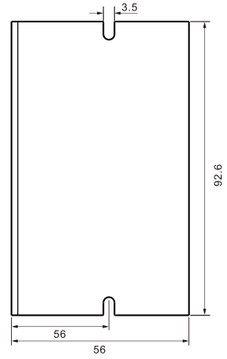
	A	B	C	D	E
Wiring according to the specified sequence of the motor, SW4 adjust the initial direction of the motor					
SW4	off	CW	on	CCW	

Micro-stepping Setting

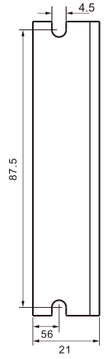
Pulse/rev	SW5	SW6	SW7	SW8
500	on	on	on	on
1000	off	on	on	on
1250	on	off	on	on
2000	off	off	on	on
2500	on	on	off	on
4000	off	on	off	on
5000	on	off	off	on
10000	off	off	off	on
12500	on	on	on	off
20000	off	on	on	off
25000	on	off	on	off
40000	off	off	on	off
50000	on	on	off	off
62500	off	on	off	off
100000	on	off	off	off
125000	off	off	off	off

When 5, 6, 7, and 8 are all ON, any micro-stepping can be changed through the debugging software

Installation Diemesion



Front



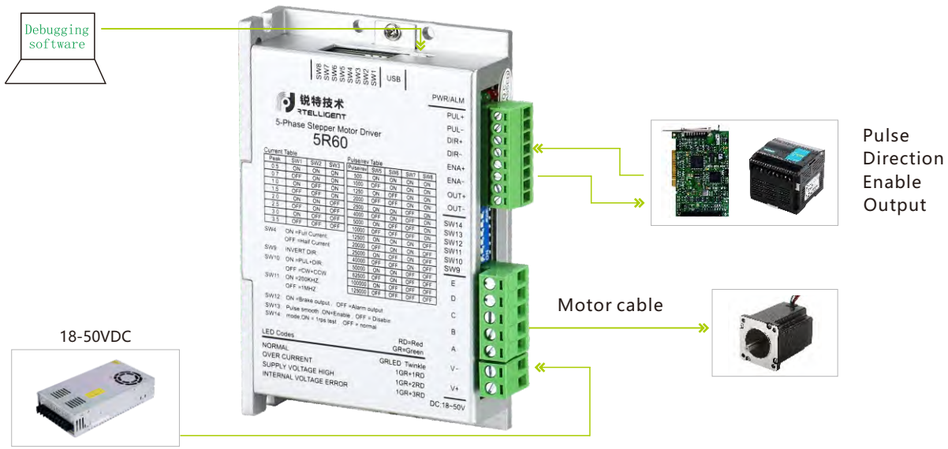
Side

5R60

5R60 digital five-phase stepper drive is based on TI 32-bit DSP platform and integrated with the micro-stepping technology and the patented five-phase demodulation algorithm. With the features of low resonance at low speed, small torque ripple and high precision, it allows the five-phase stepper motor to deliver full performance benefits.

- Pulse mode: default PUL&DIR
- Signal level: 5V, PLC application requires string 2K resistor.
- Power supply: 18-50VDC, 36 or 48V recommended.
- Typical applications： dispenser, wire-cut electrical discharge machine, engraving machine, laser cutting machine, semiconductor equipment, etc

Drive Interface & Connection



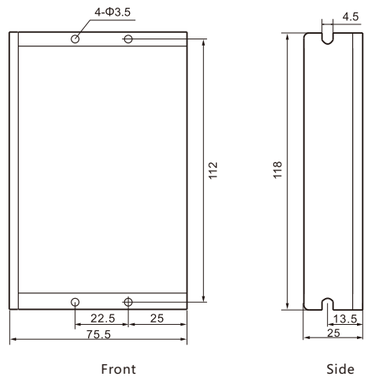
Working Current Setting

Output current	SW1	SW2	SW3
0.5A	on	on	on
0.7A	off	on	on
1.0A	on	off	on
1.5A	off	off	on
2.0A	on	on	off
2.5A	off	on	off
3.0A	on	off	off
3.5A	off	off	off

Initial Direction Setting

A	B	C	D	E
Wiring according to the specified sequence of the motor, SW9 adjust the initial direction of the motor				
SW9	off	CW	on	CCW

Installation Diemesion



Function Setting Selection

Pulse mode			SW10
off	CW+CCW	on	PUL+DIR
Max pulse frequency			SW11
off	Max pulse 1MHz	on	Max pulse 200KHz
Output function			SW12
off	Alarm output	on	Break control output
Filter function			SW13
off	Ineffective	on	Effective
Self-check			SW14
off	Normal mode	on	self-check operation

Micro-stepping Setting

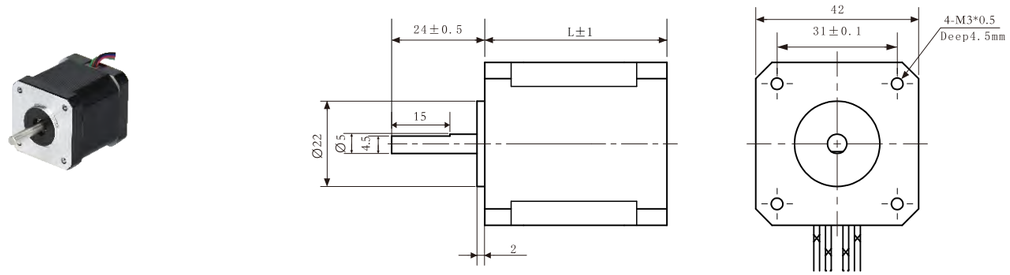
Pulse/rev	SW5	SW6	SW7	SW8
500	on	on	on	on
1000	off	on	on	on
1250	on	off	on	on
2000	off	off	on	on
2500	on	on	off	on
4000	off	on	off	on
5000	on	off	off	on
10000	off	off	off	on
12500	on	on	on	off
20000	off	on	on	off
25000	on	off	on	off
40000	off	off	on	off
50000	on	on	off	off
62500	off	on	off	off
100000	on	off	off	off
125000	off	off	off	off

When 5, 6, 7, and 8 are all ON, any micro-stepping can be changed through the debugging software

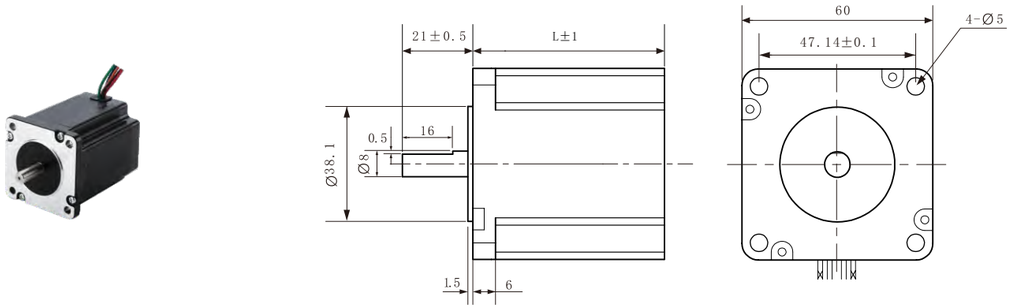
Technical Specifations

Model	Step angle (°)	Holding torque(N.m)	Rated current(A)	Resistance/ Phase(Ohm)	Inductance/ Phase(mH)	Rotor inertia (g.cm²)	Shaft diameter(mm)	Shaft length (mm)	Length (mm)	Weight (kg)
42C03	0.72	0.3	0.75	1.9	1.6	68	5	24	48	0.3
60C1	0.72	1.0	1.5	0.5	1.2	380	8	21	64	0.9
60C2	0.72	1.3	1.5	3.6	9.7	550	8	21	76	1.1

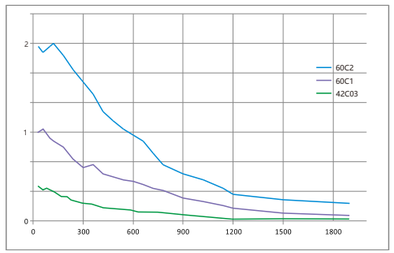
NEMA 17(42mm) Series Dimensions



NEMA 24(60mm) Series Dimensions (mm)

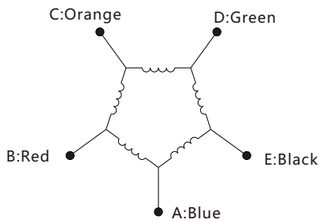


Torque-frequency Curve



Drive: 5R42/5R60 Current: Rated
Voltage: 36VDC Micro-stepping: 2000

Wiring



Linear Stepper Motor

External Nut ACME Screw	External Nut Ball Screw	Non-Captive ACME Screw
		
● Inch T-shape screw, anti-backlash nuts are optional ● Recommended speed range 300rpm ● Screw transmission efficiency 20-50% ● Brake and closed loop are optional	● Rolling ball screw, C7 precision ● Recommended speed range 700rpm (closed loop 1500rpm) ● Screw transmission efficiency 90-98% ● Brake and closed loop are optional	● Inch T-shape screw ● Recommended speed range 300rpm ● Screw transmission efficiency 20-50% ● Brake and closed loop are notoptional

Naming Rule

57A09 E C – Z – GZ1210 – 3 – 140 – 001

1 2 3 4 5 6 7 8

1. Motor model
2. Shaft mode
   N: Non-Captive
   E: External Nut
3. Encoder code
   C: With encoder
   None: Omitted
4. Break code
   Z: With break
   None: Omitted
5. Screw type & lead
   Gz1210: Ball screw, 10mm lead, 12mm diameter
   5.08: ACME screw, 5.08mm lead, diameter omitted
6. Rated motor current
   Unit: mm
7. Screw length
   Unit: mm
8. Customized Code

*Model naming rules are only used for model meaning analysis. For specific optional models, please consult with our engineer.

Technical Specifications

Screw type	Motor frame	Optional motor body length				Optional diameter	Optional lead						
ACME	20	30	42			3.5	1	2	4	8			
	28	34	45			4.76	0.635	1.27	2.54	5.08	10.16		
	35	34	47			6.35	1.27	2.54	6.35	12.7	25.4		
	42	34	40	48	60	6.35	1.27	2.54	6.35	12.7	25.4		
	57	45	55	65	75	9.525	1.27	2.54	5.08	10.16	25.4		
	86	76	114			15.875	2.54	3.175	6.35	12.7	25.4		
Ball	20	30	42			6	1						
	28	34	45			8	1	2					
	35	34	47			8	1	2					
						12	2	5	10				
	42	34	40	48	60	8	1	2					
						12	2	5	10				
	57	45	55	65	75	12	2	5	10				
	86	76	114			16	5	10	16				

Concepts

Lead: The lead is the linear stroke of the screw when it rotates the nut for one circle.

Thrust: Thrust refers to the thrust generated by the motor in the shaft direction of screw. When selecting, the screw thrust should be greater than the sum of the external forces of the current load.

Thrust formula: $T \cdot 2\pi \cdot \eta = F \cdot B$

T: Effective torque
Q: Screw transmission efficiency
F: Thrust
B: Lead

Screw: The ball screw uses the cyclic movement of the ball between the nut and the screw to move the load. T-shape screw uses the oil film between the nut and the screw to generate relative sliding to move the load.

Screw type	Friction form	Friction coefficient	Transmission efficiency	Self-locking force	Motor speed
Ball screw	Rolling friction	Small	High	No	High
T-shape screw	Sliding friction	Large	Low	Has a certain selflocking force	Speed limit 300rpm

Model Selection

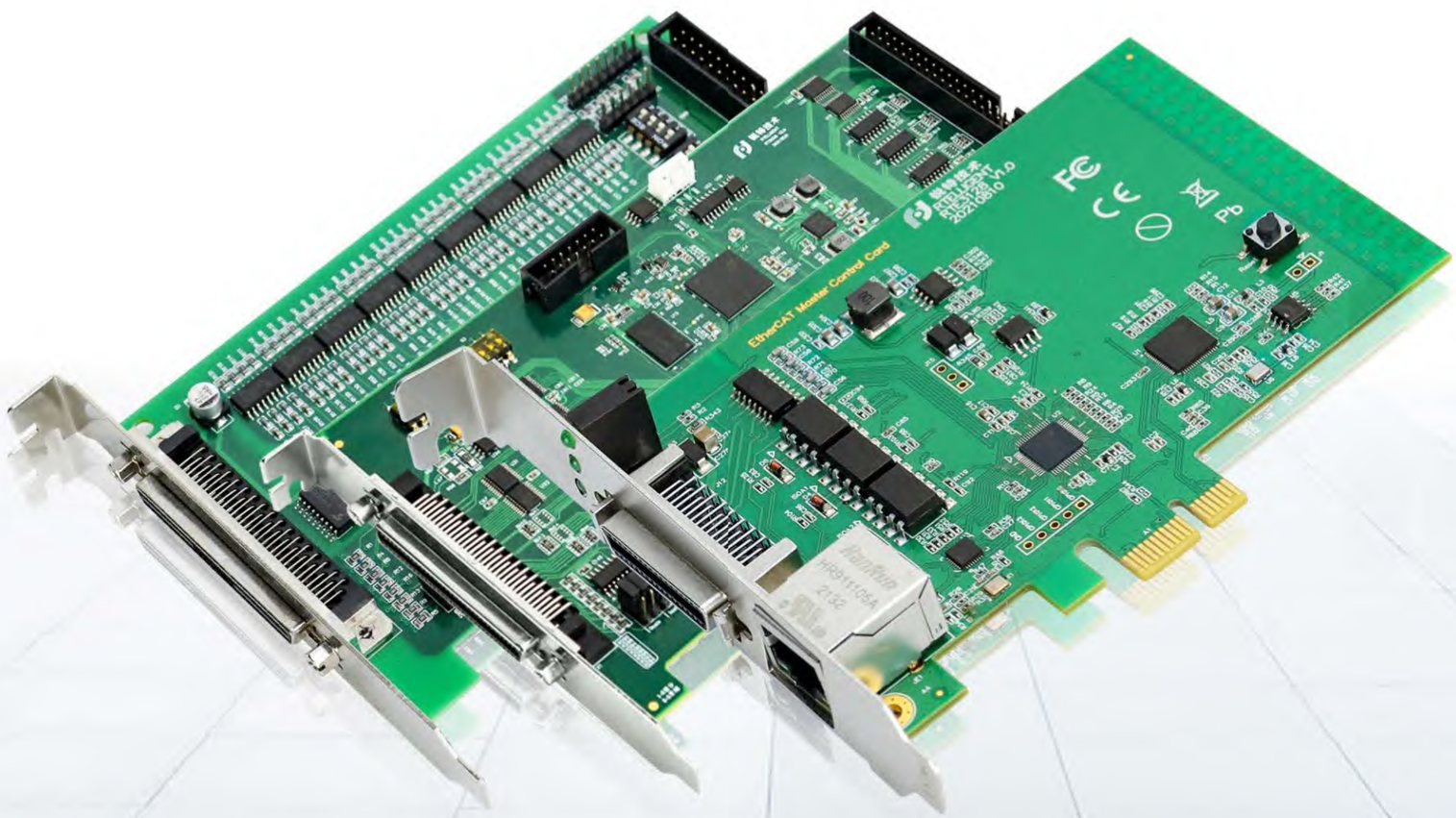
1. Determine the load specifications and stroke
   Dimension and weight of workpireces and loads, also the motion range of workpieces
2. Determine the static stress condition of the loads according to its installationEg.
   eg: Calculate gravity and friction if installed vertically.
   Calculate friction if installed horizontally.
   Other forces should be considered as well.
3. Select the proper size of linear screw motor based on speed and the screw specifications table.
   Estimate static torque based on static stress condition of the system.
   Estimate dynamic torque based on accelerated speed and inertia
   Approximately determine the condition of the motor body and screw lead.
   (Remarks: the transmission efficiency of ACME screw is 20%-60%)
4. Select the matching drive

Pluse type			
Switching type			
Fieldbus type	Modbus RTU 	Modbus TCP 	EtherCAT 

MOTION CONTROL

Be more intelligent in motion control

EtherCAT

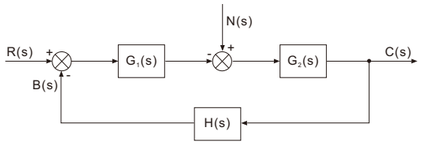


INTELLIGENT

Motion Control System

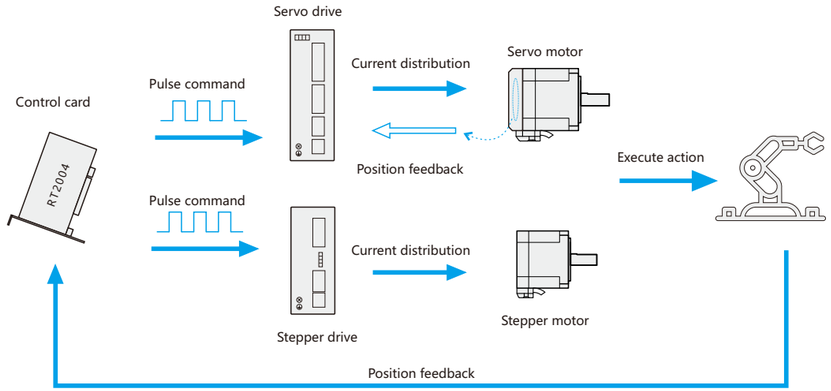
The motion control system is the carrier for automatic equipment operation logic and the realization of technological process, and the commander of the motion execution system. The biggest difference from other control systems is the "motion"attribute of the motion control system. Through the rapid calculation of digital signals, various motion control actions can be carried out accurately.

Rtelligent general-purose motion controllers, based on the computing power of industrial PC, customers can use various high-level programming languages to independently develop system programs for equipment, which is flexible and efficient.



Control system block diagram

System Diagram



Basic Structure

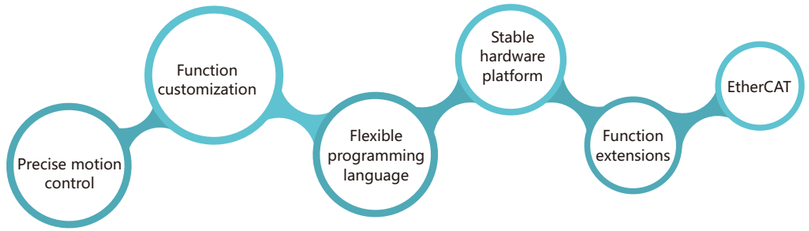
Controller	Amplifier
The role of the motion controller is to generate trajectory points (expected output) and close the position feedback loop. Many controllers can also close a velocity loop internally. For example: PLC, Motion control card	The function of the drive or amplifier is to convert the control signal from the motion controller into a higher power current or voltage signal. The intelligent drive can close the position loop and speed loop by itself for more precise control. For example: Servo drive, Stepper drive
Actuator	**Sensor**
The role of the actuator is to execute the action commands from the controller, and cooperate with various mechanical components to convert the actuator's motion form into the desired motion form. For example: Servo motor, Stepper motor	The function of the sensor is to feedback the speed or position of the actuator to the controller, so as to realize the closed control of the speed loop and the position loop. For example: Optical encoder, Hall effect equipment

Motion Control Card

Rtelligent motion control cards, integrated with rich motion control algorithm functions, suitable for a variety of automation equipment customized program development. It is applicable to a wide range of fields, including robotics, electronic processing equipment, semiconductor equipment, laser processing equipment and packaging equipment.

Our motion control cards are equipped with Windows dynamic link library and support C#/C++/VB/VC/LabVIEW/Delphi and other high-level language development environment, which is convenient for users to develop by themselves and construct the required control system.

*This series of products requires users to have a certain programming foundation



Naming Rule

RTE 3 128 EB — □

1 Type
RT: PCI interface
RTE: PCIe interface

2 Card Serial Code
0: Iocard 1: Point card
2: High-performance interpolation card
3: Bus communication card

3 Number of axes
004：4-axis
008：8-axis
128：128-axis

4 Extended form
EB: Extension terminal board
EX: Extension terminal box

5 Function code

*Model naming rules are only used for model meaning analysis. For specific optional models, please refer to the details page.

Product Series

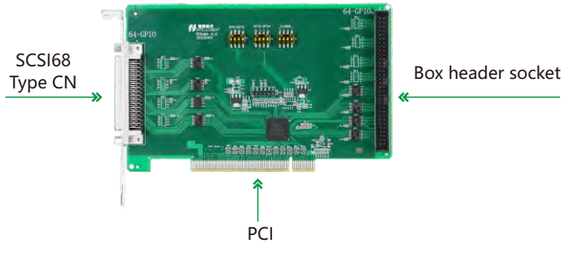
1000 series—Basic point card	2000 series—High-performance interpolation card	3000 series—Bus communication card
		

High performance I/O control card RT0064/RT0128

High performance I/O control card RT0064/RT0128, the maximum support 64 universal input, 64 universal output, support input port interrupt function. The photoelectric isolation technology used in input and output can effectively isolate the interference of external circuit and improve the reliability of the system.

- Output port: Terminal board
- Power supply : 24VDC/0.5A
- Support systems: WIN Vista/WIN XP/WIN 7/WIN 10/WIN 11
- Interface specifications: SCSI-68（Type CN），PCI

Master Card Interface

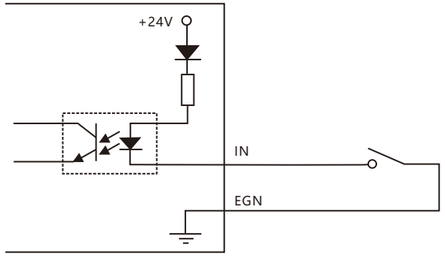


Accessory products

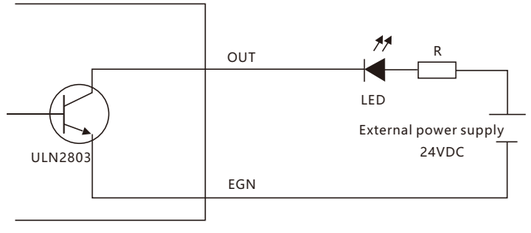
RT0064EB　　SCSI68-2.0M-CN

RT0128EB-M　　SCSI68-2.0M-CN

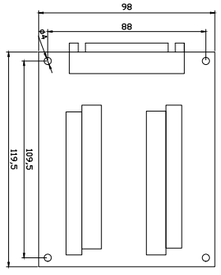
Schematic Diagram of Input Signal Interface



Schematic Diagram of Output Signal Interface



Dimension



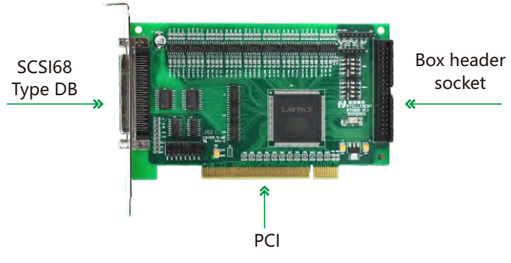
RT0064EB

4-axis Point Control Card RT1004

4-axis Point Control Card RT1004, based on the hardware platform of FPGA, supports T-shaped and S-shaped acceleration and deceleration, can realized 4-axis pulse point control, and the maximum pulse frequency of each axis is 2.0MHz.

- Output port: Terminal board
- Output extension : Support 37 Pin optocoupler isolation extension
- Power supply : 24VDC/1A
- Support system: WIN Vista/WIN XP/WIN 7/WIN 10/WIN 11
- Interface specifications: SCSI-68（Type DB），PCI

Master Card Interface



Accessory Products

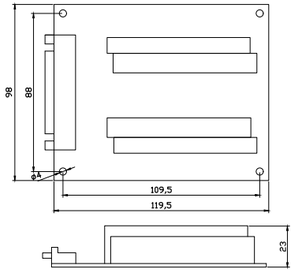
RT1004EB　　SCSI68-1.8M-DB

RT1004EB-37　　DB37 40PIN IDC　　DB37-1.5M

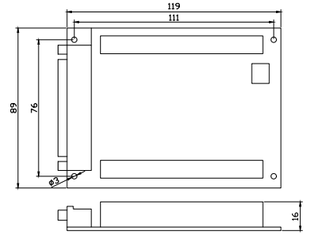
Product Parameter

Control mode	Position control, speed control
Pulse output mode	Single pulse(PUL+DIR) or double pulse(CW+CCW)
Position pulse setting range	0~16,777,215 pulses(24 bits)
Universal input signal interface	32 channels, of which 16 channels are photoelectric isolation
Universal output signal interface	27 channels, of which 12 channels are photoelectric isolation
Dedicated IO signal interface	20 channels, all photoelectric isolation
General-purpose digital output port maximum drive current	45mA
Maximum withstand voltage	35V
Photoelectric isolation withstand voltage seat	2500VRMS

Dimension



RT1004EB



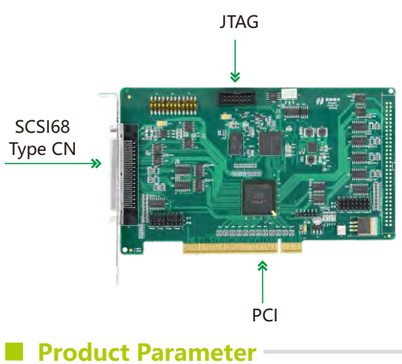
RT1004EB-37

4-axis High-performance Interpolation Motion Control Card RT2004

4-axis interpolation PCI motion control card RT2004, based on FPGA+ dedicated motion control chip hardware platform, supports 4-axis position latch comparison and encoder input, and can realize 4-axis pulse high-performance trajectory control, with a maximum pulse frequency of 4MHz per axis .

- Output port: Terminal box
- Power supply : 24VDC/1A
- Support systems: WIN Vista/WIN XP/WIN 7/WIN 10/WIN 11
- Interface specifications: SCSI-68（Type CN）,PCI

Master Card Interface



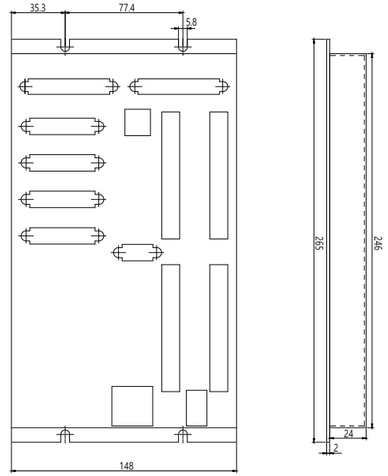
Accessory Products

RT2004EX　　SCSI68-2.0M-CN

Product Parameter

Servo control cycle	125us
Pulse output	4-axis pulse output
Encoder input	4 channels quadruple Incremental Maximum frequency 8MHz
Auxiliary encoder input	1 channel quadruple Incremental Maximum frequency 8MHz
Handwheel signal input	1 channel quadruple Incremental Maximum frequency 10MHz
Limit signal input	Positive and negative limit optocoupler isolation per axis
Origin signal input	1 channel optocoupler isolation per axis
Drive alarm signal input	1 channel optocoupler isolation per axis
Drive enable signal output	1 channel optocoupler isolation per axis
Drive reset signal output	1 channel optocoupler isolation per axis
Drive position signal output	1 channel optocoupler isolation per axis
Universal digital signal input	16 channels optocoupler isolation
Universal digital signal output	16 channels optocoupler isolation
Position comparison output	4 channels high-speed optocoupler isolation
Encoder position latch input	2 channels high-speed optocoupler isolation

Dimension



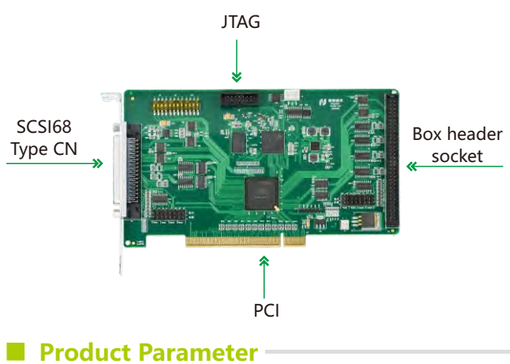
RT2004EX

8-axis High-performance Interpolation Motion Control Card RT2008

8-axis interpolation PCI motion control card RT2008, based on the hardware platform of FPGA + dedicated motion control chip, supports 8-axis position latch comparison and encoder input, and can realize 8-axis pulse high-performance trajectory control, with a maximum pulse frequency of 10MHz per axis .

- Output port: Terminal box
- Power supply : 24VDC/1A
- Support systems: WIN Vista/WIN XP/WIN 7/WIN 10/WIN 11
- Interface specifications: SCSI-68(Type CN),PCI， Modbus

Master Card Interface



Accessory Products

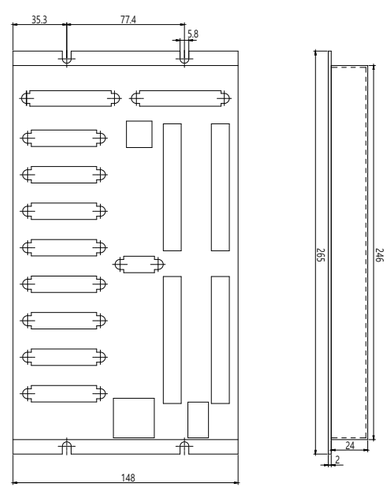
RT2008EX　　SCSI68-2.0M-CN

RT2008EX-M　　SCSI68-2.0M-CN

Product Parameter

Servo control cycle	125us
Control cycle	250us
Pulse output	8-axis pulse output
Encoder input	8 channels quadruple Incremental Maximum frequency 8MHz
Auxiliary encoder input	1 channel quadruple Incremental Maximum frequency 8MHz
Handwheel signal input	1 channel quadruple Incremental Maximum frequency 10MHz
Limit signal input	Positive and negative limit optocoupler isolation per axis
Origin signal input	1 channel optocoupler isolation per axis
Drive alarm signal input	1 channel optocoupler isolation per axis
Drive enable signal output	1 channel optocoupler isolation per axis
Drive reset signal output	1 channel optocoupler isolation per axis
Drive position signal output	1 channel optocoupler isolation per axis
Universal digital signal input	16 channels optocoupler isolation
Universal digital signal output	16 channels optocoupler isolation
Position comparison output	4 channels high-speed optocoupler isolation
Encoder position latch input	2 channels high-speed optocoupler isolation

Dimension



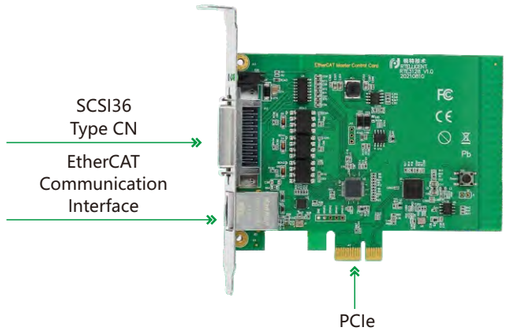
RT2008EX

EtherCAT Bus communication Motion Control Card RTE3128

RTE series PCIe bus motion control card RTE3128, based on the hardware platform of dedicated motion control chip, can realize 3-axis spatial interpolation motion + N-axis auxiliary axis (up to 42 groups of 3-axis spatial interpolation motion), and the minimum communication period is 125us.

- Communicaiton mode: EtherCAT
- Output extension: EIO1616 bus IO module
- Power supply: 24VDC/1A
- Support systems: WIN Vista/WIN XP/WIN 7/WIN 10/WIN 11
- Function library: Windows Visual Studio .Net framework DLL
- Interface specifications: SCSI-36（Type CN），PCIe

Master Card Interface



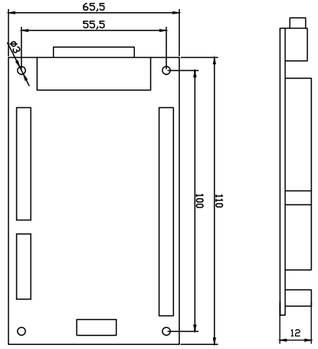
Accessory Products

RTE3128EB　　SCSI36-2.0M-CN

Product Parameter

Network Interface	1 auto-adaptive RJ45 port
Minimum communication cycle	125us
SPI transmission rate	96Mbps(Max)
Email communication	CoE/FoE/EoE
PDD data length	32Bytes~1408Bytes, 112 Bytes default
Number of encoder inputs	3 groups
Encoder input frequency	Max 24Mhz
Quantity of general purpose digital IO intputs	8, photoelectric isolation
Quantity of general purpose digital IO outputs	8, photoelectric isolation
Quantity of ADC/DAC	1 group each
Motion control function library	Supply Windows Visual Studio .Net framework DLL
PCB Dimension	117*87.2mm
Net weight	71g

Dimension



RT3128EB

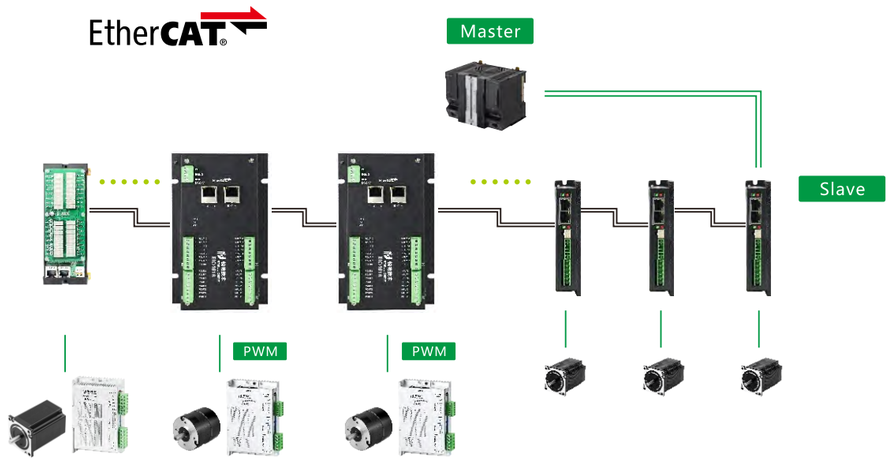
Fieldbus Communication Slave IO module

EIO11616 is a digital input and output extension module developed by Rtelligent based on EtherCAT bus communication. RTEC1616 has 16 NPN single-ended common anode input ports and 16 common cathode output ports, 4 of which can be used as PWM output functions. In addition, the series of extension modules have two installation ways for customers to choose.

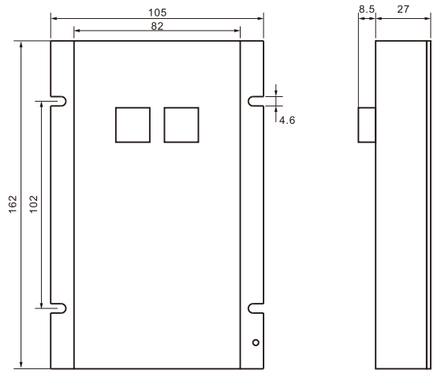
- Communication mode: EtherCAT
- Input and output: Input common anode 16/Output common cathode 16
- Power supply voltage: 24VDC
- PWM output: OUT11-OUT14, adjustable duty cycle 0~100%

*EIO1616B has no PWM output function, if you need this function, please choose EIO1616

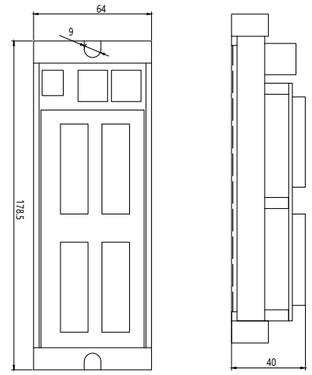
Application Diagram



Installation Dimension(mm)



EIO1616



EIO1616B

Common Model Quick Selection Table

AC Servo Drive

Model	Matching motor	Control mode	Power supply voltage	External debug interface
RS100C	100W AC servo motor	Pulse control	220VAC	mini USB
RS200C	200W AC servo motor	Pulse control	220VAC	mini USB
RS400C	400W AC servo motor	Pulse control	220VAC	mini USB
RS750C	750W AC servo motor	Pulse control	220VAC	mini USB
RS1000C	1kW AC servo motor	Pulse control	220VAC	mini USB
RS1500C	1.5kW AC servo motor	Pulse control	220VAC	mini USB
RS100	100W AC servo motor	Pulse control/RS485	220VAC	mini USB
RS200	200W AC servo motor	Pulse control/RS485	220VAC	mini USB
RS400	400W AC servo motor	Pulse control/RS485	220VAC	mini USB
RS750	750W AC servo motor	Pulse control/RS485	220VAC	mini USB
RS1000	1kW AC servo motor	Pulse control/RS485	220VAC	mini USB
RS1500	1.5kW AC servo motor	Pulse control/RS485	220VAC	mini USB
RS3000	3.8kW AC servo motor	Pulse control/RS485	220VAC	mini USB
RS100E	100W AC servo motor	EtherCAT	220VAC	mini USB
RS200E	200W AC servo motor	EtherCAT	220VAC	mini USB
RS400E	400W AC servo motor	EtherCAT	220VAC	mini USB
RS750E	750W AC servo motor	EtherCAT	220VAC	mini USB
RS1000E	1kW AC servo motor	EtherCAT	220VAC	mini USB
RS1500E	1.5kW AC servo motor	EtherCAT	220VAC	mini USB
RS3000E	3.8kW AC servo motor	EtherCAT	220VAC	mini USB

*The matching motor specification is for reference only, smaller motor is also compatible.

Low-voltage Servo Drive

Model	Matching motor	Control mode	Power supply voltage	External debug interface
DV400	400W Low-voltage servo motor	Pulse control/RS485	18-50VDC	micro USB
DRV400	400W Low-voltage servo motor	Pulse control/RS485	18-70VDC	mini USB
DRV750	750W Low-voltage servo motor	Pulse control/RS485	18-70VDC	mini USB
DRV1500	1.5kW Low-voltage servo motor	Pulse control/RS485	18-70VDC	mini USB
DRV400C	400W Low-voltage servo motor	CANopen	18-70VDC	mini USB
DRV750C	750W Low-voltage servo motor	CANopen	18-70VDC	mini USB
DRV1500C	1.5kW Low-voltage servo motor	CANopen	18-70VDC	mini USB
DRV400E	400W Low-voltage servo motor	EtherCAT	18-70VDC	mini USB
DRV750E	750W Low-voltage servo motor	EtherCAT	18-70VDC	mini USB
DRV1500E	1.5kW Low-voltage servo motor	EtherCAT	18-70VDC	mini USB

*The matching motor specification is for reference only, smaller motor is also compatible.

AC Servo Motor

Encoder type	Motor base	Rated current (W)	Rated torque (N.M)	Model	Extension cable*	Matching drive	Length (mm)
17 bit magnetic single-turn absolute encoder	40	50	0.16	RSNA-M04J0130A	Encoder cable SES4-030 Motor power cable SMS4-030A Brake Cable (Optional) SBS2-030	RS100 RS100E RS100CS/CR	61.5
		100	0.32	RSNA-M04J0330A			81.5
				RSNA-M04J0330A-Z			110
	60	200	0.64	RSNA-M06J0630A		RS200 RS200E RS200CS/CR	80
				RSNA-M06J0630A-Z			109
		400	1.27	RSNA-M06J1330A		RS400 RS400E RS400CS/CR	98
				RSNA-M06J1330A-Z			127
	80	750	2.39	RSNA-M08J2430A		RS750 RS750E RS750CS/CR	107
				RSNA-M08J2430A-Z			144
		1000	3.20	RSNA-M08J3230A		RS1000 RS1000E RS1000CS/CR	127
				RSNA-M08J3230A-Z			163
17 bit magnetic mult-iturn absolute encoder	40	50	0.16	RSNA-M04G0130A	Encoder cable SES6-030 Motor power cable SMS4-030A Battery box MR-J3BAT Brake Cable (Optional) SBS2-030	RS100 RS100E RS100CS/CR	61.5
		100	0.32	RSNA-M04G0330A			81.5
				RSNA-M04G0330A-Z			110
	60	200	0.64	RSNA-M06G0630A		RS200 RS200E RS200CS/CR	80
				RSNA-M06G0630A-Z			109
		400	1.27	RSNA-M06G1330A		RS400 RS400E RS400CS/CR	98
				RSNA-M06G1330A-Z			127
	80	750	2.39	RSNA-M08G2430A		RS750 RS750E RS750C	107
				RSNA-M08G2430A-Z			144
		1000	3.20	RSNA-M08G3230A		RS1000 RS1000E RS1000CS/CR	127
				RSNA-M08G3230A-Z			163
23 bit optical multi-turn absolute encoder	40	50	0.16	RSNA-M04L0130A	Encoder cable SES6-030 Motor power cable SMS4-030A Battery box MR-J3BAT Brake Cable (Optional) SBS2-030	RS100 RS100E RS100CS/CR	61.5
		100	0.32	RSNA-M04L0330A			81.5
				RSNA-M04L0330A-Z			110
	60	200	0.64	RSNA-M06L0630A		RS200 RS200E RS200CS/CR	80
				RSNA-M06L0630A-Z			109
		400	1.27	RSNA-M06L1330A		RS400 RS400E RS400CS/CR	98
				RSNA-M06L1330A-Z			127
	80	750	2.39	RSNA-M08L2430A		RS750 RS750E RS750CS/CR	107
				RSNA-M08L2430A-Z			144
		1000	3.20	RSNA-M08L3230A		RS1000 RS1000E RS1000CS/CR	127
				RSNA-M08L3230A-Z			163

*The standard length of the extension cable is 3 meters, if you need other sizes, please specify when ordering

**For the model of high-power servo motor, please refer to the details page or consult with our engineer.

Low-voltage Servo Motor

Encoder type	Motor base	Rated current (W)	Rated torque (N.M)	Model	Extension cable*	Matching drive	Length (mm)
17 bit magnetic single-turn absolute encoder	40	50	0.16	TSNA-04J0130AS-48	Encoder cable SES4-030 Motor power cable DMH4-030-□ Brake Cable (Optional) SBS2-030	DV400 DRV400 DRV400E DRV400C	61.5
		100	0.32	TSNA-04J0330AS-48			81.5
				TSNA-04J0330AS-48Z			110
	60	200	0.64	TSNA-06J0630AH-48			80
				TSNA-06J0630AH-48Z			109
		400	1.27	TSNA-06J1330AH-48			98
				TSNA-06J1330AH-48Z			127
	80	750	2.39	TSNA-08J2430AH-48		DRV750 DRV750E DRV750C	107
				TSNA-08J2430AH-48Z			144
		1000	3.20	TSNA-08J3230A-H48		DRV1500 DRV1500E DRV1500C	127
				TSNA-08J3230AH-48Z			163
17 bit magnetic mult-iturn absolute encoder	40	50	0.16	TSNA-04G0130AS-48	Encoder cable SES6-030 Motor power cable DMH4-030-□ Battery box MR-J3BAT Brake Cable (Optional) SBS2-030	DV400 DRV400 DRV400E DRV400C	61.5
		100	0.32	TSNA-04G0330AS-48			81.5
				TSNA-04G0330AS-48Z			110
	60	200	0.64	TSNA-06G0630AH-48			80
				TSNA-06G0630AH-48Z			109
		400	1.27	TSNA-06G1330AH-48			98
				TSNA-06G1330AH-48Z			127
	80	750	2.39	TSNA-08G2430AH-48		DRV750 DRV750E DRV750C	107
				TSNA-08G2430AH-48Z			144
		1000	3.20	TSNA-08G3230AH-48		DRV1500 DRV1500E DRV1500C	127
				TSNA-08G3230AH-48Z			163
23 bit optical multi-turn absolute encoder	40	50	0.16	TSNA-04L0130AS-48	Encoder cable SES6-030 Motor power cable DMH4-030-□ Battery box MR-J3BAT Brake Cable (Optional) SBS2-030	DV400 DRV400 DRV400E DRV400C	61.5
		100	0.32	TSNA-04L0330AS-48			81.5
				TSNA-04L0330AS-48Z			110
	60	200	0.64	TSNA-06L0630AH-48			80
				TSNA-06L0630AH-48Z			109
		400	1.27	TSNA-06L1330AH-48			98
				TSNA-06L1330AH-48Z			127
	80	750	2.39	TSNA-08L2430AH-48		DRV750 DRV750E DRV750C	107
				TSNA-08L2430AH-48Z			144
		1000	3.20	TSNA-08L3230AH-48		DRV1500 DRV1500E DRV1500C	127
				TSNA-08L3230AH-48Z			163

*The standard length of the extension cable is 3 meters, if you need other sizes, please specify when ordering.

**For the model of high-power servo motor, please refer to the details page or consult with our engineer.

Open Loop Stepper Drive

Model	Matching motor*	Control mode	Power supply voltage	External debug interface	Notes
R42	42 series open loop	Pulse control	18-50VDC	MicroUSB	
R57	57 series open loop	Pulse control	18-50VDC	-	
R57-HV	57 series open loop	Pulse control	18-70VDC	-	
R60	60 series open loop	Pulse control	18-50VDC	-	
R60-1M	60 series open loop	Pulse control	18-50VDC	-	Pulse bandwidth 1M
R60-AL	60 series open loop	Pulse control/IO control	18-50VDC	MicroUSB	24V pulse only
R60-AL-5V	60 series open loop	Pulse control/IO control	18-50VDC	MicroUSB	5V pulse only
R85	86 series open loop	Pulse control	20-60VAC/24–80VDC	-	
R86	86 series open loop	Pulse control	18-80VAC/24–100VDC	-	
R86mini	86 series open loop	Pulse control/IO control	18-80VAC/24–100VDC	MicroUSB	
R110PLUS v3.0	86/110 series open loop	Pulse control/IO control	110-220VAC	TTL	
R110PLUS	110 series open loop	Pulse control/IO control	110-220VAC	MicroUSB	
R130	130 series open loop	Pulse control	110-220VAC	RS232	
R60-CCW	60 series open loop	Pulse control	18-50VDC	-	CW&CCW
3R60	3 phase 60series open loop	Pulse control	18-50VDC	-	
3R110PLUS v3.0	3 phase 86/110 series open loop	Pulse control	110-220VAC	TTL	
3R110PLUS	3 phase 110 series open loop	Pulse control	110-220VAC	microUSB	
3R130	3 phase 130 series open loop	Pulse control	110-220VAC	RS232	
R42-IO	42 series open loop	IO control	18-50VDC	-	
R57-IO	57 series open loop	IO control	18-50VDC	-	
R60-IO	60 series open loop	IO control	18-50VDC	-	
R86-IO	86 series open loop	IO control	18-80VAC/24–100VDC	-	
R110PLUS-IO	110 series open loop	IO control	110-220VAC	MicroUSB	
R130-IO	130 series open loop	IO control	110-220VAC	RS232	
R42-IR	42 series open loop	IO control	18-50VDC	-	Potentiometer speed regulation
R57-IR	57 series open loop	IO control	18-50VDC	-	
R60-IR	60 series open loop	IO control	18-50VDC	-	
R42-D	42 series open loop	IO control	18-50VDC	-	One Drive Two
R60-D	60 series open loop	IO control	18-50VDC	-	One Drive Two
R60-IRD	60 series open loop	IO control	18-50VDC	-	One Drive Two
R42X2	42 series open loop	Pulse control	18-50VDC	-	Biaxial, 24V pulse only
R42X2-5V	42 series open loop	Pulse control	18-50VDC	-	Biaxial, 5V pulse only
R60X2	60 series open loop	Pulse control	18-50VDC	-	Biaxial, 24V pulse only
R60X2-5V	60 series open loop	Pulse control	18-50VDC	-	Biaxial, 5V pulse only
R60X3	60 series open loop	Pulse control	18-50VDC	RS232	Triaxial
NT60	60 series open loop	Pulse control/IO control/RS485	18-50VDC	RS485	
NT86	86 series open loop	Pulse control/IO control/RS485	18-80VAC/24–100VDC	RS485	
NT86-C	86 series open loop	CANopen	18-80VAC/24–100VDC	RS485	
NT110	3 phase 86/110 series open loop	Pulse control/IO control/RS485	110-220VAC	RS485	
EPR60	60 series open loop	TCP	18-50VDC	TCP/IP	
ECR42	42 series open loop	EtherCAT	18-80VDC	EtherCAT	
ECR60	57/60 series open loop	EtherCAT	18-80VDC	EtherCAT	
ECR60X2A	57/60 series open loop	EtherCAT	18-80VDC	EtherCAT	Biaxial
ECR86	86 series open loop	EtherCAT	18-80VAC/24–100VDC	EtherCAT	

*The matching motor specification is for reference only, smaller motor is also compatible.

Open Loop Stepper Motor

Motor base	Model	Rated torque (N.M)	Rated current (A)	Matching drive	Shaft diameter* (mm)	Shaft length (mm)	Length (mm)	Notes
20	20AM003	0.03	0.6	R42	G4	10	33	
	20AM005	0.05	0.6		G4	10	45	
28	28AM006	0.06	1.2		D5	20	32	
	28AM01	0.10	1.2		D5	20	41	
	28AM013	0.13	1.2		D5	20	51	
35	35A02	0.2	1.0		D5	20	34	
39	39A02	0.2	1.0		D5	20	36	
42	42AM02	0.2	1.5		D5	24	34	
	42AM04	0.4	1.5		D5	24	40	
	42AM06	0.6	2.0		D5	24	47	
	42AM06-Z2	0.6	2.0		D5	24	78	Brake
	42AM08	0.8	2.0		D5	24	60	
	42AM08-Z2	0.8	2.0		D5	24	91	Brake
	42A01	0.15	1.0		D5	24	34	
	42A02	0.2	1.2		D5	24	40	
	42A03	0.3	2.0		D5	24	47	
	42A08	0.8	2.0		D5	24	60	
57	57AM13	1.3	3.0	R60	D8	21	55	
	57AM13-6.35	1.3	3.0		D6.35	21	55	
	57AM23	2.3	5.0		D8	21	76	
	57AM23-6.35	2.3	5.0		D6.35	21	76	
	57AM24	2.4	5.6		D8	21	80	
	57AM24-Z2	2.4	5.6		D8	21	124	Brake
	57AM26	2.6	5.0		D8	21	84	
	57AM30	3.0	5.0		D8	21	102	
	57AM30-Z2	3.0	5.0		D8	21	146	Brake
	57A09	0.9	2.8		D6.35	21	55	
	57A09-8	0.9	2.8		D8	21	55	
	57A1	1.3	2.8		D6.35	21	76	
	57A1-8	1.3	2.8		D8	21	76	
	57A1S8D	1.3	2.8		D8	21	76	Biaxial
	57A2	2.2	4.0		D8	21	80	
	57A3	3.0	5.0		D8	21	102	
D57	D57AM30	3.0	5.0		D8	21	86	
60	60AM21	2.1	5.0		D8	21	58	
	60AM30	3.0	5.0		D8	21	86	
	60AM30-Z2	3.0	5.0		D8	21	125	Brake
	60AM40	4.0	5.0		D10	30	102	

*G-Plain shaft, D-Single flat, K-Keyed

Open Loop Stepper Motor

Motor base	Model	Rated torque (N.M)	Rated current (A)	Matching drive	Shaft diameter* (mm)	Shaft length (mm)	Length (mm)	Notes
86	86AM35	3.5	4.0	R86	D9.5	32	64	
	86AM45	4.5	6.0		D12.7	32	78	
	86AM45-14	4.5	6.0		K14	32	78	
	86AM45-Z2	4.5	6.0		K14	32	123	Brake
	86AM65	6.5	6.0		K12.7	32	98	
	86AM65-14	6.5	6.0		K14	32	98	
	86AM85	8.5	6.0		K12.7	32	112	
	86AM85-14	8.5	6.0		K14	32	112	
	86AM85-Z2	8.5	6.0		K14	32	157	Brake
	86AM100	10	6.0		K14	32	128	
	86AM120	12	6.0		K15.875	32	155	
	86AM120-14	12	6.0		K14	32	155	
	86AM120-Z2	12	6.0		K14	32	199	Brake
110	110A12	12	6.0	R110PLUS	K19	56	115	
	110A20	20	6.0		K19	56	150	
	110A28	28	6.5		K19	56	201	
130	130A27	27	6.0	R130	K19	45	226	
	130A45	45	7.0		K19	45	283	

*G-Plain shaft, D-Single flat, K-Keyed

Closed Loop Stepper Drive

Model	Matching motor*	Control mode	Power supply voltage	External debug interface	Notes
T42	42 series closed loop	Pluse control	18-50VDC	RS232	
T60	57/60 series closed loop	Pluse control	18-50VDC	RS232	
T60-IO	60 series closed loop	IO control	18-50VDC	RS232	
T60-1M	60 series closed loop	Pluse control	18-50VDC	RS232	Pulse bandwidth 1M
T60-SC	60 series closed loop	Pluse control	18-50VDC	RS232	With brake output
T60PLUS v3.0	60 series closed loop	Pluse control	18-50VDC	mini USB	Z signal interface
T86	86 series closed loop	Pluse control	18-80VAC/24-100VDC	RS232	
T86-IO	86 series closed loop	IO control	18-80VAC/24-100VDC	RS232	
3T60	3 phase 60 series closed loop	Pluse control	18-50VDC	RS232	
3T60PLUS v3.0	3 phase 60 series closed loop	Pluse control	18-50VDC	mini USB	Z signal interface
NT60	60 series closed loop	Pluse control/IO control/RS485	18-50VDC	RS485	
NT86	86 series closed loop	Pluse control/IO control/RS485	18-80VAC/24-100VDC	RS485	
NT86-C	86 series closed loop	CANopen	18-80VAC/24-100VDC	RS485	
NT110	3 phase 86/110 series closed loop	Pluse control/IO control/RS485	110-220VAC	RS485	
DS86	86 series closed loop	Pluse control	18-80VAC/24-100VDC	microUSB	Digital display screen
EPT60	60 series closed loop	TCP	18-50VDC	TCP/IP	
ECT42	42 series closed loop	EtherCAT	18-50VDC	EtherCAT	
ECT60	57/60 series closed loop	EtherCAT	18-50VDC	EtherCAT	
ECT60X2	57/60 series closed loop	EtherCAT	18-50VDC	EtherCAT	Biaxial
ECT86	86 series closed loop	EtherCAT	18-80VAC/24-100VDC	EtherCAT	

*The matching motor specification is for reference only, smaller motor is also compatible.

Closed Loop Stepper Motor

Motor base	Model	Rated torque (N.M)	Rated current (A)	Matching drive	Extension cord*	Shaft diameter*** (mm)	Shaft length (mm)	Length (mm)	Notes
20	20AM003EC	0.03	0.6	T42	Encoder cable C1-030	G4	20	46	
28	28AM006EC	0.06	1.2			D5	20	45	
	28AM013EC	0.13	1.2		Power cable C2-030**	D5	20	64	
42	42A03EC	0.3	2.0			D8	21	69	
	42A08EC	0.8	2.8			D8	21	85	
	42AM06ED	0.6	2.0		Encoder cable B1-030	D5	24	67	
	42AM06ED-Z2	0.6	2.0			D5	24	98	Brake
	42AM06ED-8	0.6	2.0			D8	24	67	
	42AM08ED	0.8	2.0			D5	24	79	
	42AM08ED-Z2	0.8	2.0		Power cable C2-030**	D5	24	110	Brake
	42AM08ED-8	0.8	2.0			D8	24	79	
	42AM08ED-8-Z2	0.8	2.0			D8	24	110	Brake
57	57AM13ED	1.3	4.0	T60	Encoder cable B1-030	D8	22	77	
	57AM23ED	2.3	5.0			D8	22	98	
	57AM24ED-Z2	2.3	5.0			D8	22	142	Brake
	57AM26ED	2.6	5.0			D8	22	106	
	57AM30ED	3.0	5.0			D8	22	124	
	57AM30ED-Z2	3.0	5.0			D8	22	168	Brake
D57	D57AM30ED	3.0	5.0		Power cable C2-030**	D8	22	107	
60	60AM22ED	2.2	5.0			D8	22	79	
	60AM30ED	3.0	5.0			D8	22	107	
	60AM30ED-Z2	3.0	5.0			D8	22	150	Brake
	60AM40ED	4.0	5.0			D10	30	123	
86	86AM45ED	4.5	6.0	T86	Encoder cable B1-030	K14	40	105	
	86AM45ED-Z2	4.5	6.0			K14	40	151	Brake
	86AM65ED	6.5	6.0			K14	40	127	
	86AM85ED	8.5	6.0			K14	40	140	
	86AM85ED-Z2	8.5	6.0		Power cable C2-030**	K14	40	185	Brake
	86AM100ED	10	6.0			K14	40	157	
	86AM120ED	12	6.0			K14	40	182	
	86AM120ED-Z2	12	6.0			K14	40	228	Brake
42	42AM06ECZ	0.6	2.0	T60PLUS	Encoder cable CES8-030	D5	24	67	Z signal
	42AM08ECZ	0.8	2.0			D5	24	79	
57	51A1ECZ	1.3	4.0			D8	22	76	
	57A2ECZ	2.0	3.5			D8	22	98	
	57A3ECZ	3.0	5.0			D8	22	123	
60	60A3ECZ	3.0	5.0		Power cable C2-030**	D8	22	110	
86	86AM45ECZ	4.5	6.0	T86		K14	40	105	
	86AM100ECZ	10	6.0			K14	40	157	
	86A12ECZ	12	6.0			K14	40	176	

*The standard length of the extension cable is 3 meters, if you need other sizes, please specify when ordering

**Power cable C2 is an optional model, if necessary, please specify when ordering

***G-Plain shaft, D-Single flat, K-Keyed

Motion Control Card

Product kit	Description	Model	Notes
32/32 IO card	Motion control card	RT0064	Master Card
	Terminal board	RT0064EB	SCSI interface accessories (standard)
	Adapter cable	SCSI68-2.0M-CN	
64/64 IO card	Motion control card	RT0128	Master Card
	Terminal board	RT0064EB	SCSI interface accessories (standard)
	Adapter cable	SCSI68-2.0M-CN	
	Adapter components	RT0128EB-M	Black socket interface accessories (standard)
	Wire arranging	2.54IDC-64PIN	
	Adapter cable	SCSI68-2.0M-CN	
4-axis basic point card	Motion control card	RT1004	Master Card
	Terminal board	RT1004EB	SCSI interface accessories (standard)
	Adapter cable	SCSI68-1.8M-DB	
	Extension connection board	RT1004EB-37	Black socket interface accessories (standard)
	Adapter cable	DB37-1.5M	
	Adapter cable	DB37 40PIN	
4-axis high-performance interpolation card	Motion control card	RT2004	Master Card
	Terminal box	RT2004EX	SCSI interface accessories (standard)
	Adapter cable	SCSI68-2.0M-CN	
8-axis high-performance interpolation card	Motion control card	RT2008	Master Card
	Terminal box	RT2008EX	SCSI interface accessories (standard)
	Adapter cable	SCSI68-2.0M-CN	
	Adapter components	RT2008EX-M	Black socket interface accessories (standard)
	Wire arranging	2.54IDC-64PIN	
	Adapter cable	SCSI68-2.0M-CN	
EtherCAT Bus communication card	Motion control card	RTE3128	Master Card
	Terminal board	RTE3128EB	SCSI interface accessories (standard)
	Adapter cable	SCSI36-2.0M-CN	

Cable Accessory

Single-turn Absolute Servo Encoder Extension Cable

SES4-030

VCC	GND	SD+	SD-
RED	WHT	BLU	BLU&WHT

Matching products: Single-turn absolute value servo motor below 1kW

SEH4-030

VCC	GND	SD+	SD-
RED	WHT	BLU	BLU&WHT

Matching products: Single-turn absolute value servo motor above 1kW

Multi-turn Absolute Servo Encoder Extension Cable

SES6-030

VCC	GND	PS+	PS-	BAT+	BAT-
RED	BLK	BLU	BLU&BLK	GRN	GRN&BLK

Matching products: Multi-turn absolute value servo motor below 1kW

SEH6-030

VCC	GND	PS+	PS-	BAT+	BAT-
RED	BLK	BLU	BLU&BLK	GRN	GRN&BLK

Matching products: Multi-turn absolute value servo motor above 1kW

AC Servo Power Extension Cable

SMS4-030A

U	V	W	PE
RED	WHT	BLK	YEL&GRN

Matching products: RS series AC servo below 1kW

SMH4-030

U	V	W	PE
BRN	BLU	BLK	YEL&GRN

Matching products: RS series AC servo above 1kW

Low-voltage Servo Motor Power Extension Cable

DM□4-030-□

U	V	W	PE
RED	WHT	BLK	YEL&GRN

Matching products: TS series low-voltage servo

Extension cable model No.	Matching motor power
DMS4-030	50W,100W
DMH4-030-10	200W,400W
DMH4-030-15	750W
DMH4-030-30	1kW
DMHM4-030-30	1.2kW,1.5kW

AC Servo brake cable

SBS2-030 (Optional)

VCC	GND
RED	BLACK

Matching products: AC servo motor with brake

Multi-turn encoder battery box

MR-J3BAT

VCC	GND
RED	BLACK

Matching products: AC servo motor with multi-turn encoder

Stepper Encoder Cable

B1-030

EB+	EB-	EA+	EA-	VCC	GND
GRN	YEL	BRN	WHT	RED	BLU

Matching products: ED series closed-loop stepper motor

C1-030

EB+	EB-	EA+	EA-	VCC	GND
GRN	YEL	BRN	WHT	RED	BLU

Matching products: EC series closed-loop stepper motor

Z Signal Encoder Extension Cable

CES8-030

EB+	EB-	EA+	EA-
GRN	GRN&BLK	BLU	BLU&BLK

VCC	GND	EZ+	EZ-
RED	BLK	YEL	YEL&BLK

Matching products: ECZ series closed-loop stepper motor

Stepper Motor Power Extension Cable

C2-030
(Optional)

A+	A-	B+	B-
RED	BLU	GRN	BLK

Matching products: Stepper series

RS232 Interface Tuning Cable

RS232
(Optional)

Matching products：T42,T60,T86,R60X3,R130,3R130

MiniUSB Interface Tuning Cable

MINI USB
(Optional)

Matching products: RS series, DRV series, T60PLUS

Network Cable (Short)

E0035
(Optional)

Matching products: EtherCAT series

Power Supply Series

Rtelligent provides 3 types of power supply, DS series switching power supply series, DL series linear power supply series and AT transformer series.

- DS series switching power supply can output regulated voltage, and is known for the features of voltage stabilization.
- DL series are linear power supplies built upon the AT transformer with attached rectifier filter; it is known for the features of small voltage ripple and strong overload capacity.
- AT series transformer is applicable to stepper system of 86 series and above; it outputs low voltage AC with low cost and long service life.

DS Series Switching Power Supply

Model	Power (W)	Output Power Specifications	Dimensions L×W×H (mm)	Weight (kg)
DS100-24	100	DC24V/4A	160×98×40	0.5
DS150-24	150	DC24V/6A	199×98×40	0.6
DS240-24	240	DC24V/10A	199×110×50	0.8
DS350-24	350	DC24V/14A	215×115×50	0.9
DS350-48	350	DC48V/7A	215×115×50	0.9
DS400-48	400	DC48V/8A	261×103×65	1.1
DS500-48	500	DC48V/10A	250×160×80	1.4

AT Series Transformer

Model	Power (W)	Output Power Specifications	Dimensions L×W×H (mm)	Weight (kg)
AT300-60	300	AC60V/5A	120×120×61	3.2
AT500-48	500	AC48V/10A	110×110×71	4.8
AT500-60	500	AC60V/8A	140×140×71	4.8
AT800-68	800	AC68/12A	160×160×67	7.4
AT1200-60	1200	AC60V/20A	180×180×80	10.1

DL Series Linear Power Supply

Model	Power (W)	Output Power Specifications	Dimensions L×W×H (mm)	Weight (kg)
DL200-36-5	200	DC36V/5A	175×112×68	2.5
DL300-36-12	300	DC36V/8A	230×150×65	3.5
DL500-48-12	500	DC48V/10A	230×150×75	5.2

Series Picture

Switching power supply

Transformer

Linear power supply

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