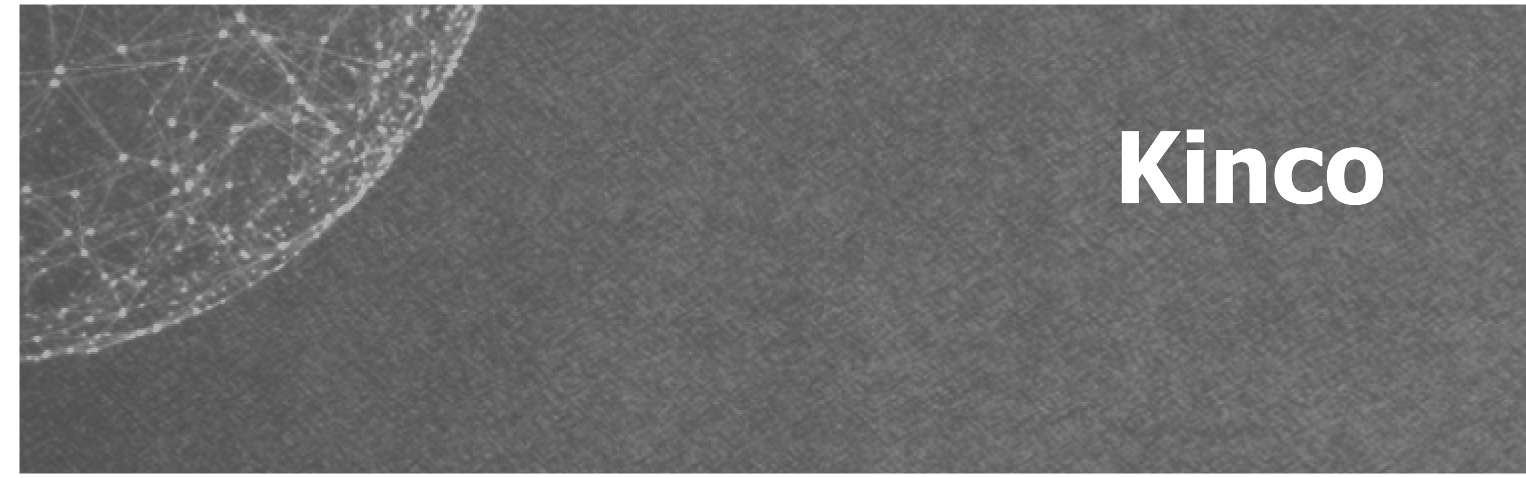
PROVEN PERFORMANCE

Customers in over 60 countries and in diverse markets and sectors.

Kinco® Automation

www.en.kinco.cn   Email:sales@kinco.cn

K1C25-202405



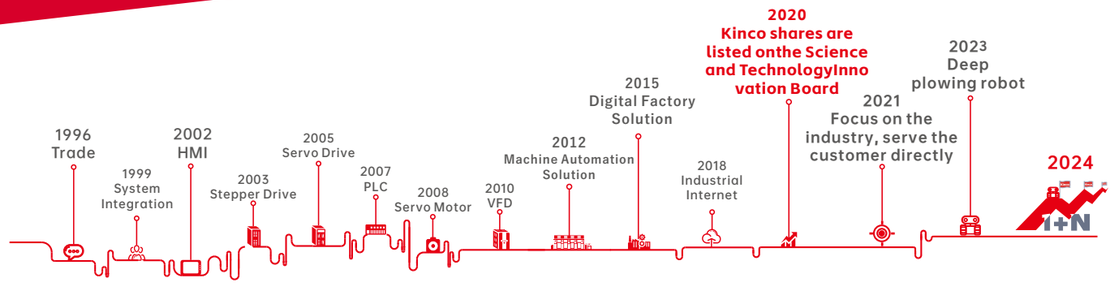
Kinco

Motion Control
Servo System

Low-voltage Servo System Catalog

- -FD1X5 Servo Drive
- iSMK drive and motor integrated machine
- SMK low voltage servo motor

About us



Kinco was founded in 1996, and successfully listed on the Shanghai Stock Exchange in 2020 (abbreviated name: Kinco share, stock code 688160), which is a high-tech, specialized and sophisticated enterprise that attaches great importance to independent research and development and innovation, mainly engaged in the research and development, production, sales and related technical services of industrial automation and robot core components and digital factory hardware and software. It is a leading supplier of automation control, robot power and digital factory solutions in China.

After years of continuous research and development and innovation, Kinco has established a complete product line with independent intellectual property rights, covering a series of products from machine iot to human-machine interaction, control, drive and execution, which are widely used in robots, medical equipment, logistics equipment, packaging equipment, food equipment, clothing equipment, environmental protection equipment, etc. New energy equipment, rail transit equipment and other automation equipment industry.

Based on the comprehensive industrial automation and digital technology platform, the company has in-depth application scenarios in the robot industry, providing display, control, drive and other multi-dimensional solutions for industrial mobile robots, collaborative robots, industrial robots, pan-service robots, and bionic robots. Through the insight of the industry pain points, deep links with robot customers, combined with the advantages of product research and development, the company continues to innovate, and launches industry-leading low-voltage servo products for mobile robots, integrated servo wheel, frameless torque motor for collaborative robots, robot human-machine interfaces, robot controllers and other products. The company has formed a relatively complete robot core parts capability, and after nearly 10 years of hard work in the robot industry, it has become a leading enterprise in the field of mobile robot low-voltage servo, and has a high brand influence in the industry.

Kinco has four research and development centers in Shanghai, Shenzhen, Changzhou and Chengdu, and two manufacturing bases in Shenzhen and Changzhou, a total of 10+ domestic marketing centers, 100+ domestic service providers, 40+ global partners, and products are exported to 70+ countries overseas. In terms of after-sales service, Kinco has established after-sales service centers in Shanghai, Shenzhen and Changzhou.

FD1X5 series

New design platform, high-performance low-voltage fifth generation servo driver

FD1X5

New design platform

NEW

- ☑ Support RS485、CANopen、EtherCAT communication;
- ☑ Automatically identify motor parameters;
- ☑ Motor temperature monitoring and over temperature protection;
- ☑ Equipped with S-curve and parameter self-tuning function;
- ☑ Motor overspeed protection;
- ☑ Use Type-C debugging port.

Drive naming rule

Model: FD 1 2 5 - AB - 000

① ② ③ ④ ⑤ ⑥

①-Series Name	FD: FD series	④-Drive version	5: Fifth generation low-voltage drive
②-Upply voltage	1: Input Voltage DC24～60V	⑤-Control mode	AB：RS485, CANopen、Have pulse、24V logic power supply EB：EtherCAT、Have pulse、24V logic power supply
③-Drive current	2：15Arms 3：30Arms 4：50Arms	⑥Software Version	000：Software Version Number

Note：The output currents for the FD125, FD135 and FD145 are 15Arms, 30Arms and 50Arms respectively. These values were measured with the driver mounted on a 300mm*300mm*10mm (L*W*H) black oxide 6063 aluminum plate auxiliary heatsink.

FD1X5 Servo driver configuration table

Rated power/ Rated current	Servo motor	Description	Power cable Brake cable	Encoder cable	Servo Drive CANopen+RS485 Pulse
200W/5.7A	SMK60S-0020-30SAK-5DSA	Singleturn communication type magnetoelectric encoder motor	MOT-005-LL-KA-D	ENCHG-LL-GA	FD125-AB-000 FD125-EB-000
	SMK60S-0020-30SBK-5DSA	Singleturn communication type magnetoelectric encoder brake motor	MOT-005-LL-KAB-D		
400W/10.6A	SMK60S-0040-30SAK-5DSA	Singleturn communication type magnetoelectric encoder motor	MOT-011-LL-KA-D		
	SMK60S-0040-30SBK-5DSA	Singleturn communication type magnetoelectric encoder brake motor	MOT-011-LL-KAB-D		
750W/19.9A	SMK80S-0075-30SAK-5DKA	Singleturn communication type magnetoelectric encoder motor	MOT-020-LL-KA-D		FD135-AB-000 FD135-EB-000
	SMK80S-0075-30SBK-5DKA	Singleturn communication type magnetoelectric encoder brake motor	MOT-020-LL-KAB-D		
1000W/26.4A	SMK80S-0100-30SAK-5DKA	Singleturn communication type magnetoelectric encoder motor	MOT-030-LL-KA-D		
	SMK80S-0100-30SBK-5DKA	Singleturn communication type magnetoelectric encoder brake motor	MOT-030-LL-KAB-D		
200W/5.7A	SMK60S-0020-30QAK-5DSA	Multiturn communication type magnetoelectric absolute value encoder motor	MOT-005-LL-KA-D	ENCDG-LL-GA/ ★ENCHG-(4)-GU-DC	FD125-AB-000 FD125-EB-000
	SMK60S-0020-30QBK-5DSA	Multiturn communication type magnetoelectric absolute value encoder holding motor	MOT-005-LL-KAB-D		
400W/10.6A	SMK60S-0040-30QAK-5DSA	Multiturn communication type magnetoelectric absolute value encoder motor	MOT-011-LL-KA-D		
	SMK60S-0040-30QBK-5DSA	Multiturn communication type magnetoelectric absolute value encoder holding motor	MOT-011-LL-KAB-D		
750W/19.9A	SMK80S-0075-30QAK-5DKA	Multiturn communication type magnetoelectric absolute value encoder motor	MOT-020-LL-KA-D		FD135-AB-000 FD135-EB-000
	SMK80S-0075-30QBK-5DKA	Multiturn communication type magnetoelectric absolute value encoder holding motor	MOT-020-LL-KAB-D		
1000W/26.4A	SMK80S-0100-30QAK-5DKA	Multiturn communication type magnetoelectric absolute value encoder motor	MOT-030-LL-KA-D		
	SMK80S-0100-30QBK-5DKA	Multiturn communication type magnetoelectric absolute value encoder holding motor	MOT-030-LL-KAB-D		

Note1:"LL" in the power line/brake line/encoder line listindicates the cable length, please refer to the model description.
Note2:★ENCHG - (4) - GU-DC is an essential battery power cable for multi turn absolute encoder motors, with a length of 40CM.
Note3:SMK80S-0100-30□■K-5DKA is recommended to match FD135，If 3 times overload is required, it needs to be matched with FD145.

FD1X5 servo driver technical parameters table

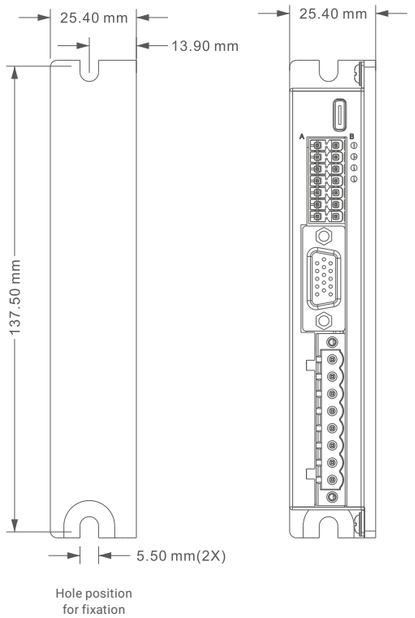


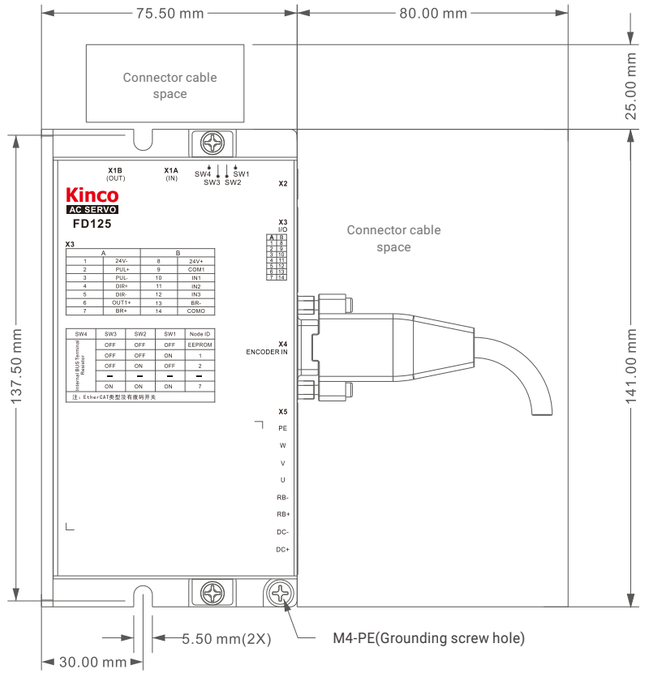
Model parameter		FD1X5 servo driver		
		FD125-□B-000	FD135-□B-000	FD145-□B-000
Rated input voltage	Power	24VDC～60VDC		
	Logic power	24VDC 1A (Optional connection or not)		
Rated output current	Maximum continuous output current (rms)	15A (Up to 12A without auxiliary cooling plate)	30A (Up to 22A without auxiliary cooling plate)	50A (Up to 35A without auxiliary cooling plate)
	Peak current (AP)	48A	100A	160A
Feedback signal		Tamagawa protocol single-turn, multi-turn encoder		
Energy consumption brake		Need external brake resistance (depending on the operation condition, mainly used in rapid start-stop occasions)		
Energy consumption brake voltage absorption point		The default is 63V		
Overvoltage alarm voltage		The default is 70V		
Undervoltage alarm voltage		The default is 18V		
Cooling mode		Natural cooling		
Weight (kg)		0.322	0.657	0.861
Logic loss power (mW)		1000	1200	1300
General function	General function	3 channels digital input, COMI terminal; High level: 12.5-30VDC; Low level: 0-5VDC; Maximum frequency: 1KHz; Input impedance: 5KΩ.		
	Input function	Freely defined as required, the functions are as follows: drive enable, drive error reset, drive mode control, speed loop proportional control, positive limit, negative limit, origin signal, command reverse, internal speed segment control, internal position segment control, emergency stop, start to find the origin, command activation, electronic gear ratio switching, gain switching		
	Pulse control	Pulse+direction, phase A+phase B (3.3V～24V)		
	Output specification	1 digital output, OUT1 is an open collector output, up to 30V, 100mA drive capability, The brake is PWM output, the effective voltage value is 24V, (BR+/BR-) capacity is 1A, no external power supply is required, and the brake device can be directly driven		
	Output function	following functions can be freely defined as needed, with the following functions: drive ready, drive error, motor position reached, motor zero speed, motor holding brake, motor speed reached, index Z signal present, maximum limit speed in torque mode, motor locked axis, motor in limit, home position found.		
	Type-C	Debug special, can use Kinco PC software connection		
	Protect function	Overvoltage protection, undervoltage protection, motor overheat (I2T) protection, short circuit protection, drive overheat protection		
Bus function	Modbus/RS485	It supports a maximum 115.2K baud rate and can communicate with the controller using Modbus RTU		
	CANopen	It supports a maximum of 1 M baud rate and can communicate with the controller using the CANopen		
	EtherCAT	Support CoE(CiA402 protocol)and CSP/CSV/PP/PV/PT/HM mode，communication speed 100M		
Installation site		Dust-free, dry, lockable (e.g. electrical cabinet)		
Installation method		Install vertically or horizontally		
Application environment	Working Temperature	-20°C～40°C (no freezing) ,When the operating temperature exceeds 40°C, the driver needs to be derated		
	Storage temperature	-40°C～70°C (no freezing)		
	Humidity (no condensation)	Less than 90%RH		
	Protection class	IP20		
	Altitude	The rated working altitude is less than 1000 meters above sea level. When the working altitude is higher than 1000 meters, it is necessary to reduce the rated value by 1.5% for every 100 meters of elevation. The maximum working altitude is 2000 meters above sea level.		
	Atmospheric pressure	86kpa～106kpa		

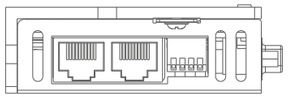
Note :□=A: RS485、CANopen
□=E: EtherCAT

FD125 mechanical dimension drawing

Note1: wiring is needed around the driver, so it is recommended to keep a space of > 80 mm.
Note2:FD125-EB-000 has no dip switch

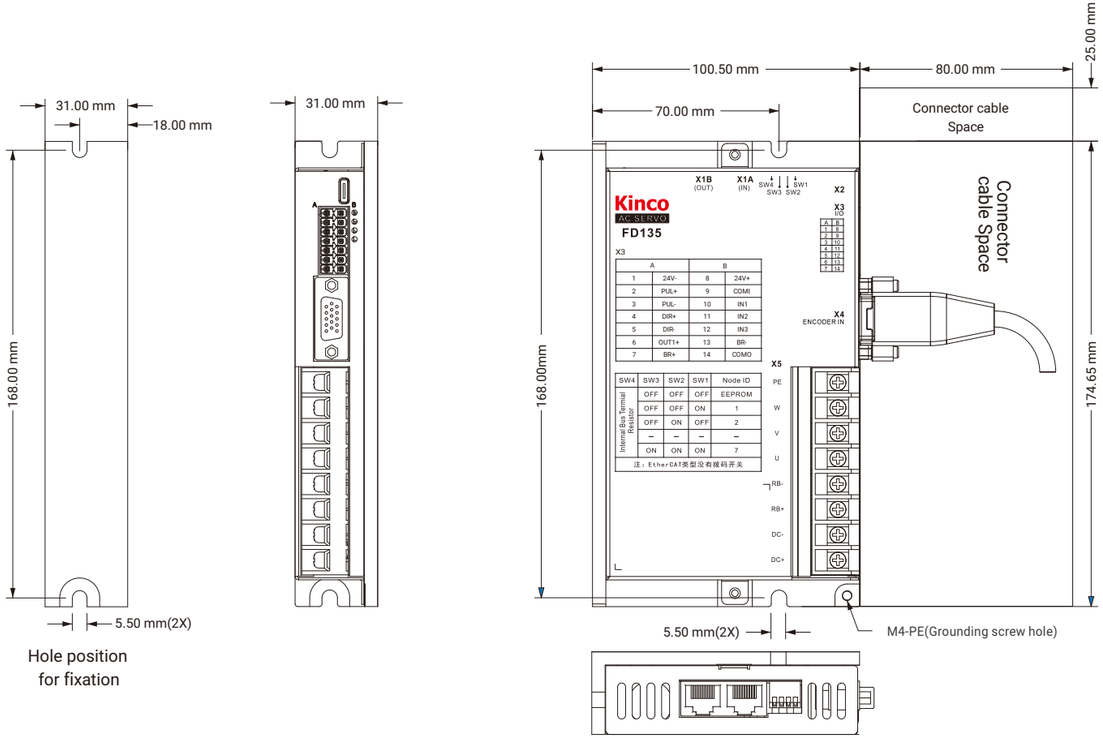






FD135 mechanical dimension drawing

Note1: wiring is needed around the driver, so it is recommended to keep a space of > 80 mm.
Note2:FD135-EB-000 has no dip switch



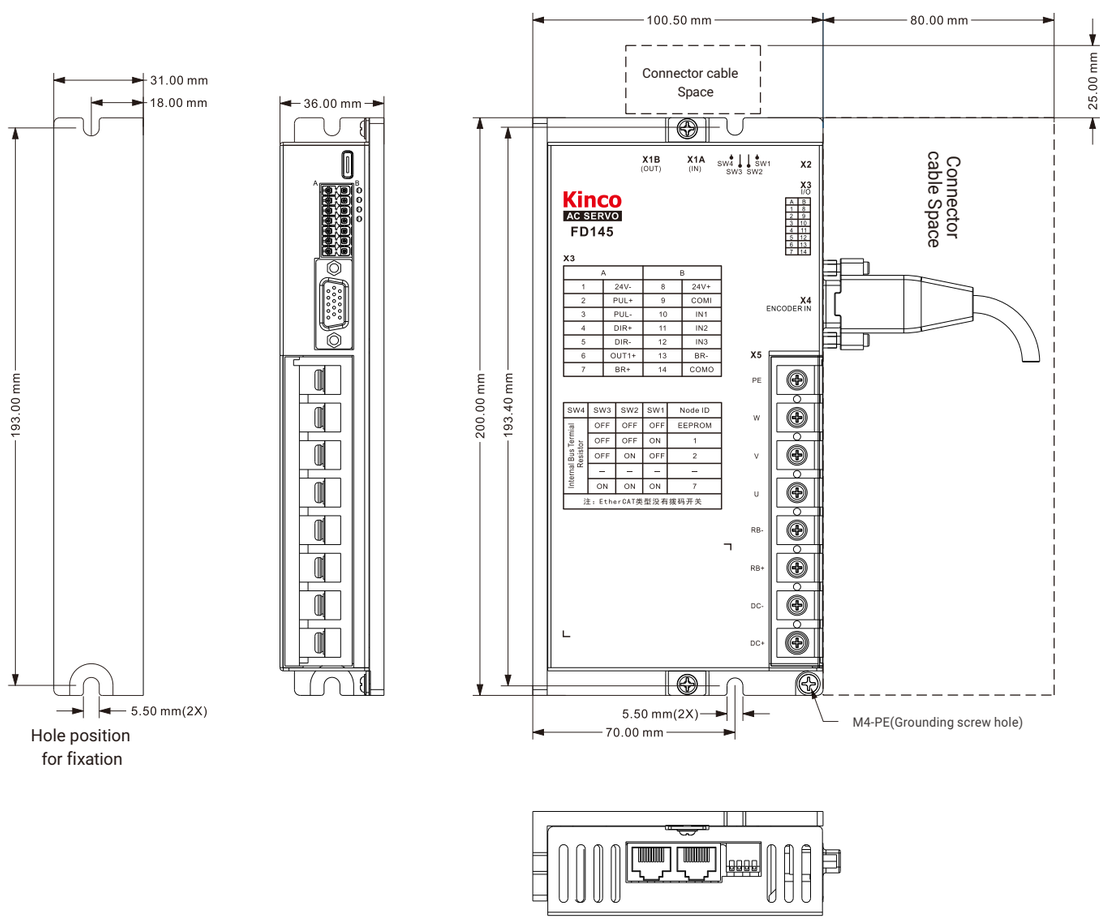
X3	A		B	
1	24V-	8	24V+
2	PUL+	9	COMI
3	PUL-	10	IN1
4	DIR+	11	IN2
5	DIR-	12	IN3
6	OUT1+	13	BR-
7	BR+	14	COMO

	SW4	SW3	SW2	SW1	Node ID
Internal Bus Termal Resistor	OFF	OFF	OFF	OFF	EEPROM
	OFF	OFF	OFF	ON	1
	OFF	ON	OFF	OFF	2
	–	–	–	–	–
	ON	ON	ON	ON	7

注：EtherCAT类型没有拨码开关

FD145 mechanical dimension drawing

Note1: wiring is needed around the driver, so it is recommended to keep a space of > 80 mm.
Note2:FD145-EB-000 has no dip switch



X3	A		B	
1	24V-	8	24V+
2	PUL+	9	COMI
3	PUL-	10	IN1
4	DIR+	11	IN2
5	DIR-	12	IN3
6	OUT1+	13	BR-
7	BR+	14	COMO

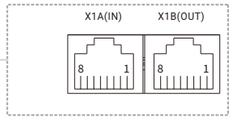
	SW4	SW3	SW2	SW1	Node ID
Internal Bus Termal Resistor	OFF	OFF	OFF	OFF	EEPROM
	OFF	OFF	OFF	ON	1
	OFF	ON	OFF	OFF	2
	–	–	–	–	–
	ON	ON	ON	ON	7

注：EtherCAT类型没有拨码开关

FD1X5 servo driver wiring port description

Bus communication interface

X1

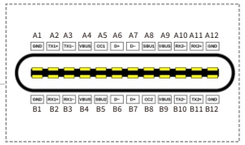


X1A、X1B
Rj45

Pin No.	RS485/Modbus	CAN	EtherCAT
1	\	CAN_H	TD+
2	\	CAN_L	TD-
3	\	GND_CAN	RD+
4	485B	\	\
5	485A	\	\
6	\	\	RD-
7	\	\	\
8	\	\	\

USB communication interface

X2

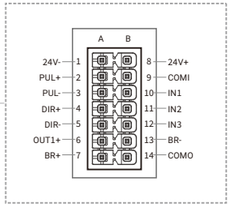


X2
USB interface
(TYPE-C interface)

Pin No.	Signal
A1&B12	GND
A6&B6	USBDP
A7&B7	USBDN
A4&B9	+5V

Digital signal input/ output port

X3

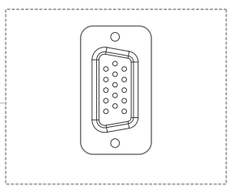


X3
F8CR-THR-3.5-14P-A-L28

Pin No.	Signal	Pin specification
8	24V+	The logical power input is positive Input voltage: 24V, rated input current: 1A
1	24V-	The logical power input is negative Input voltage: 24V, rated input current: 1A
2	PUL+	Input voltage: 3.3V～24V,Maximum input frequency:500KHz
3	PUL-	
4	DIR+	
5	DIR-	
6	OUT1+	Digital signal output OUT1 is an open-collector output with a maximum voltage of 30V and a driving capacity of 100mA
14	COMO	Output common terminal
7	BR+	Lock gate output positive end The output current of the lock port is 500mA
13	BR-	Lock output negative end The output current of the lock port is 500mA
9	COMI	Input common terminal
10	In1	Digital signal input High level: 12.5-30VDC; Low level: 0-5VDC; Maximum frequency: 1KHz; Input impedance: 5KΩ.
11	In2	
12	In3	

Encoder input

X4

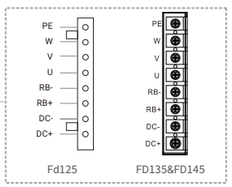


X4
Db15

Pin No.	Magnetoelectric photoelectric encoder signal(Supporting the Tamagawa Agreement)
1	+5V
2	GND
3	PTC_IN (Motor temperature detection)
4	\
5	\
6	\
7	\
8	\
9	ENC_A
10	\
11	\
12	\
13	\
14	ENC_B
15	\

Power and Motor Ports

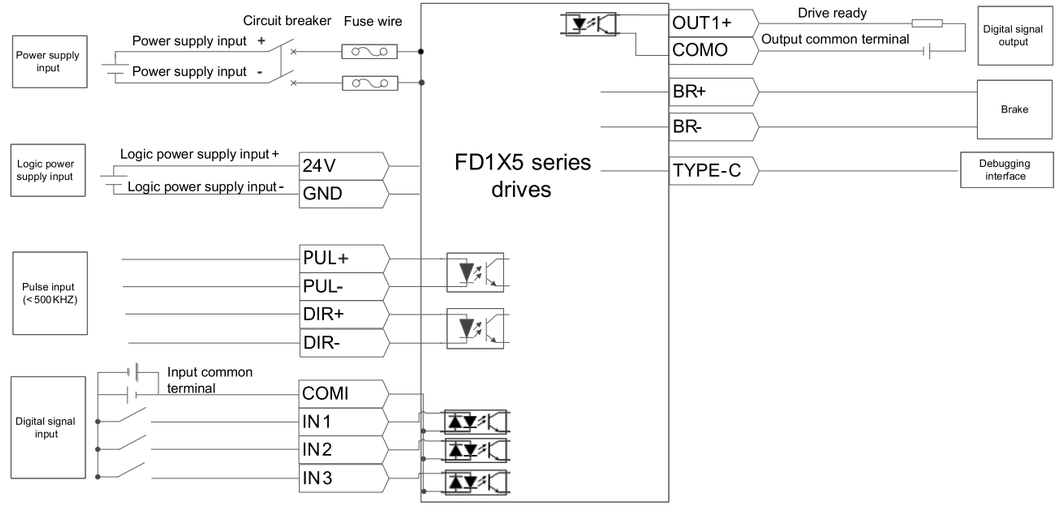
X5



X5
FD125:F8A-8-5.0-08P-A
FD135:BRTB950-02-08-R3
FD145:BRTB130-00-08-50A

Pin No.	Signal
1	PE
2	W
3	V
4	U
5	RB-
6	RB+
7	DC-
8	DC+

FD1X5 driver electrical wiring



iSMK drive and motor integrated machine

Product features:

Compact body, highly integrated motor, driver, encoder and brake in one;

Support 24 ～ 60VDC wide voltage.
Supports CANopen, Modbus RTU, EtherCAT，etc.
A variety of safety protection measures such as overvoltage protection, under pressure protection, short-circuit protection, motor overheating (IIT) protection, and driver overheating protection;
Can be equipped with a standard reducer, suitable for rotary jacking and other scenes.

iSMK naming rules

型号：iSMK 60- 040- D M A K- AA- 000
①　②　③　④ ⑤ ⑥ ⑦　⑧　⑨

①-Series name	iSMK：iSMK Integrated servo motor	⑥-Brake	A：Without brake B：With brake
②-Flange	40：40x40(mm) 60：60x60(mm) 80：80x80(mm)	⑦-Output axis style	K：With key
③-Rated power	010：10x10(W) 020：20x10(W) 040：40x10(W) 075：75x10(W)	⑧-Contro mode	AA：RS485、CANopen、Not pulse、24V logic power supply EA：RS485、EtherCAT、Not pulse、24V logic power supply
④-Supply voltage	D：Input Voltage DC24～60V		
⑤-Encoder type	M：Singleturn communication type magnetoelectric encoder	⑨-Software version number	000：Software version number

Note: The oil seal is an optional accessory, and it can be omitted if it is not necessary.

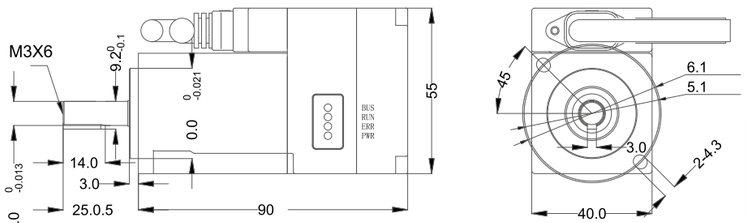
iSMK integrated servo drive motor technical parameters

Model parameter		iSMK drive and motorintegrated machine			
		iSMK40-010-DM■K-□A-000	iSMK60-020-DM■K-□A-000	iSMK60-040-DM■K-□A-000	iSMK80-075-DM■K-□A-000
Input	power	24VDC～60VDC			
	Built-in fuse	Null			
	Logic power	24V			
Rated power Pn(W)		100	200	400	750
Rated speed nN(rpm)		3000	3000	3000	3000
Rated torque Ts(Nm)		0.32	0.64	1.27	2.39
Maximum torque Tm(Nm)		0.96	1.92	3.81	7.17
Rotational inertia Jm(Kg•cm^2)		0.044	0.17	0.31	0.85
		0.046 (With brake)	0.174 (With brake)	0.314 (With brake)	0.91 (With brake)
Logic loss power (mW)		900	900	900	900
Energy consumption brake		There is no brake circuit inside the driver, and an external brake module is required			
Overvoltage alarm voltage		The default is 70V			
Undervoltage alarm voltage		The default is 18V			
Cooling mode		Natural cooling			
General function	Input specification	2 digital inputs, high: 12.5VDC ～ 30VDC Low: 0VDC ～5VDC Input impedance: 5KΩ Input frequency: <1KHz			
	Input function	Freely defined as required, the functions are as follows: drive enable, drive error reset, drive mode control, speed loop proportional control, positive limit, negative limit, origin signal, command reverse, internal speed segment control, internal position segment control, emergency stop, start to find the origin, command activation, electronic gear ratio switching, gain switching			
	Output specification	1 digital output, OUT1 for the open collector output, the highest voltage 30V, driving capacity of 100mA			
	Output function	Freely defined according to needs, the functions are as follows: driver ready, driver error, motor position to, motor zero speed, motor lock brake, motor speed to, index Z signal appears, maximum limit speed in torque mode, motor lock shaft, motor limit medium, origin finding			
Bus function	RS485	It supports a maximum 115.2Kbps baud rate and can communicate with the controller using the Modbus RTU			
	CANopen	It supports a maximum 1Mbps baud rate and can communicate with the controller using the CANopen			
	EtherCAT	Support CoE(CiA402 protocol)and CSP/CSV/PP/PV/PT/HM mode，communication speed 100M			
Apply environment	Operation temperature	-20°C～40°C (no freezing),When the operating temperature exceeds 40°C, the driver needs to be derated			
	Operating humidity	Less than 90%RH (no condensation)			
	Storage temperature	-40°C～70°C (no freezing)			
	Storage humidity	90%RH (no condensation)			
	Installation method	Motor flange installation (vertical side installation)			
	Protection grade	IP65, shaft end IP54			
	Atmospheric pressure	86kpa～106kpa			
	Altitude	The rated working altitude is less than 1000 meters above sea level. When the working altitude is higher than 1000 meters, it is necessary to reduce the rated value by 1.5% for every 100 meters of elevation. The maximum working altitude is 2000 meters above sea level.			

Note1:■=A：Without brake
=B：With brake (Power supply conversion, external unlocking.)
Note2：□=A: RS485、CANopen
=E: RS485、EtherCAT

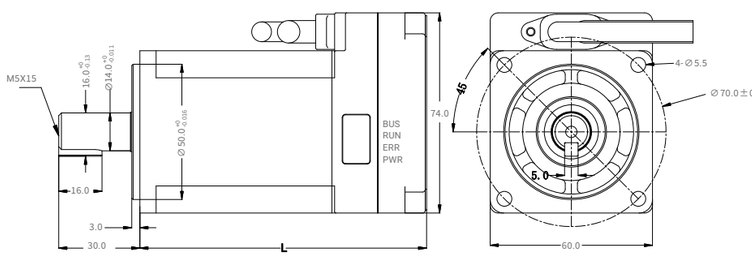
iSMK integrated servo drive motor mechanical dimensions

iSMK40 series mechanical dimension diagram (unit：mm)



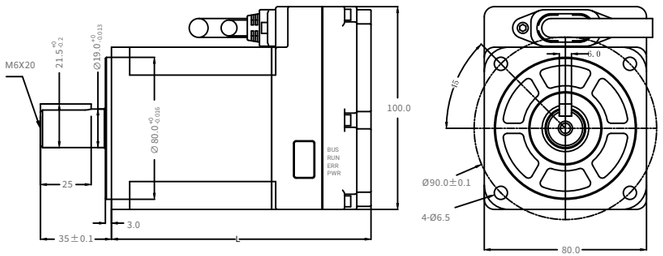
iSMK40 series model	With brake	Weight(kg)	Motor body size L (mm)
iSMK40-010-DMAK-AA-000		0.6	90
iSMK40-010-DMBK-AA-000	√	0.8	126
iSMK40-010-DMAK-EA-000		0.7	90
iSMK40-010-DMBK-EA-000	√	0.9	126

iSMK60 series mechanical dimension diagram (unit：mm)



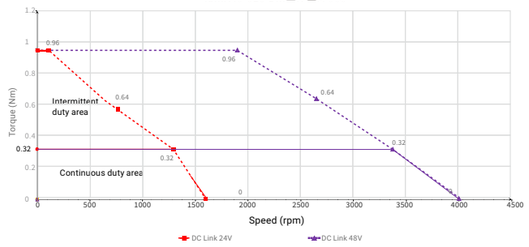
iSMK60 series model	With brake	Weight(kg)	Motor body size L (mm)
iSMK60-020-DMAK-AA-000		1.1	88
iSMK60-020-DMBK-AA-000	√	1.6	127.5
iSMK60-020-DMAK-EA-000		1.2	88
iSMK60-020-DMBK-EA-000	√	1.7	127.5
iSMK60-040-DMAK-AA-000		1.3	106
iSMK60-040-DMBK-AA-000	√	1.8	145.5
iSMK60-040-DMAK-EA-000		1.4	106
iSMK60-040-DMBK-EA-000	√	1.9	145.5

iSMK80 series mechanical dimension diagram (unit：mm)

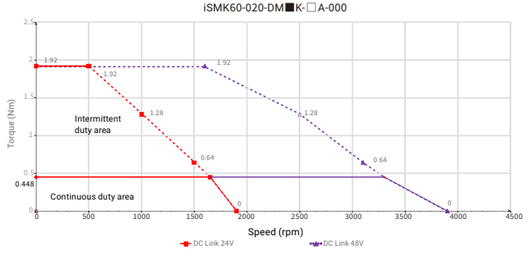


iSMK60 series model	With brake	Weight(kg)	Motor body size L (mm)
iSMK80-075-DMAK-AA-000		2.5	128
iSMK80-075-DMBK-AA-000	√	3	158
iSMK80-075-DMAK-EA-000		2.6	128
iSMK80-075-DMBK-EA-000	√	3.1	158

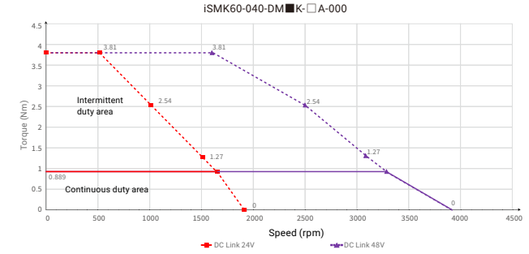
iSMK40-010-DM■K-□A-000



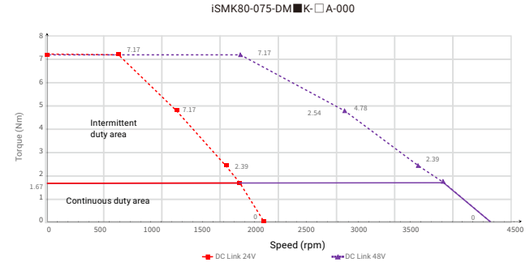
iSMK60-020-DM■K-□A-000



iSMK60-040-DM■K-□A-000

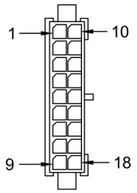


iSMK80-075-DM■K-□A-000



iSMK integrated servo drive motor connection port description

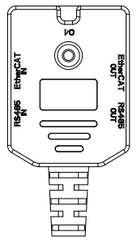
iSMK-AA communication terminal definition

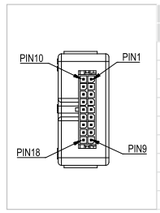


A			B		
Pin	Name	Cable color	Pin	Name	Cable color
1	24V	Red	10	GND	Black
2	LOCK+	Purple	11	LOCK-	Purple and black
3	CANH	Blue and black	12	CANL	Blue
4	CANH	Blue and black	13	CANL	Blue
5	RS485A	Orange and black	14	RS485B	Orange
6	RS485A	Orange and black	15	RS485B	Orange
7	OUT1+	Yellow and black	16	COMO	Yellow
8	COMI	White	17	DI1	Green
9	GNDC	Green and black	18	Di2	White and black

Note: This definition applies to iSMK60 & 80 AA.
CABLE-iSMK-AA-LL external cable can be purchased.

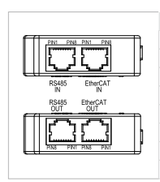
iSMK-EA communication terminal definition





A		B	
PIN	Signal	PIN	Signal
1	24V	10	GND
2	LOCK+	11	LOCK-
3	/	12	/
4	/	13	/
5	RS485A	14	RS485B
6	RS485A	15	RS485B
7	OUT1+	16	COMO
8	COMI	17	DI1
9	GNDC	18	Di2

Note:Kinco CABLE-iSMK-AA-LL external cable can be purchased
(Pins 3, 4, 12, 13 of the iSMK-EA series are empty, and the corresponding color cable of these four pins of the external cable can be ignored)



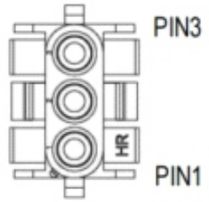
PIN	Rs485 IN/RS485 OUT	EtherCAT IN	EtherCAT OUT
1	/	IN TX+	OUT TX+
2	/	IN TX-	OUT TX-
3	/	IN RX+	OUT RX+
4	GND_C	/	/
5	RS485B	/	/
6	RS485A	IN RX-	OUT RX-
7	/	/	/
8	/	/	/

IO signal description

Signal	Function description
24V	The logic power supply is an optional option. When using the logic power supply, ensure that the power supply and logic are completely isolated. If the system power supply is not isolated, the logical ground cable is not connected. The logic power supply is connected at DC- and 24V
GND	Logic electrical reference ground
LOCK+	External release beake input The input voltage is 24V, the maximum input current is 0.7A, only when the AGV body battery is out of emergency use; Only when both the logic power supply and the power supply are powered off, the external lock can be unlocked. Do not short-circuit or connect to other signals and enclosures during normal operation
LOCK-	
CANH	CAN signal positive end(Only the iSMK-AA series has this terminal)
CANL	CAN signal negative end(Only the iSMK-AA series has this terminal)
485A	RS485 data positive end
485B	RS485 data negative end
GND_C	Signal ground
DIN1	Digital signal input；High level: 12.5VDC~30VDC Low level: 0VDC~5VDC Input impedance: 5KΩ Input frequency: <1KHz
DIN2	
COMI	Digital signal input to the common end
OUT1+	Digital signal output；1 digital output, maximum output current: 100mA
COMO	Digital signal output common terminal

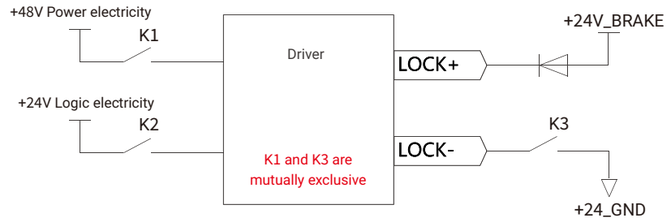
iSMK integrated servo drive motor connection port description

Power cable port definition



Power line terminal C6350HM-3P-V0	Signal	Color
1	48V+	Red
2	/	/
3	48V-	Black

Wiring Diagram of Recommended Circuit for Forced Unlocking Brake



Note: After cutting off the iSMK logic and power supply, use the power supply

SMK series common body low-voltage servo motor

Product features:

New electromagnetic design
Adopting 12-slot and 10-pole design, with small slot torque and low torque pulsation ,which is conducive to reducing the vibration during the operation of the motor and making the torque output more smooth.
New structure and short fuselage
The redesign of the fuselage structure shortens the length of the fuselage, which can save more installation space and reduce the size of the equipment for customers' equipment.
Insulation class F
The motor in the industry is at the highest insulation level, which can maintain high reliability and stability in high temperature extreme environment.
Energy efficiency class: 2

SMK series naming rules

Model: SMK 60 S - 0040 - 30 S A K - 5 D S A
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

①-Series name	SMK: Common body series
②-Flange	60：60x60(mm) 80：80x80(mm)
③-Inertia type	S:Small inertia
④-Rated power	0020：10x20(W) 0040：10x40(W) 0075：10x75(W) 0100：10*100 (W)
⑤-Rated speed	30：30x100(rpm)
⑥-Encoder type	S:Singleturn communication type magnetoelectric encoder Q: Multiturn communication type magnetoelectric absolute encoder
⑦-Brake	A：Without brake B：With brake
⑧-Output axis style	K：Withkey
⑨-Number of polar pairs	5:5-pole pair
⑩- Supply voltage	D：DC48V
⑪- Motor version number	S:S version K:K version
⑫- Motor Outlet Type	A: Special socketfor common motor

Note: The oil seal is an optional accessory, and it can be omitted if it is not necessary.

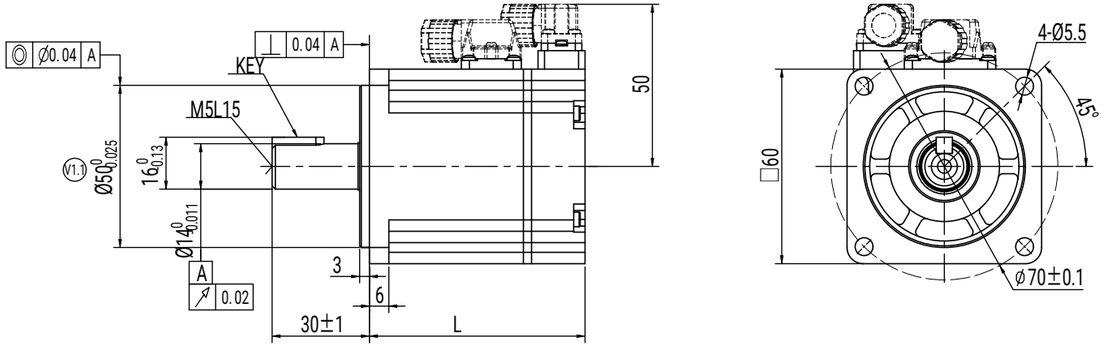
SMK series servo motor technical parameters table

Servo motor model		SMK series servo motor			
		SMK60S-0020-30□■K-5DSA	SMK60S-0040-30□■K-5DSA	SMK80S-0075-30□■K-5DKA	SMK80S-0100-30□■K-5DKA
Drive power supply voltage Intermediate link DC voltage VDC		48	48	48	48
Continuous Characteristics	Rated power Pn(W)	200	400	750	1000
	Rated torque Tn(Nm)	0.64	1.27	2.39	3.18
	Rated speed Nn (rpm)	3000	3000	3000	3000
	Rated current In(A)	5.7	10.6	19.2	25.8
MAX torqueTm(Nm)		1.92	3.81	7.17	9.54
MAX current Im (A)		18.2	33.9	62.7	81
Standstill torque Ts(Nm)		0.7	1.4	2.63	3.5
Standstill current Is(A)		6.27	11.7	21.1	28.4
Resistance cable RL(Ω)		0.68	0.32	0.088	0.058
Inductance cable LL(mH)		1.33	0.65	0.32	0.22
Electrical time constant τe (ms)		1.96	2.03	3.64	3.79
Mechanical time constant τm (ms)		1.3	0.98	0.687	0.63
		1.33(with brake)	1(with brake)	0.736(with brake)	0.66(with brake)
Reverse voltage constant Ke (V/krpm)		7.5	8	8.3	8.23
Torque constant Kt (Nm/A)		0.124	0.132	0.137	0.136
Rotor moment of inertia Jm (Kg•cm2)		0.17	0.31	0.85	1.16
		0.174(with brake)	0.314(with brake)	0.91(with brake)	1.22(with brake)
Brake holding torque T(Nm)		2	2	4	4
Number of pole pairs		5	5	5	5
MAX voltage rising du/dt (KV/μs)		8	8	8	8
Insulation class		F	F	F	F
Max radial force Fr(N)		40	40	392	392
Max axial force Fa(N)		30	30	147	147
Weight G(Kg)		0.9	1.1	1.9	2.4
		1.3(with brake)	1.5(with brake)	2.6(with brake)	3.1(with brake)
Fuselage length L(mm)		66.5±1.5	89±1.5	100.5±1	112.5±1
		98±1.5(with brake)	116±1.5(with brake)	134.5±1	146.5±1
Cooling method		Totally enclosed, self-cooling			
Protection level		IP65 (IP54 at the shaft end)			
Operation environment	Temperature	-20～40℃			
	Humidity	Below 90% RH (no condensation)			
	Ambient environment	Keep away from corrosion, flammable gases, oil droplets, dust			
	Altitude	The highest altitude is 2000m. Above 1000m, the power will decrease by 1.5% for every			

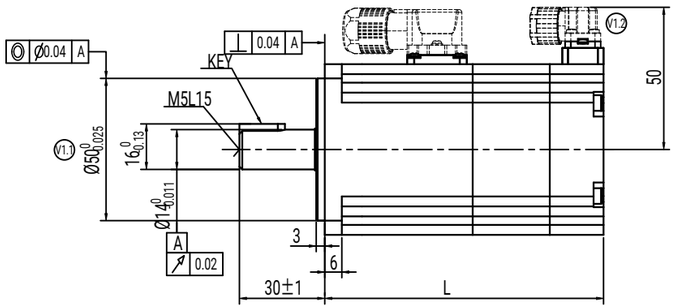
Note：□ = S：Singleturn communication type magnetoelectric encoder
Q：Multiturn communication type magnetoelectric absolute encoder
■ = A：Motor without holding brake
B：Motor with holding brake

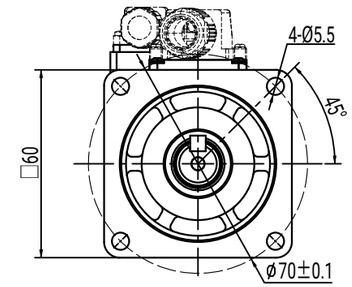
SMK series servo motor dimensions

60 flange



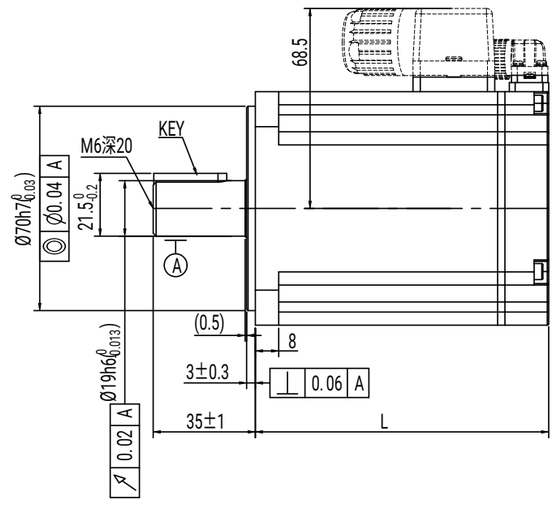
60 flanges (with brake)

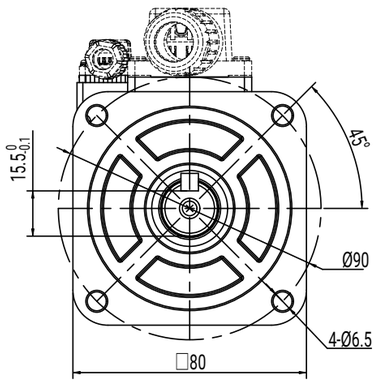




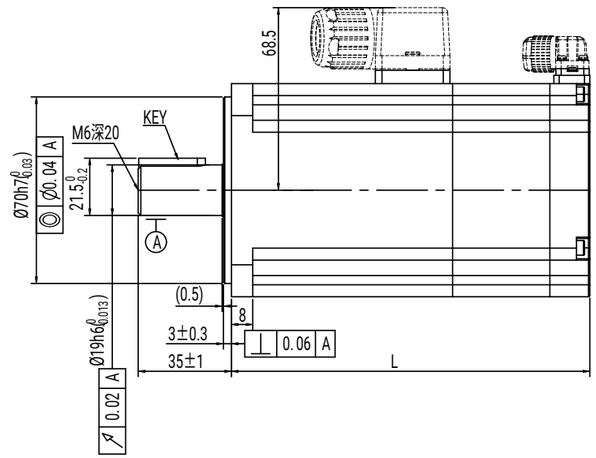
SMK series servo motor dimensions

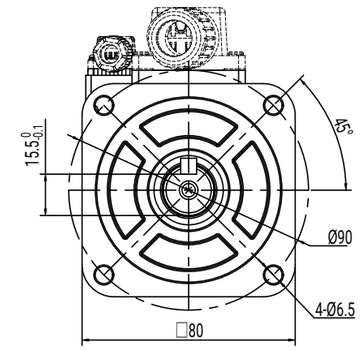
80 flange





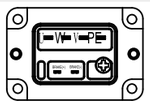
80 flanges (with brake)





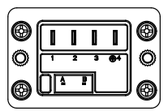
SMK series servo motor end connectors and wiring

Num	Definition
1	U
2	W
3	V
4	PE



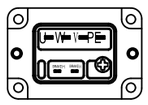
SMK60 power socket without brake

Num	Definition
1	U
2	W
3	V
4	PE



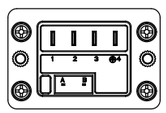
SMK80 power socket without brake

Num	Definition
1	U
2	W
3	V
4	PE
5	BRAKE(+)
6	BRAKE(-)



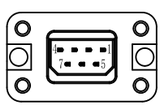
SMK60 power socket with

Num	Definition
1	U
2	W
3	V
4	PE
5	BRAKE(+)
6	BRAKE(-)



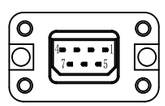
SMK80 power socket with brake

Num	Definition
1	DC +5V
2	GND
3	NC
4	NC
5	485+
6	485-



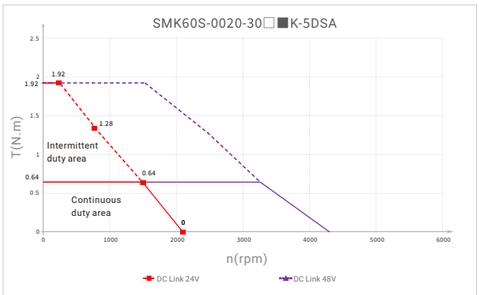
Encoder socket single turn

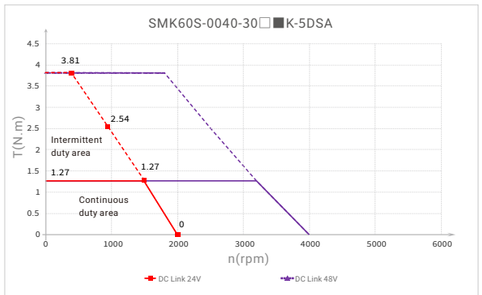
Num	Definition
1	DC +5V
2	GND
3	VB+
4	VB-
5	SD+
6	SD-

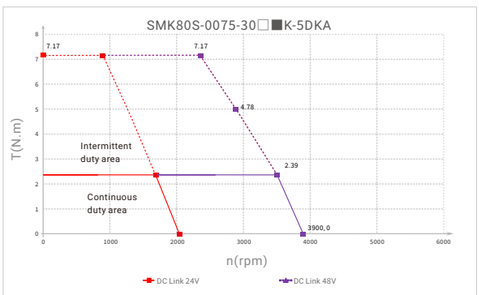


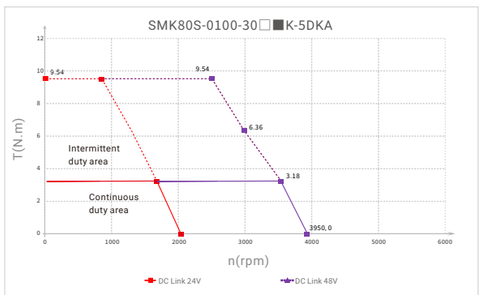
Encoder socket multiturn

SMK series servo motor curve









Cable naming rules

Power cable

MOT F - 005 - LL - KAB - D

① ② ③ ④ ⑤ ⑥

①-Cable function type	MOT：Motor power cable
②-Cable type	F：Flexible cable empty：Common cable
③-Rated current	005：5A 011：11A 020：20A 030：30A
④-Cable length	(5)：0.5m 01：1m 02：2m 03：3m .....
⑤-Motor outlet type	KA: Pluggable motor connector (power) KAB:Pluggable motor connector (power and brake)
⑥-Connector types	D: DC servo standard connector

Encoder cable/encoder battery cable

ENC D G F - LL - G A - DC

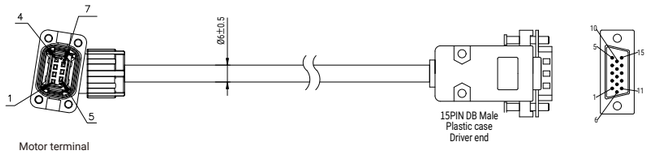
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①-Cable function type	ENC：Motor encoder cable
②-Drive encoder connector type	D：1394 connector H：Three rows of 15DB connectors
③-Drive connector definition	G：Communication type connector
④-Cable type	F：Flexible cable empty：Common cable
⑤-Cable length	(5)：0.5m 01：1m 02：2m 03：3m .....
⑥-Core cable type	G：6-core cable
⑦-Type of encoder connector to the motor end	A: Pluggable encoder connector U：1394 connector
⑧-Cable accessories	DC: With battery box outlet wire Empty: Without battery box outlet wire

Wiring drawing

ENCHG-LL-GA

Wire specification: 1P22AWG+2P26AWG standard cable
22AWGcorresponds to a cross-sectional area of 0.3247mm2
26AWGcorresponds to a cross-sectional area of 0.1281mm2

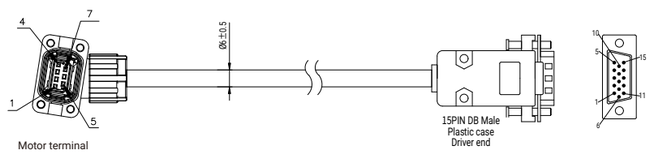


Motor end	Color	Signal	15PIN DB Male
PIN1	red	VDD	PIN1
PIN2	orange	GND	PIN2
PIN3	/	/	/
PIN4	/	/	/
PIN5	blue	485+	PIN9
PIN6	purple	485-	PIN14
Outer shell	shielded wire	shield	shield

Note：Corresponding kit ENCHG-GA

ENCHGF-LL-GA

Wire specification: 1P22AWG+2P26AWG flexible drag chain cable
22AWGcorresponds to a cross-sectional area of 0.3247mm2
26AWGcorresponds to a cross-sectional area of 0.1281mm2

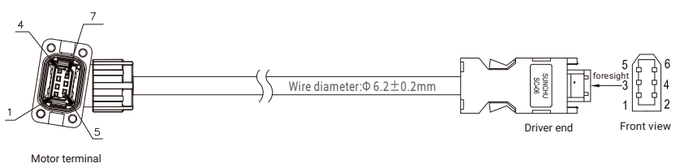


Motor end	Color	Signal	15PIN DB Male
PIN1	red	VDD	PIN1
PIN2	orange	GND	PIN2
PIN3	/		/
PIN4	/		/
PIN5	blue	485+	PIN9
PIN6	purple	485-	PIN14
Outer shell	shielded wire	shield	shield

Note：Corresponding kit ENCHG-GA

ENCDG-LL-GA

Wire specification: 1P22AWG+2P26AWG standard cable
22AWG corresponds to a cross-sectional area of 0.3247mm2
26AWG corresponds to a cross-sectional area of 0.1281mm2



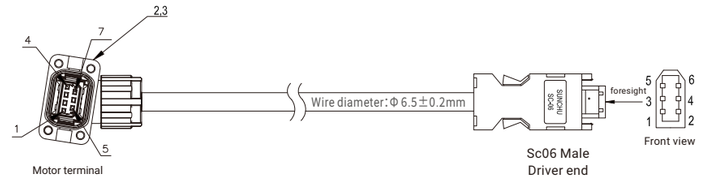
Motor end	Color	Signal 1	Signal 2	SC06 Male
PIN1	red	VDD	VDD	PIN1
PIN2	orange	GND	GND	PIN2
PIN3	brown	MA_P+	/	PIN3
PIN4	black	MA_N-	/	PIN4
PIN5	blue	SLO_P+	SD	PIN5
PIN6	purple	SLO_N-	/SD	PIN6
Outer shell	shielded wire	shield	shield	shield

Note: Signal 1 for magnetoelectric encoders,
signal 2 for absolute encoders;
Corresponding kit: ENCDG/ENCDGF-GA

Wiring drawing

ENCDGF-LL-GA

Wire specification: 1P22AWG+2P26AWG flexible drag chain cable
22AWG corresponds to a cross-sectional area of 0.3247mm2
26AWG corresponds to a cross-sectional area of 0.1281mm2

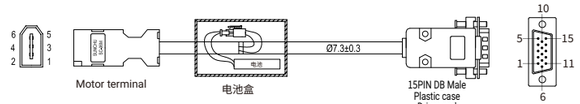


Motor end	Color	Signal 1	Signal 2	Sc06 Male
PIN1	red	VDD	VDD	PIN1
PIN2	orange	GND	GND	PIN2
PIN3	brown	MA_P+	/	PIN3
PIN4	black	MA_N-	/	PIN4
PIN5	blue	SLO_P+	SD	PIN5
PIN6	purple	SLO_N-	/SD	PIN6
Outer shell	shielded wire	shield	shield	Outer shell

Note: Signal 1 for magnetoelectric encoders,
signal 2 for absolute encoders;
Corresponding kit: ENCDG/ENCDGF-GA

ENCHG-(4)-GU-DC

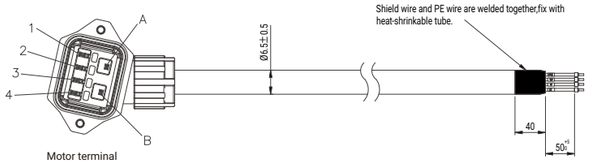
Wire specification:3×2 ×0 .2mm²



ENCHG-(4)-GU-DC					
Motor end	Color	black HSG	External single line	Signal	15PIN DB Male
PIN1	red			+5V	PIN1
PIN2	black			GND	PIN2
PIN3	brown	PIN1	red	BAT+	
PIN4	blue	PIN2	black	BAT-	
PIN5	Yellow			SD	PIN9
PIN6	Green			/SD	PIN14
Outer shell	shielded wire			shield	Outer shell

MOT-005-LL-KA-D

Wire specification: 4C*20AWG 300V standard cable
20AWG corresponds to a cross-sectional area of 0.5189mm2



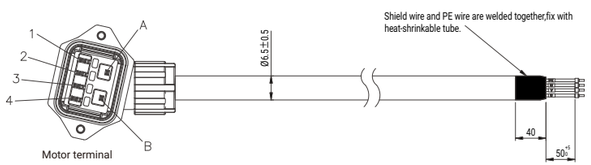
Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT/MOTF-005-KA

Wiring drawing

MOTF-005-LL-KA-D

Wire specification: 4C*20AWG 300V flexible drag chain cable
20AWG corresponds to a cross-sectional area of 0.5189mm2

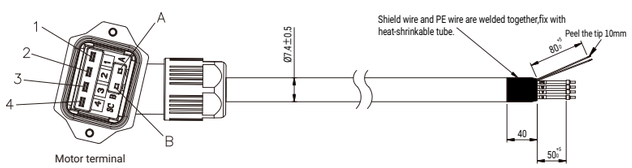


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT/MOTF-005-KA

MOT-005-LL-KAB-D

Wire specification: 4C*18AWG+1P*24AWG standard cable
18AWG corresponds to a cross-sectional area of 0.8107mm2
24AWG corresponds to a cross-sectional area of 0.2047mm2

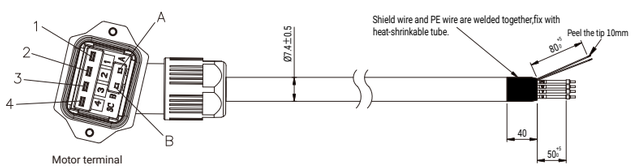


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-011-KA

MOTF-005-LL-KAB-D

Wire specification: 4C*18AWG+1P*24AWG flexible drag chain cable
18AWG corresponds to a cross-sectional area of 0.8107mm2
24AWG corresponds to a cross-sectional area of 0.2047mm2



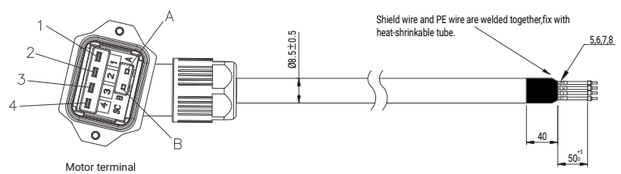
Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-011-KA

Wiring drawing

MOT-011-LL-KA-D

Wire specification: 4C*16AWG 300V standard cable
16AWG corresponds to a cross-sectional area of 1.318mm2

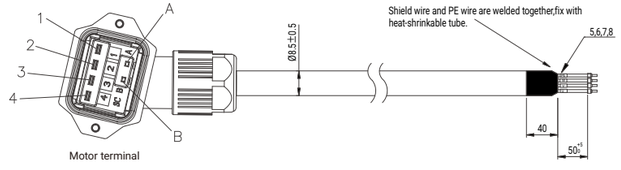


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT-011-KA

MOTF-011-LL-KA-D

Wire specification: 4C*16AWG 300V flexible drag chain cable
16AWG corresponds to a cross-sectional area of 1.318mm2

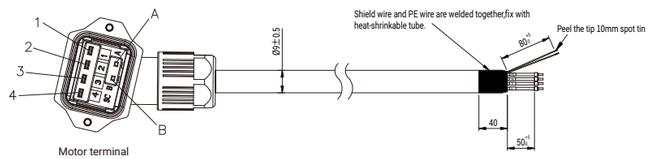


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT-011-KA

MOT-011-LL-KAB-D

Wire specification: 4C*16AWG+1P*24AWG standard cable
16AWG corresponds to a cross-sectional area of 1.318mm2
24AWG corresponds to a cross-sectional area of 0.2047mm2



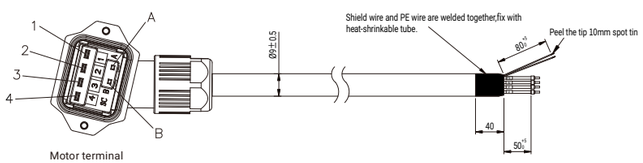
Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-011-KA

Wiring drawing

MOTF-011-LL-KAB-D

Wire specification: 4C*16AWG+1P*24AWG flexible drag chain cable
16AWG corresponds to a cross-sectional area of 1.318mm2
24AWG corresponds to a cross-sectional area of 0.2047mm2

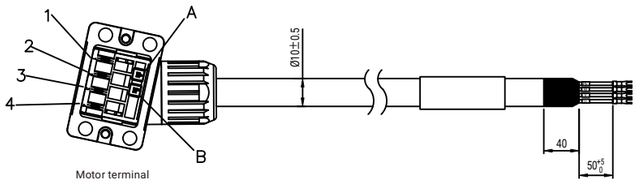


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-KA(OD⩾11mm)

MOT-020-LL-KA-D

Wire specification: UL2586 4x13AWG standard cable
13AWG corresponds to a cross-sectional area of 2.627mm2

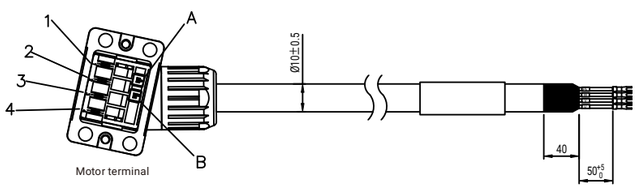


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT-KA(OD<11mm)

MOTF-020-LL-KA-D

Wire specification: UL2586 4x13AWG flexible drag chain cable
13AWG corresponds to a cross-sectional area of 2.627mm2



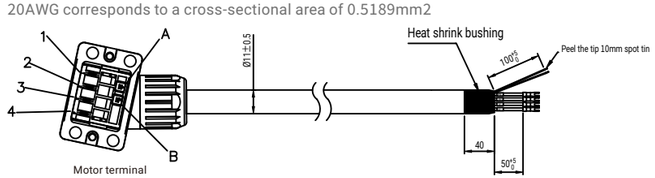
Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT-KA(OD<11mm)

Wiring drawing

MOT-020-LL-KAB-D

Wire specification: UL25864Cx13AWG+1Px20AWG standard cable
13AWG corresponds to a cross-sectional area of 2.627mm2
20AWG corresponds to a cross-sectional area of 0.5189mm2

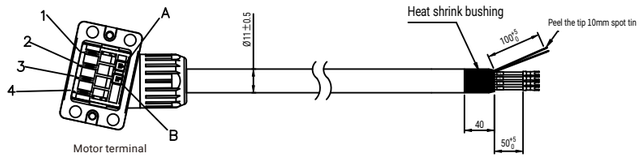


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-KA(OD⩾11mm)

MOTF-020-LL-KAB-D

Wire specification:UL25864Cx13AWG+1Px20AWG flexible drag chain cable
13AWG corresponds to a cross-sectional area of 2.627mm2
20AWG corresponds to a cross-sectional area of 0.5189mm2

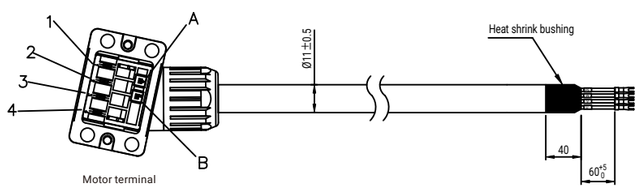


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-KA(OD⩾11mm)

MOT-030-LL-KA-D

Wire specification: UL2586 4x12AWG standard cable
12AWG corresponds to a cross-sectional area of 3.332mm2



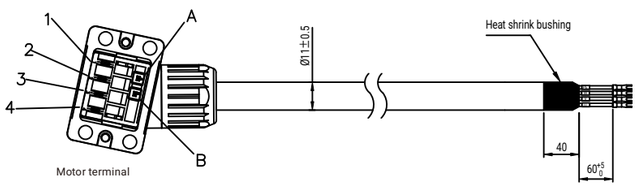
Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT-KA(OD⩾11mm)

Wiring drawing

MOTF-030-LL-KA-D

Wire specification: UL2586 4x12AWG flexible drag chain cable
12AWG corresponds to a cross-sectional area of 3.332mm2

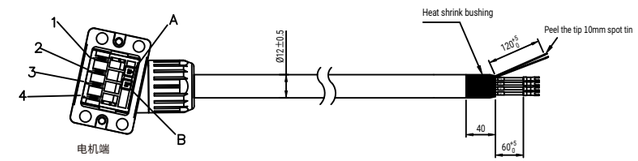


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE

Note: Corresponding kit MOT-KA(OD≥11mm)

MOT-030-LL-KAB-D

Wire specification: UL2586 4Cx12AWG+1Px20AWG standard cable
12AWG corresponds to a cross-sectional area of 3.332mm2
20AWG corresponds to a cross-sectional area of 0.5189mm2

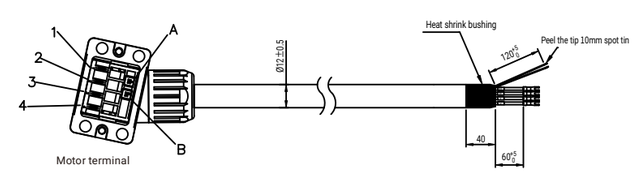


Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-KA(OD≥11mm)

MOTF-030-LL-KAB-D

Wire specification: UL2586 4Cx12AWG+1Px20AWG flexible drag chain cable
12AWG corresponds to a cross-sectional area of 3.332mm2
20AWG corresponds to a cross-sectional area of 0.5189mm2



Motor end	Color	Signal
PIN1	white	U
PIN2	black	W
PIN3	red	V
PIN4	Yellowgreen+Shielding	PE
PINA	brown	BRAKE+
PINB	blue	BRAKE-

Note: Corresponding kit MOT-KA(OD≥11mm)