Zilvertron
mechanics & electronics

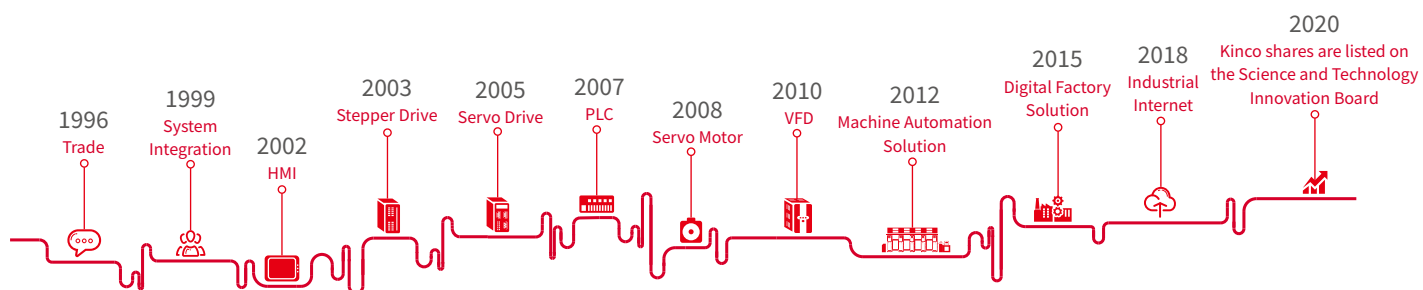# Kinco

Low-voltage Servo System Catalog

-FD1X4S Servo Drive
-Low-voltage Servo Motor
-MD series integrated Servo Motor

About us

1996 Trade

1999 System Integration

2002 HMI

2003 Stepper Drive

2005 Servo Drive

2007 PLC

2008 Servo Motor

2010 VFD

2012 Machine Automation Solution

2015 Digital Factory Solution

2018 Industrial Internet

2020 Kinco shares are listed on the Science and Technology Innovation Board

Shanghai Kinco Automation Co., Ltd. focuses on R&D, production, sales and technical services of automation standard products and intelligent hardware products, which is a leading supplier of machine automation and intelligent solutions for factories in China.

In 1996, Kinco has been providing total automation solutions for global industrial automation equipment manufacturers by relying on standard automation products such as HMI, servo system, stepping system, PLC, low-voltage inverter, etc. to penetrate into the industry,making China's automation solutions prevail all over the world.The company's HMI products have led the wave of HMI popularization in China, and its market share has maintained a leading position among local brand manufacturers for many years.

With the mission of "Making China's manufacturing become the top manufacturing in the world", Kinco company insists on investing a large amount of resources in the research and development of automated technology platforms, and sets up R&D facilities in Shanghai, Shenzhen and Changzhou.Kinco company has an automated technology platform that covers all aspects of control, drive, human-machine interaction, communication and electromechanical integration design.In the field of machine automation, Kinco focuses on the industry and has developed special solutions for logistics automation, service robots, medical instruments, professional drones, 3C machine tools, ozone and other industries

In the field of smart factory, Kinco provides customers with the most easy-to-implement smart factory solutions for manufacturing companies at the field implementation level, PLC control and communication level, Scada and system integration level, and MES management level through its comprehensive automation technology platform and software system developed for smart factory.
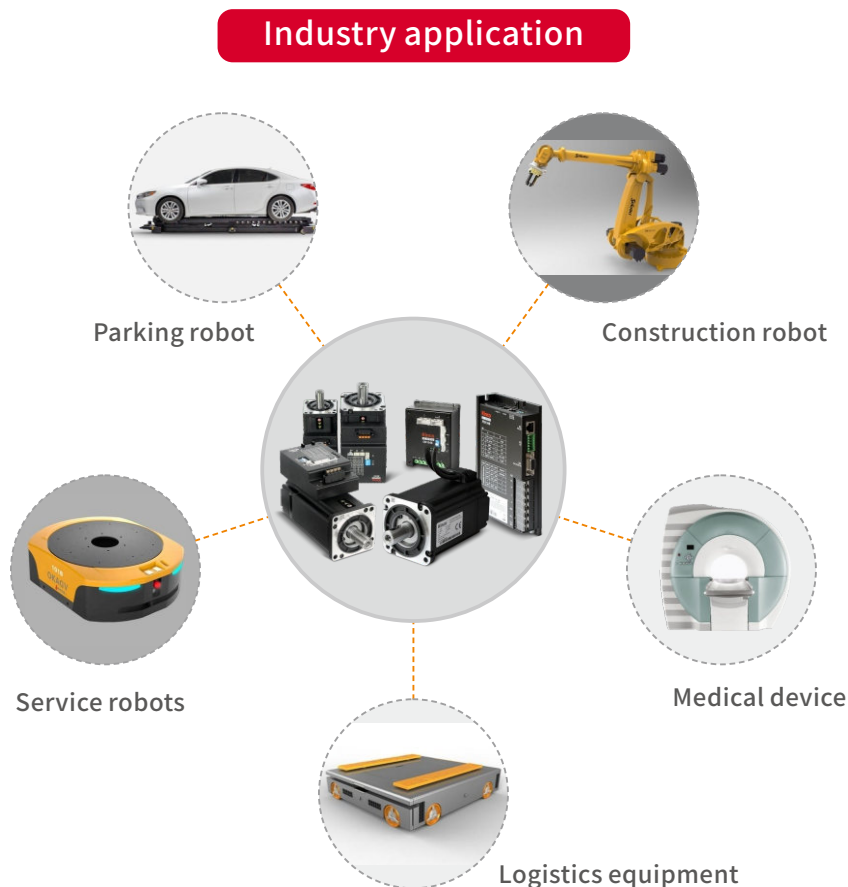
With the vision of "creating a better life intelligently" and adhering to the values of "maintain conscience in growth and hold ingenuity in innovation", Kinco is a platform to help employees maximize their creative potential and a partner to help customers succeed in innovative management. We develop products and operate businesses with innovative thinking and practical spirit, adhere to ideals, and expect human creativity to make the world more wonderful.

Kinco low voltage servo system

FD, OD, MD series low-voltage servo drives are a new generation of products with small size, good performance and high stability developed by Kinco Electric after years of market research and according to the characteristics of the logistics automation industry.

The working voltage of Kinco low voltage servo system is DC24~60V. Support CAN, Modbus, Ethercat, Profinet bus and pulse and other control methods. It can be matched with encoder motors such as photoelectric, magnetoelectric, multi-turn absolute value, etc., and the product configuration is more flexible. Widely used in logistics storage equipment, mobile handling equipment, sorting trolleys, mobile service robots and other fields that have high requirements on voltage and volume.

For industrial customers who have special requirements in communication mode, installation mode, protection level, etc., our company also provides customized low-voltage servo drives and motors for customer application.

Industry application

Parking robot

Construction robot

Service robots

Medical device

Logistics equipment

Contents

Standards and Certificates

European Standards
Drive：EN 61800-5-1:2007/A11:2021
Motor：EN 60034-1:2010
American Standard
Drive：UL 61800-5-1:2012 R3.15
Motor：UL 1004-1:2012R11.20

EMC

EMC electromagnetic
compatibility certification

Standard： EN 61000-6-4:2007+A1:2011
Standard： EN 61000-6-2:2005

Drive naming rule

Model: FD124S-CB-000
① ②③ ④ ⑤ ⑥

①-Serial number	FD：FD series
②-Voltage input specifications	1：Input voltage DC24～60V
③-Rated output current	1：5Arms 2：15Arms 3：25Arms 4：40Arms 6：80Arms
④-Drive version	4S：4S version low voltage drive
⑤-Control method	LB：RS232、RS485、pluse CB：RS232、CANopen EB：RS232、EtherCAT
⑥-Software version number	000：Incremental encoder (communication, photoelectric encoder) 005：Absolute value encoder 020：mobile specific

Note 1、The output currents of FD124S, FD134S, and FD144S are 15Arms, 25Arms, and 40Arms, respectively, which is the value measured by installing the drive on an oxide black 6063 aluminum plate with a length*width*height of 300mm*300mm*10mm of the auxiliary heat sink.

2、The output current of the FD164S is 80Arms, and the drive needs to be installed on the auxiliary radiator with a length*width*height of 400mm*400mm*10mm and the measured value of the black oxide 6063 aluminum plate.

model: **SMC 60 S - 0040 - 30 M A K -5 D S U**
①   ② ③   ④   ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

①-Series name	SMC : SMC series	**⑥-Encoder type**	M: Singleturn communication magnetoelectric encoder Q: Multiturn communication magnetoelectric encoder A : 2500P/R photoelectric incremental encoder W: 2500P/R incremental magnetoelectric encoder
②-Flange	40： 40x40(mm) 60： 60x60(mm) 80： 80x80(mm) 110： 110x110(mm) 130： 130x130(mm)	**⑦-Brake**	A : None B : Have
③-Inertia type	S：Small inertia D：Medium inertia	**⑧-Output shaft style**	K：With key
④-Rated power	0005：5x10(W) 0010：10x10(W) 0020：20x10(W) 0040：40x10(W) 0060：60x10(W) 0075：75x10(W) 0100：100x10(W) 0120：120x10(W) 0150：150x10(W) 0250：250x10(W) 0300：300x10(W)	**⑨-Number of polar pairs**	4:4 pole pairs 5:5 pole pairs
		⑩-Supply voltage	D： DC48V
		⑪-Motor version number	K : K version S : S version C : Ultra short version
⑤-Rated rotation speed	20：20x100(rpm) 30：30x100(rpm)	**⑫-Motor outlet mode**	H : Three rows of 15-pin metal shell encoder socket U : Communication encoder socket R : Aviation socket Y : Connectors round IP-rated

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

Naming rules for motor cables

Power cable : MOT F - 005-03 - KL -D
① ② ③ ④ ⑤ ⑥

①- Cable function type	MOT: Motor power cable	
②- Cable type	F: The flexible cable Empty: Ordinary cable	
③-Rated current	005: 5A 008: 8A 015: 15A 040: 40A	

④-Cable length	(5): 0.5 m 01: 1 m 02: 2 m 03: 3 m
⑤-Outgoing type of motor	KL: 4PIN power plug KC5: Aviation socket
⑥-Connector types	D: DC servo standard connector SP: SP21 series common aviation plugs B: brake - power integrated cable Empty: Ordinary cable

Encoder cable: ENC H G F - 03 - G U- ☐☐
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①-Cable function type	ENC: Motor encoder wire
②-Drive encoder interface type	H: Three rows of 15 pin connector D: 1394 connector O: Compact quick lock connector
③-Drive interface definition	A: Incremental encoder G: Communication encoder
④-Cable type	F: The flexible cable Empty: Ordinary cable

⑤-Cable length	(5): 0.5 m 01: 1 m 02: 2 m 03: 3 m
⑥-Conductor type	K: 16 core G: 6 core
⑦-Type of motor end encoder connector	U: 1394 connector C0: HFO series common air connector H: Three rows of 15-pin D-Sub encoder connector
⑧-Cable accessories	DC: With battery (suitable for multi-turn absolute value encoder motors) Empty: No battery

Brake cable: BRA F - 03 - KL
① ② ③ ④

①-Cable function type	BRA: Motor brake cable
②-Cable type	F: The flexible cable Empty: Ordinary cable

③-Cable length	(5): 0.5 m 01: 1 m 02: 2 m 03: 3 m
④-Connector types	KL: 2PIN brake connector

Magnetoelectric absolute encoder servo motor and servo drive configuration DC48V)

Power	Servo motor	Description	Brake cable	Power cable	Encoder cable/ Battery cable	Servo drive	
						CANopen	EtherCAT
50W	SMC40S-0005-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-	MOTF-005-LL-SP21	ENCHGF-LL-SP13 ENCHG-(4)-GH-DC★	FD114S-CB-005	FD114S-EB-005
	SMC40S-0005-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				
100W	SMC40S-0010-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-				
	SMC40S-0010-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				
200W	SMC60S-0020-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-			FD124S-CB-005	FD124S-EB-005
	SMC60S-0020-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				
★★★ 400W	SMC60S-0040-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-	MOTF-008-LL-SP21			
★★★	SMC60S-0040-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				
600W	SMC60S-0060-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-	MOTF-015-LL-SP21		FD134S-CB-005	FD134S-EB-005
	SMC60S-0060-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				
★★★ 750W	SMC80S-0075-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-				
★★★	SMC80S-0075-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				
1000W	SMC80S-0100-30QAK-5DSY	Multiturn magnetoelectric absolute value encoder motor	-	MOTF-030-LL-SP21		FD144S-CB-005	FD144S-EB-005
	SMC80S-0100-30QBK-5DSY	Multiturn magnetoelectric absolute value encoder brake motor	BRAF-LL-SP13				

★★★ Voorkeursprogramma

Note:1、"LL" in the power line/brake line/encoder line list indicates the cable length, please refer to the model description.
　　2、★ENCHG-(4)-GH-DC is a necessary battery-powered cable for multi-turn absolute value encoder motors.

2500P/R photoelectric encoder servo motor and servo drive configuration (DC48V)

Power	Servo motor	Description	Brake cable	Power cable	Encoder cable	Servo drive		
						CANopen	RS485+ Pluse	EtherCAT
200W	SMC60S-0020-30AAK-5DSH	2500P/R photoelectric encoder motor	-	MOT-005-LL-KL-D	ENCHA-LL-KH	FD124S-CB-005	FD124S-LB-005	FD124S-EB-005
	SMC60S-0020-30ABK-5DSH	2500P/R photoelectric encoder brake motor	BRA-LL-KL					
400W	SMC60S-0040-30AAK-5DSH	2500P/R photoelectric encoder motor	-	MOT-008-LL-KL-D				
	SMC60S-0040-30ABK-5DSH	2500P/R photoelectric encoder brake motor	BRA-LL-KL					
600W	SMC60S-0060-30AAK-5DSH	2500P/R photoelectric encoder motor	-	MOT-015-LL-KL-D		FD134S-CB-005	FD134S-LB-005	FD134S-EB-005
	SMC60S-0060-30ABK-5DSH	2500P/R photoelectric encoder brake motor	BRA-LL-KL					
750W	SMC80S-0075-30AAK-5DSH	2500P/R photoelectric encoder motor	-					
	SMC80S-0075-30ABK-5DSH	2500P/R photoelectric encoder brake motor	BRA-LL-KL					
1000W	SMC80S-0100-30AAK-5DSH	2500P/R photoelectric encoder motor	-	MOT(F)-030-LL-xx	ENCHx-LL-xx	FD144S-CB-005	FD144S-LB-005	FD144S-EB-005
	SMC80S-0100-30ABK-5DSH	2500P/R photoelectric encoder brake motor	BRA-LL-KL					
***	SMC80S-0120-30AAK-5DSx	2500P/R photoelectric encoder motor	-					
***	SMC80S-0120-30ABK-5DSx	2500P/R photoelectric encoder brake motor	BRA(F)-LL-xx					
1.2kW	SMH110D-0120-30AAK-4DKR	2500P/R photoelectric encoder aviation socket motor	-	MOT-040-LL-KC5	ENCHA-LL-KC0			
	SMH110D-0120-30ABK-4DKR	2500P/R photoelectric encoder aviation socket brake motor	-	MOT-040-LL-KC5-B				
	SMC130D-0120-30AAK-4DKR	2500P/R photoelectric encoder aviation socket motor	-	MOT-040-LL-KC5				
	SMC130D-0120-30ABK-4DKR	2500P/R photoelectric encoder aviation socket brake motor	-	MOT-040-LL-KC5-B				
1.5kW	SMC130D-0150-30AAK-4DKR	2500P/R photoelectric encoder aviation socket motor	-	MOT-040-LL-KC5				
	SMC130D-0150-30ABK-4DKR	2500P/R photoelectric encoder aviation socket brake motor	-	MOT-040-LL-KC5-B				

*** Voorkeursprogramma

Note: "LL" in the power line/brake line/encoder line list indicates the cable length, please refer to the model description.

Ultra-short servo motor and servo drive configuration (DC48V)

Power	Servo motor	Description	Brake cable	Power cable	Encoder cable	Servo drive		
						CANopen	RS485+ Pluse	EtherCAT
200W	SMC60S-0020-30WAK-5DCH	2500P/R incremental magnetoelectric encoder motor	-	MOT-005-LL-KL-D	ENCHA-LL-KH	FD124S-CB-005	FD124S-LB-005	FD124S-EB-005
	SMC60S-0020-30WBK-5DCH	2500P/R incremental magnetoelectric encoder brake motor	BRA-LL-KL					
400W	SMC60S-0040-30WAK-5DCH	2500P/R incremental magnetoelectric encoder motor	-	MOT-008-LL-KL-D				
	SMC60S-0040-30WBK-5DCH	2500P/R incremental magnetoelectric encoder brake motor	BRA-LL-KL					
750W	SMC80S-0075-30WAK-5DCH	2500P/R incremental magnetoelectric encoder motor	-	MOT-015-LL-KL-SP		FD134S-CB-005	FD134S-LB-005	FD134S-EB-005
	SMC80S-0075-30WBK-5DCH	2500P/R incremental magnetoelectric encoder brake motor	BRA-LL-KL					
1000W	SMC80S-0100-30WAK-5DCH	2500P/R incremental magnetoelectric encoder motor	-	MOTF-030-LL-KL-SP	ENCHA-LL-KH	FD144S-CB-000	FD144S-LB-005	FD144S-EB-005
	SMC80S-0100-30WBK-5DCH	2500P/R incremental magnetoelectric encoder brake motor	BRA-LL-KL					

Note: "LL" in the power line/brake line/encoder line list indicates the cable length, please refer to the model description.

Low-voltage high-power servo motor and servo drive configuration (DC48V)

Power	Servo motor	Description	Brake cable	Power cable	Encoder cable	Servo drive		
						CANopen	RS485+ Pluse	EtherCAT
1500W	SMC130D-0150-30WAK-4DSH-2	2500P/R incremental magnetoelectric encoder motor	-	-	-	FD144S-CB-005	FD144S-LB-005	FD144S-EB-005
	SMC130D-0150-30WBK-4DSH-2	2500P/R incremental magnetoelectric encoder brake motor						
2500W	SMC130D-0250-30WAK-4DSH-2	2500P/R incremental magnetoelectric encoder motor				FD164S-CB-000	-	-
	SMC130D-0250-30WBK-4DSH-2	2500P/R incremental magnetoelectric encoder brake motor						
3000W	SMC130D-0300-30WAK-4DSH-2	2500P/R incremental magnetoelectric encoder motor						
	SMC130D-0300-30WBK-4DSH-2	2500P/R incremental magnetoelectric encoder brake motor						
	SMC130D-0300-20WAK-4DSH-2	2500P/R incremental magnetoelectric encoder motor						
	SMC130D-0300-20WBK-4DSH-2	2500P/R incremental magnetoelectric encoder brake motor						

Note: In this table, SMC130 motor body out of 2 meters, directly connected to the drive.No need for additional adapter cable.
    If you need longer cable, please contact local sales.

FD1X4S technical specifications table

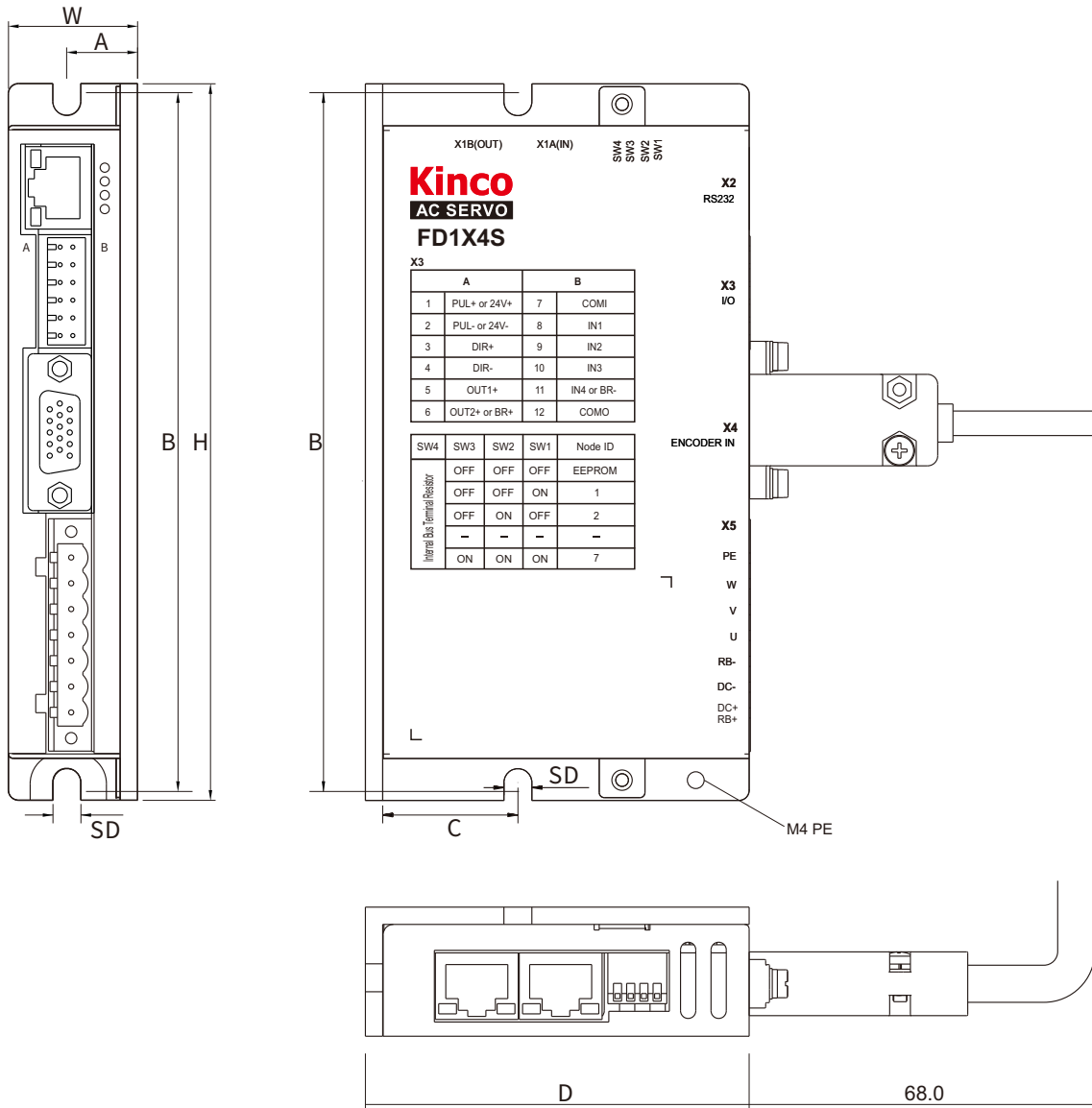| Model parameters		FD1X4S servo drive technical parameter table				
		FD114S-□B-00■	FD124S-□B-00■	FD134S-□B-00■	FD144S-□B-00■	FD164S-CB-000
Rated input voltage		24VDC~60VDC				
Rated output current	Maximum continuous output current (rms)	5Arms	15Arms (Up to 12Arms without auxiliary radiator)	25Arms (Up to 20Arms without auxiliary radiator)	40Arms Up to 30Arms without auxiliary radiator)	80Arms (Up to 60Arms without auxiliary radiator)
	Peak current (PEAK)	12Ap	48Ap	80Ap	120Ap	240Ap
Feedback signal		2500P/R (incremental differential 5V encoder):magnetic encoder;absolute encoder (for FD1X4S-CB-005 and FD1X4S-EB-005)				
Brake chopper		An external braking resistor (depending on the working conditions, mainly used for quick start and stop), the braking voltage absorption point is 73V (FD164S is 63V) (software setting).				
Brake chopper threshold		DC73V ± 2V (default value, can be set)				DC63V ± 2V (default value, can be set)
Over-voltage alarm voltage		DC83V ± 2V				DC70V ± 2V
Under-voltage alarm voltage		DC18V±2V				DC18V ± 2V
Cooling method		Natural cooling Remark1：The output currents of FD124S, FD134S and FD144S are 15Arms, 25Arms and 40Arms respectively. The value measured on an oxide black 6063 aluminum plate of 300mm*300mm*10mm. 2：The output current of FD164S is 80Arms, the drive needs to be installed on the auxiliary radiator. The length*width*height is the value measured on an oxide black 6063 aluminum plate of 400mm*400mm*10mm.				
Weight(Kg)		0.3	0.3	0.6	0.9	1.68
General functions	Input specification	4-channel digital input, common to COMI terminal, high level: 12.5-30VDC, low level: 0-5VDC, maximum frequency: 1KHz, input impedance: 5KΩ.(the brake motor drive is a 3-way digital input)				
	Input function	Freely define as needed, the functions are as follows: drive enable, drive error reset, drive working mode control, speed loop proportional control, positive limit, negative limit, origin signal, command reversal, internal speed segment control, internal position segment control , emergency stop, start to find origin, command activation, electronic gear ratio switching, gain switching				
	Output specification	2 digital outputs, brake motor drive is 1 digital signal output				
	Pulse direction control	Pulse+direction, CCW+CW, A phase+B phase (5V～24V) Note: Only FD1X4S-L□-000 supports this function				-
	Output function	Freely define according to needs, the functions are as follows: drive ready, drive error, motor position arrives, motor zero speed, motor holding brake, motor speed arrives, index Z signal appears, maximum speed limit reached in torque mode, motor lock shaft, motor limit bit center, origin found				
	RS232	The default baud rate is 38400 and the maximum baud rate is 115.2K. Can use Kinco host computer software for linking, or use custom protocol to communicate with the controller				
	Protective function	Overvoltage protection, undervoltage protection, motor overheating (I2T) protection, short circuit protection, drive overheating protection, etc.				
Bus function	Modbus/RS485	Maximum support 115.2K baud rate, can use Modbus RTU protocol to communicate with the controller				-
	CAN BUS	Maximum support 1M baud rate, can use CANopen protocol to communicate with the controller				
	EtherCAT	Support CoE (CiA402 protocol) and CSP/CSV/PP/PV/PT/HM mode, the communication speed is 100M.				-
Use environment	Operating temperature	0～40℃				
	Storage temperature	– 10℃～70℃				
	Humidity (no condensation)	Below 90%RH				
	Protection level	IP20				
	Installation site	Dust-free and dry place (such as electrical cabinet)				
	Installation method	Vertical installation or horizontal installation				
	Height	The rated working altitude is below 1000m. When the working altitude is above 1000m, every 100m rise, it needs to be derated by 1.5%. The maximum working altitude is 4000m above sea level.				
	Atmospheric pressure	86kpa～106kpa				

Note：
1、□=L：Communication port RS232, RS485, pulse   2、00■=005：Matching absolute value encoder motor
　　□=C：Communication port RS232, CANopen
　　□=E：Communication port RS232, EtherCAT

FD1X4S Drive mechanical dimension diagram

Note：Wiring is needed around the drive，Recommend leaving distance>60mm

Kinco
AC SERVO
FD1X4S

X1B(OUT) X1A(IN) SW4 SW3 SW2 SW1

X2
RS232

X3

	A		B
1	PUL+ or 24V+	7	COMI
2	PUL- or 24V-	8	IN1
3	DIR+	9	IN2
4	DIR-	10	IN3
5	OUT1+	11	IN4 or BR-
6	OUT2+ or BR+	12	COMO

X3
I/O

SW4	SW3	SW2	SW1	Node ID
OFF	OFF	OFF	OFF	EEPROM
	OFF	OFF	ON	1
	OFF	ON	OFF	2
	--	--	--	--
	ON	ON	ON	7

Internal Bus Terminal Resistor

X4
ENCODER IN

X5
PE
W
V
U
RB-
DC-
DC+
RB+

M4 PE

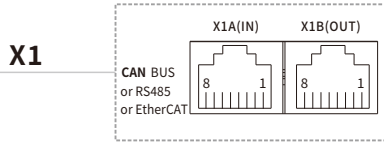| Model	Outline dimension (mm)			Installation dimension (mm)			Mounting aperture SD (mm)
	H	W	D	A	B	C	
FD114S	141	25.4	75.5	14	137.5	30	5.5
FD124S	141	25.4	75.5	14	137.5	30	5.5
FD134S	174.6	31	100.5	18	168	70	5.8
FD144S	200	35.8	100.5	18	193.4	70	5.8

FD164S Drive mechanical dimension diagram

Note：Wiring is needed around the drive，recommend leaving distance>60mm

145.00 mm 80.00 mm 25.00 mm

31.00 mm 65.13 mm

5.50 mm

Connector cable space
(Terminal trace area)

X1B (OUT) X1A (IN) SW4 SW1 SW3 SW2 X2 RS232

（Fasten the screw retention slot）

Kinco
AC SERVO
FD164S

X3 I/O

X4 ENCODER IN

X3

PIN	CA/EA	CB/EB	LA	LB
1	24V+	24V+	PUL+	PUL+
2	24V-	24V-	PUL-	PUL-
3	NC	NC	DIR+	DIR+
4	NC	NC	DIR-	DIR-
5	OUT1+			
6	OUT2+	BR+	OUT2+	BR+
7	COM1			
8	IN1			
9	IN2			
10	IN3			
11	IN4	BR-	IN4	BR-
12	COM0			

X5

PE

W

V

U

RB-

DC-

DC+ RB+

SW4	SW3	SW2	SW1	Node ID
Internal BUS Terminal Resistor	OFF	OFF	OFF	EEPROM
	OFF	OFF	ON	1
	OFF	ON	OFF	2
	—	—	—	—
	ON	ON	ON	7

Note: The EtherCAT type does not have a pull switch

225.20 mm 240.00 mm

11.50 mm

M4-PE
(Grounding screw holes)

Ø5.5mm (Fasten the screw fixing holes)
Ø12mm (Screw head vias)

50.20 mm

5.50 mm(2X)

50.20 mm

25.20 mm

3.30 mm 233.40 mm 3.30 mm

FD1X4S servo drive wiring port description

Bus communication interface — **X1**

Pin No.	RS485	EtherCAT	CAN
1	RX	TD+	CAN_H
2	/RX	TD-	CAN_L
3	GND	RD+	GND
4	/TX	\	\
5	TX	\	\
6	\	RD-	\
7	\	\	\
8	GND	\	\

Communication interface RS232 — **X2**
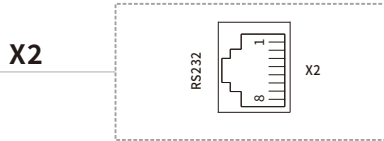
Pin No.	Signal
1	\
2	\
3	TXD
4	GND
5	\
6	RXD
7	\
8	\

Digital signal input/output port — **X3**
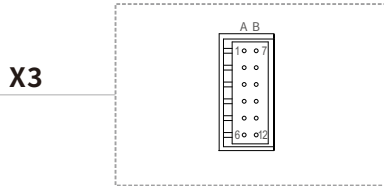
Pin No.	Communication port		FD1X4S-CB-000 FD1X4S-EB-000	FD1X4S-LB-000
	DIN	DOUT		
1			24V+	PUL+
2			24V-	PUL-
3			\	DIR+
4			\	DIR-
5		OUT1+		
6			BR+	BR+
7	COMI			
8	IN1			
9	IN2			
10	IN3			
11			BR-	BR-
12		COMO		

| X3		
	PUL+、PUL-、DIR+、DIR-	Pulse signal input terminal Input voltage: 3.3V~24V Maximum frequency: 500KHz
	24V+、24V-	FD1X4S-C □ - 000 and FD1X4S-E □ - 000 do not support pulse control, X3 port pins 1 and 2 are multiplexed as 24V logic power input ports.
	OUT1+、OUT2+、COMO	Digital signal output terminal Maximum output current: 100mA
	IN1、IN2、IN3、IN4、COMI	Digital signal output terminal Maximum output current: 100mA digital signal input terminal High level: 12.5VDC~30VDC Low level: 0VDC~5VDC Input frequency:<1KHz
	BR+、BR-	FD114S-□B-000&FD124S-□B-000, the rated output current of the brake port is 0.5Arms; FD134S-□B-000, the rated output current of the brake port is 0.8Arms; FD144S-□B-000, the rated output current of the brake port is 1Arms; FD164S-CB-000, the rated output current of the brake port is 1.2Arms;

FD1X4S servo drive wiring port description

FD114S, FD124S, FD134S, FD144S, FD164S input and output terminal X3 wiring diagram

DC24V drive logic power supply is positive
DC0V drive logic power supply is negative

Input common terminal

Digital signal input	COMI	7	
	IN1	8	
	IN2	9	
	IN3	10	

5	OUT1+	Drive ready
12	COMO	Output common terminal
6	BR+	
11	BR-	

Digital signal output

Motor brake

Pulse command (<500KHz)

PUL+/CW+/A+
PUL-/CW-/A-
DIR+/CCW+/B+
DIR-/CCW-/B-

PUL+	1
PUL-	2
DIR+	3
DIR-	4
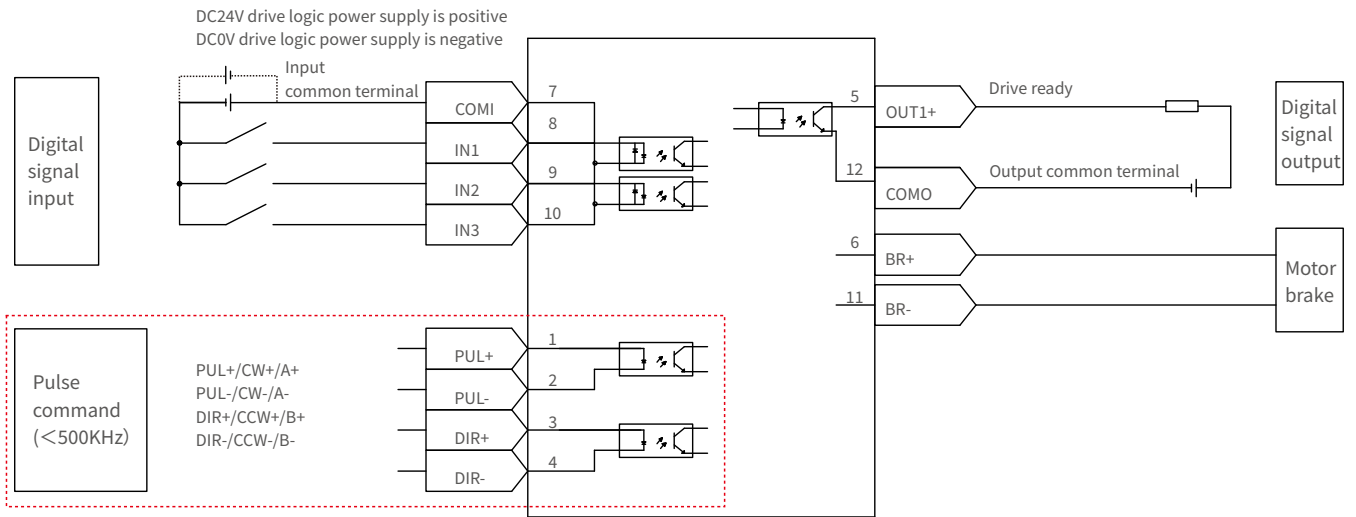
Notes:
FD1X4S-CB-00○ and FD1X4S-EB-000 do not hold pulse control;
FD1X4S-LB-00○ There is no 24V logic power supply.

Motor encoder input interface   **X4**
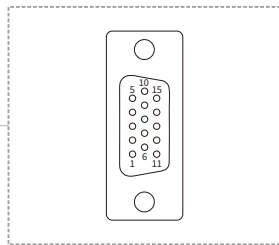
Pin No.	Incremental encoder signal	Communication type magneto-electric encoder signal
1	+5V	VDD
2	GND	GND
3	\	\
4	U	\
5	/U	\
6	Z	\
7	B	\
8	A	\
9	W	SLO__P+
10	V	MA__P+
11	/Z	\
12	/B	\
13	/A	\
14	/W	SLO__N-
15	/V	MA__N-

A new generation of G2 series servo motor

New electromagnetic design
The design adopts 12 slots and 10 poles, with small cogging torque and low torque ripple, which is conducive to reducing vibration during motor operation and making torque output more stable.

New structure and short fuselage
The fuselage structure is redesigned and the length of the fuselage is shortened, which can save more installation space for customer equipment and reduce equipment size.

The latest magnetoelectric coding technology
The independently designed magnetoelectric encoder has good shock resistance and high cost performance.

Insulation class F
The motor is at the highest level of insulation in the industry, and it can maintain high reliability and stability in high temperature extreme environments.
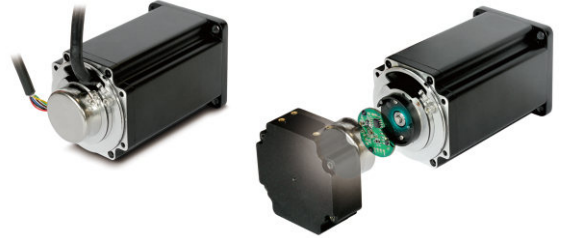
Low-voltage servo motor specification model table (DC48V)

Flange dimension (mm)	Servo motor model	Encoder type	Rotational inertia Jm(Kg·cm²)	Rated power Pn(W)	Rated torque Tn(Nm)	Rated current In(A)	Rated rotation speed nN(rpm)
40x40	SMC40S-0005-30M☐K-5DSU	Magnetoelectric encoder	0.018 (0.021)	50	0.16	1.5	3000
	SMC40S-0005-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
	SMC40S-0010-30M☐K-5DSU	Magnetoelectric encoder	0.033 (0.036)	100	0.32	3.2	
	SMC40S-0010-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
60x60 ★★★	SMC60S-0020-30M☐K-5DSU	Magnetoelectric encoder	0.2 (0.204)	200	0.64	5.7	
	SMC60S-0020-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
	SMC60S-0020-30A☐K-5DSH	2500P/R Photoelectric encoder					
	SMC60S-0020-30W☐K-5DCH	2500P/R incremental magnetoelectric encoder motor	0.11(0.114)				
	SMC60S-0040-30M☐K-5DSU	Magnetoelectric encoder	0.38 (0.384)	400	1.27	10.6	
	SMC60S-0040-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
	SMC60S-0040-30A☐K-5DSH	2500P/R Photoelectric encoder					
	SMC60S-0040-30W☐K-5DCH	2500P/R incremental magnetoelectric encoder motor	0.26 (0.264)				
	SMC60S-0060-30M☐K-5DSU	Magnetoelectric encoder	0.65 (0.654)	600	1.91	16.5	
	SMC60S-0060-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
	SMC60S-0060-30A☐K-5DSH	2500P/R Photoelectric encoder					
80x80	★★★ SMC80S-0075-30M☐K-5DSU	Magnetoelectric encoder	1.027(1.099)	750	2.39	19.9	
	SMC80S-0075-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
	SMC80S-0075-30A☐K-5DSH	2500P/R Photoelectric encoder					
	SMC80S-0075-30W☐K-5DCH	2500P/R incremental magnetoelectric encoder motor	0.77(0.84)				
	SMC80S-0100-30M☐K-5DSU	Magnetoelectric encoder	1.36(1.41)	1000	3.18	26.4	
	SMC80S-0100-30Q☐K-5DSY	Multiturn magnetoelectric absolute value encoder					
	SMC80S-0100-30A☐K-5DSH	2500P/R Photoelectric encoder					
	SMC80S-0100-30W☐K-5DCH	2500P/R incremental magnetoelectric encoder motor	1.027(1.099)				
	★★★ SMC80S-0120-30A☐K-5DSx		1.36(1.41)	1200	3.82	34	
110x110	SMH110D-0120-30A☐K-4DKR	2500P/R Photoelectric encoder	5.8(6.1)	1200	4	32	
130x130	SMC130D-0120-30A☐K-4DKR		7.4(7.5)		3.8	31.6	
	SMC130D-0150-30A☐K-4DKR		12(12.1)	1500	5	37.5	
	SMC130D-0150-30W☐K-4DSH-2	2500P/R incremental magnetoelectric encoder motor	11.5(11.5)	1500	5	42.4	
	SMC130D-0250-30W☐K-4DSH-2		17.1(17.1)	2500	7.96	61	
	SMC130D-0300-30W☐K-4DSH-2		22.6(22.6)	3000	9.55	72	
	SMC130D-0300-20W☐K-4DSH-2		35.9 (35.9)	3000	14.3	77.7	2000

★★★ Voorkeursprogramma

Note 1: Operating environment
     Temperature: -20~40°C (no freezing)
     Humidity: below 90%RH (no condensation)
     Environment: keep away from corrosion, flammable gases, oil droplets, dust
     Altitude: 1000~4000m, every 100m increase, power decreases by 1.5%
     Protection class: (1) body IP65, shaft end (without oil seal) IP54 Shaft end installation oil seal IP65
          (2) for oil seal installation, please refer to the product instruction manual
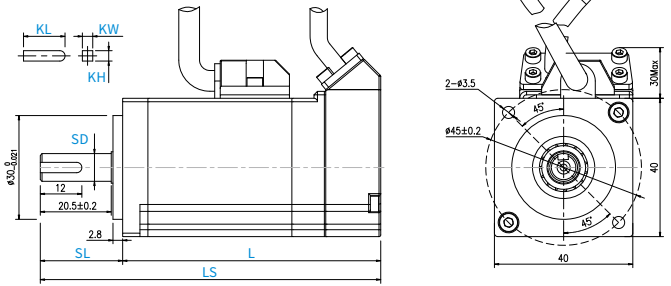   Energy efficiency class: class 2
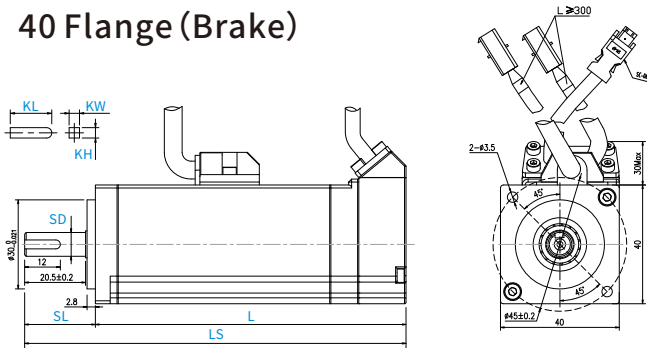
Note 2: ☐=A:Without brake
     ☐=B: With brake

Note 3: The values in parentheses in the moment of inertia column are the values of the moment of inertia column of the brake motor
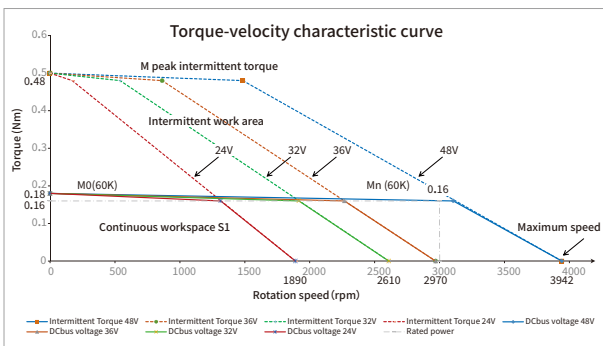
40 Flange

40 Flange（Brake）

Flange dimension (mm)	Servo motor	Brake	Weight (KG)	Overall dimension (mm)		Shaft dimension (mm)			Key dimension (mm)		
				LS	L	SL	SD	Screw hole x depth	KL	KW	KH
40x40	SMC40S-0005-30MAK-5DSU		0.4	98.4±1.5	74.6±1.5	23.8±0.8	8	M3x6	12	3	3
	SMC40S-0005-30QAK-5DSU			98±1.5	74.2±1.5						
	SMC40S-0005-30MBK-5DSU	✓	0.6	128.4±1.5	104.6±1.5						
	SMC40S-0005-30QBK-5DSU			128±1.5	104.2±1.5						
	SMC40S-0010-30MAK-5DSU		0.57	120.4±1.5	96.6±1.5						
	SMC40S-0010-30QAK-5DSU			120±1.5	96.2±1.5						
	SMC40S-0010-30MBK-5DSU	✓	0.77	150.4±1.5	126.6±1.5						
	SMC40S-0010-30QBK-5DSU			150±1.5	126.2±1.5						

50W

100W
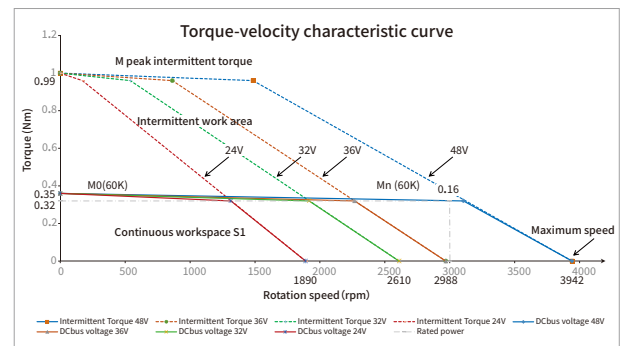
60 Flange
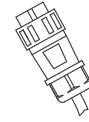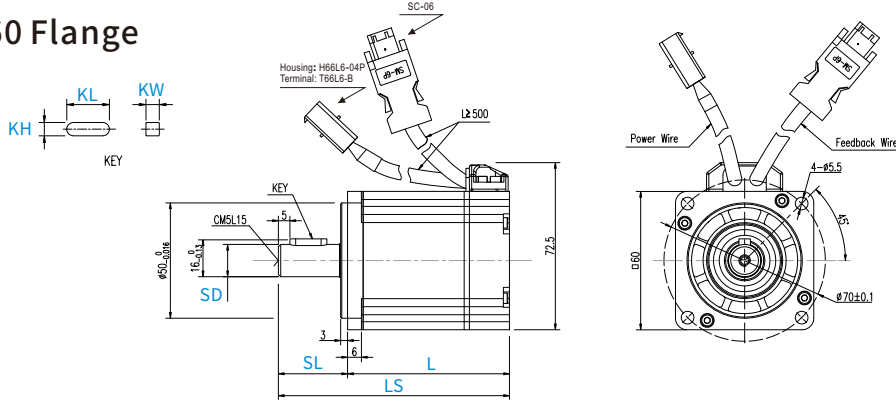
60 Flange（Brake）

（SP connector）
600W servo motor power aviation socket
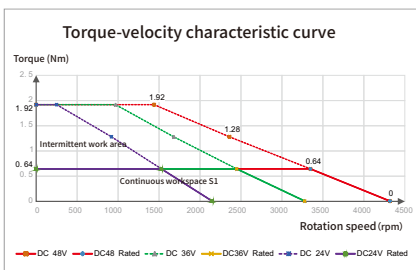
（1394 connector）
Communication encoder socket
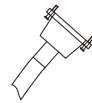
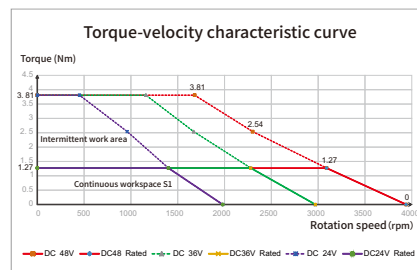Three rows of 15-pin
metal case encoder sockets
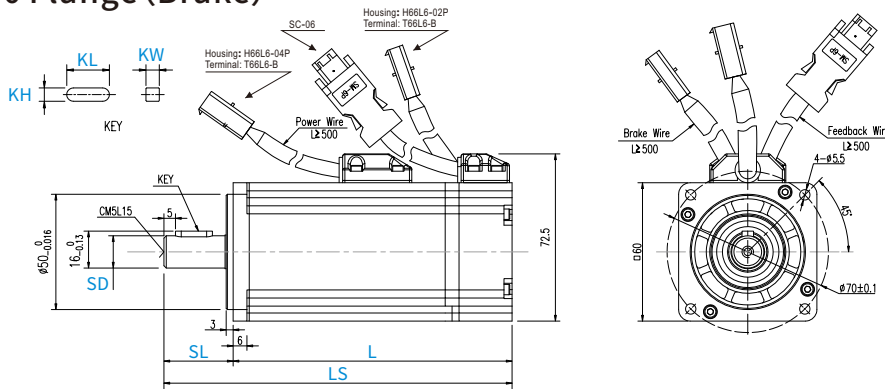
Flange dimension (mm)	Servo motor	Brake	Weight (KG)	Overall dimension (mm)		Shaft dimension (mm)			Key dimension (mm)		
				LS	L	SL	SD	Screw hole x depth	KL	KW	KH
60x60	SMC60S-0020-30MAK-5DSU		0.9	105±1.5	75±1.5	30±1	14	M5x15	16	5	5
	SMC60S-0020-30QAK-5DSU										
	SMC60S-0020-30AAK-5DSH			116.5±1.5	86.5±1.5						
	SMC60S-0020-30WAK-5DCH		0.6	81.5±1.5	51.5±1.5						
	SMC60S-0020-30MBK-5DSU	✓	1.2	142.5±1.5	112.5±1.5						
	SMC60S-0020-30QBK-5DSU										
	SMC60S-0020-30ABK-5DSH		1.3	152.5±1.5	122.5±1.5						
	SMC60S-0020-30WBK-5DCH		1.2	114±1.5	84±1.5						
	SMC60S-0040-30MAK-5DSU		1.2	127±1.5	97±1.5						
	SMC60S-0040-30QAK-5DSU										
	SMC60S-0040-30AAK-5DSH			138.5±1.5	108.5±1.5						
	SMC60S-0040-30WAK-5DCH		0.9	101.5±1.5	71.5±1.5						
	SMC60S-0040-30MBK-5DSU	✓	1.6	164.5±1.5	134.5±1.5						
	SMC60S-0040-30QBK-5DSU										
	SMC60S-0040-30ABK-5DSH			174±1.5	144±1.5						
	SMC60S-0040-30WBK-5DCH		1.4	134±1.5	104±1.5						
	SMC60S-0060-30MAK-5DSU		1.9	167.5±1.5	132.5±1.5						
	SMC60S-0060-30QAK-5DSU										
	SMC60S-0060-30AAK-5DSH			174±1.5	144±1.5						
	SMC60S-0060-30MBK-5DSU	✓	2.3	197.5±1.5	167.5±1.5						
	SMC60S-0060-30QBK-5DSU										
	SMC60S-0060-30ABK-5DSH			207±1.5	177±1.5						

200W

Torque-velocity characteristic curve

400W

Torque-velocity characteristic curve

600W

Torque-velocity characteristic curve

80 Flange

（1394 connector）
Communication encoder socket

Three rows of 15-pin
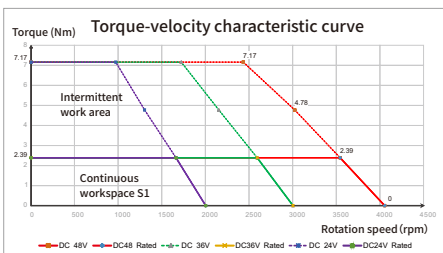metal case encoder sockets
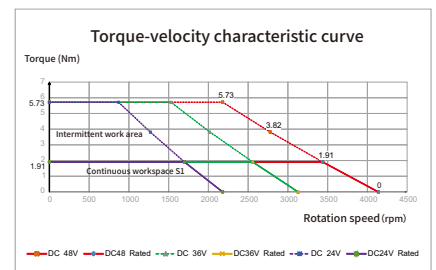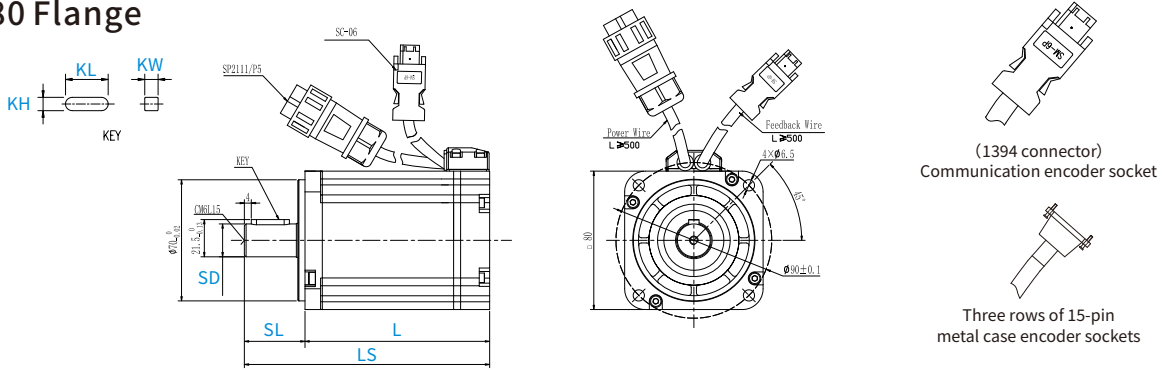
80 Flange（Brake）
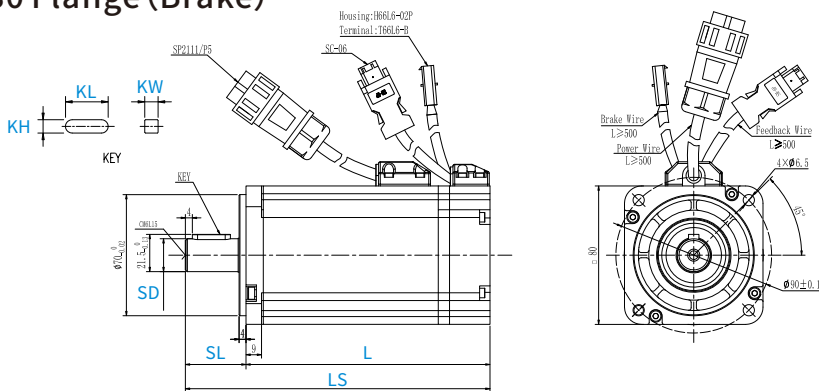
Flange dimension (mm)	Servo motor	Brake	Weight (KG)	Overall dimension (mm)		Shaft dimension (mm)			Key dimension (mm)		
				LS	L	SL	SD	Screw hole x depth	KL	KW	KH
80x80	SMC80S-0075-30MAK-5DSU		2.3	141.7±1.5	106.7±1.5	35±1	19	M6x15	22	6	6
	SMC80S-0075-30QAK-5DSU		2.5	141.7±1.5	106.7±1.5						
	SMC80S-0075-30AAK-5DSH		2.4	153.2±1.5	118.2±1.5						
	SMC80S-0075-30WAK-5DCH		1.8	118.5±1.5	83.5±1.5						
	SMC80S-0075-30MBK-5DSU	✓	3	176±1.5	141±1.5						
	SMC80S-0075-30QBK-5DSU	✓	3	176±1.5	141±1.5						
	SMC80S-0075-30ABK-5DSH	✓	3.2	185±1.5	150±1.5						
	SMC80S-0075-30WBK-5DCH	✓	2.9	151.9±1.5	116.9±1.5						
	SMC80S-0100-30MAK-5DSU		2.8	157.7±1.5	122.7±1.5						
	SMC80S-0100-30QAK-5DSU		2.8	157.7±1.5	122.7±1.5						
	SMC80S-0100-30AAK-5DSH		3	169.2±1.5	134.2±1.5						
	SMC80S-0100-30WAK-5DCH		2.2	130.5±1.5	95.5±1.5						
	SMC80S-0100-30MBK-5DSU	✓	3.3	192±1.5	157±1.5						
	SMC80S-0100-30QBK-5DSU	✓	3.3	192±1.5	157±1.5						
	SMC80S-0100-30ABK-5DSH	✓	3.6	201±1.5	166±1.5						
	SMC80S-0100-30WBK-5DCH	✓	3	163.9±1.5	128.9±1.5						
	SMC80S-0120-30AAK-5DSH		2.8	169±1.5	134.2±1.5						
	SMC80S-0120-30ABK-5DSH	✓	3.3	201±1.5	166±1.5						

750W

Torque-velocity characteristic curve

1000W

Torque-velocity characteristic curve

1200W

Torque-velocity characteristic curve
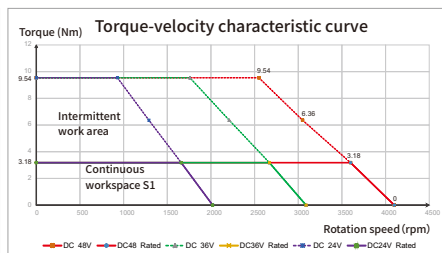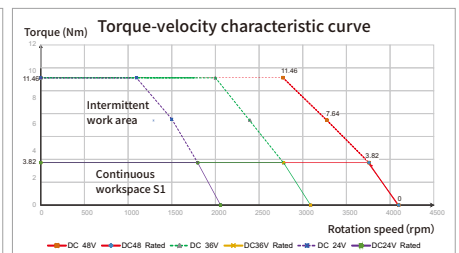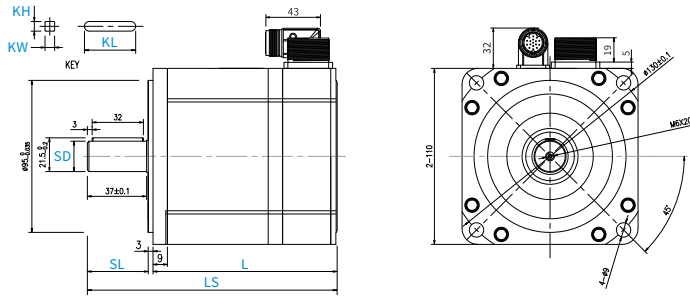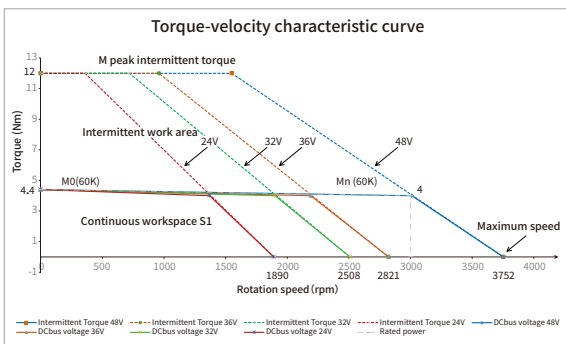
110 Flange

110 Flange（Brake）
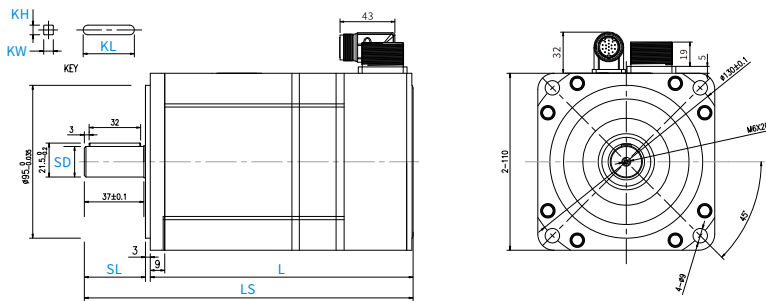
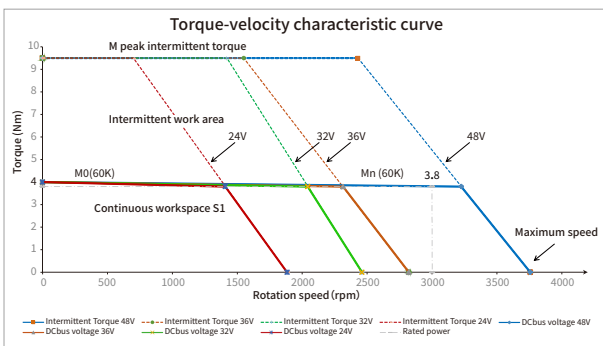| Flange dimension (mm)	Servo motor	Brake	Weight (KG)	Overall dimension (mm)		Shaft dimension (mm)			Key dimension (mm)		
				LS	L	SL	SD	Screw hole x depth	KL	KW	KH
110x110	SMH110D-0120-30AAK-4DKR		6.2	206±1.5	168±1.5	38±1	19	M6x18	32	6	6
	SMH110D-0120-30ABK-4DKR	✓	7.2	266±1.5	228±1.5						

Note: The minimum installation size shall refer to the MOT-040-LL-KC5 slot height of the power cable

1.2kW

Torque-velocity characteristic curve

130 Flange

130 Flange (Brake)
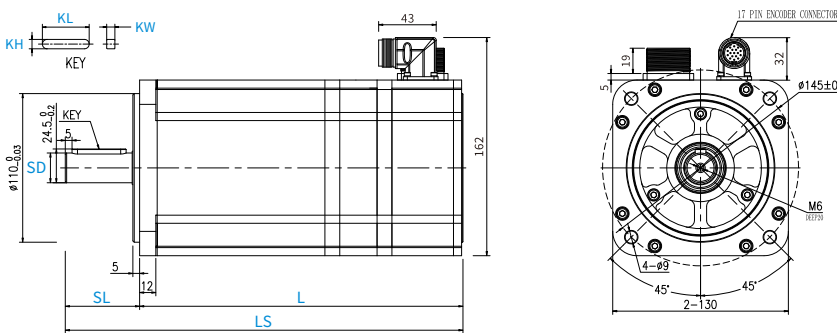
Flange dimension (mm)	Servo motor	Brake	Weight (KG)	Overall dimension (mm)		Shaft dimension (mm)			Key dimension (mm)		
				LS	L	SL	SD	Screw hole x depth	KL	KW	KH
130x130	SMC130D-0120-30AAK-4DKR		6.2	202±1.5	147±1.5	55±1	22	M6x18	40	6	6
	SMC130D-0120-30ABK-4DKR	✓	8.5	263±1.5	208±1.5						
	SMC130D-0150-30AAK-4DKR		7.5	218±1.5	163±1.5						
	SMC130D-0150-30ABK-4DKR	✓	9.8	279±1.5	224±1.5						

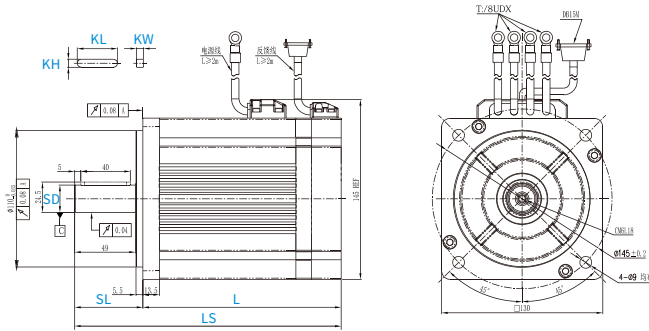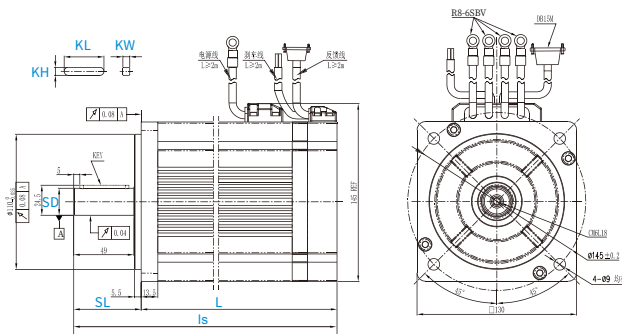Note: The minimum installation size shall refer to the MOT-040-LL-KC5 slot height of the power cable

1.2kW

1.5kW
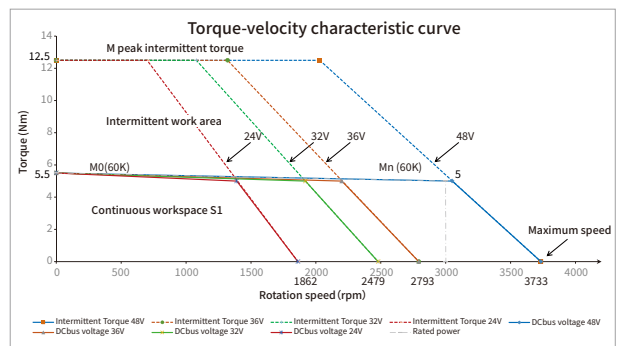
## 130 Flange (incremental magnetoelectric encoder)

130 Flange (incremental magnetoelectric encoder)(brake)

| Flange dimension (mm)	Servo motor	Brake	Weight (KG)	Overall dimension (mm)		Shaft dimension (mm)			Key dimension (mm)		
				LS	L	SL	SD	Screw hole x depth	KL	KW	KH
130x130	SMC130D-0150-30WAK-4DSH-2		6.1	195±1.5	140±1.5	55±1	22	M6x18	40	6	6
	SMC130D-0150-30WBK-4DSH-2	✓	8	211±1.5	156±1.5						
	SMC130D-0250-30WAK-4DSH-2		7.6	215±1.5	160±1.5						
	SMC130D-0250-30WBK-4DSH-2	✓	9.6	231±1.5	176±1.5						
	SMC130D-0300-30WAK-4DSH-2		9	235±1.5	180±1.5						
	SMC130D-0300-30WBK-4DSH-2	✓	11	251±1.5	196±1.5						
	SMC130D-0300-20WAK-4DSH-2		11.9	275±1.5	220±1.5						
	SMC130D-0300-20WBK-4DSH-2	✓	14.3	291±1.5	236±1.5						

1.5kW
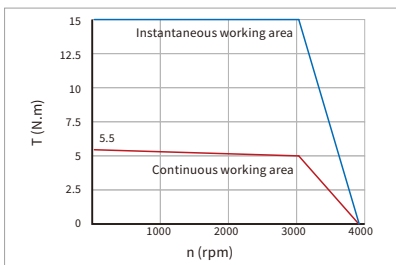
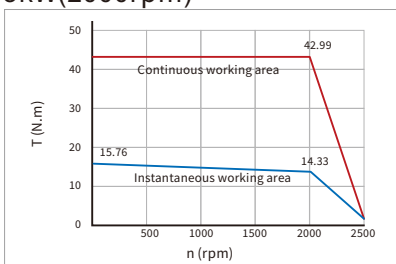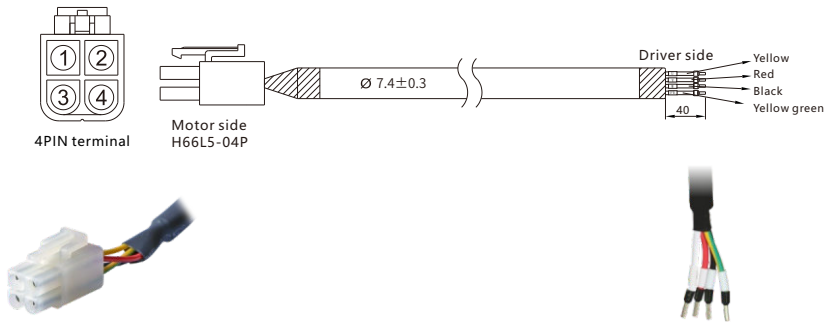### 2.5kW
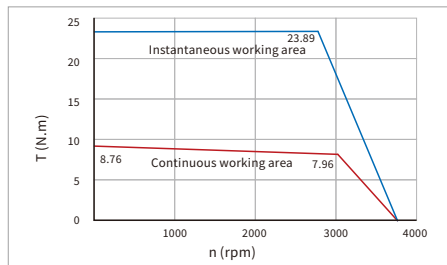
3kW(3000rpm)
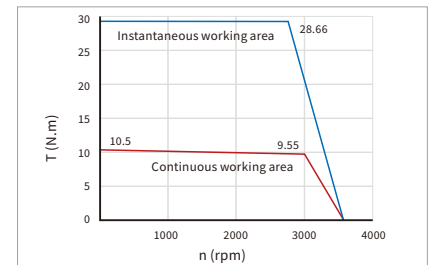
3kW(2000rpm)

MOT-005-LL-KL-D

Wire spec：4C×18AWG(41/0.16T)-PVC
18AWG cross sectional area 0.8107mm²

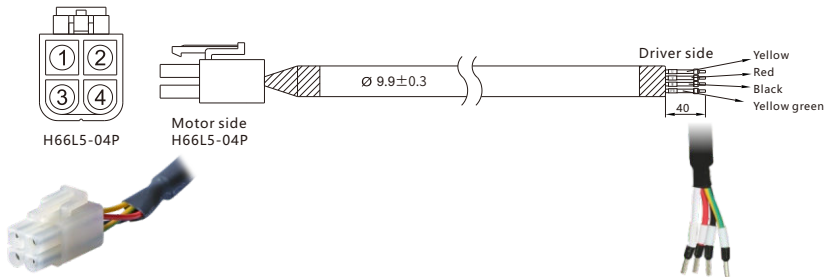| MOT-005-LL-KL-D		
Color	Signal	4PIN plug
white	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow green	PE	PIN4

Corresponding accessory：MOT-KL

Corresponding flexible cable **MOTF-005-LL-KL-D**
Wire specification：4C×18AWG(7/18/0.10T) 500 million times
Wire diameter：7.3±0.5mm

MOT-008-LL-KL-D

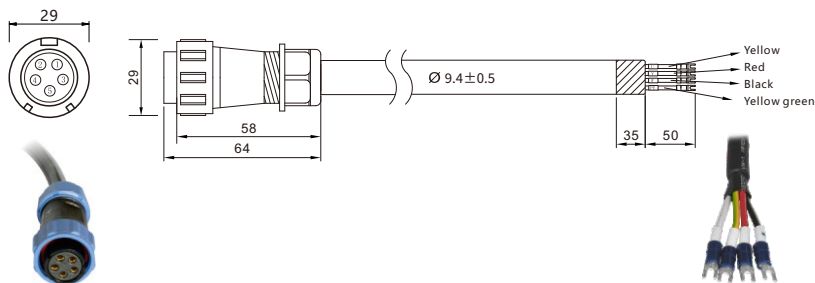Wire spec：4×16AWG
16AWG cross sectional area 1.318mm²

MOT-008-LL-KL-D		
Color	Signal	H66L5-04P
white	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow green	PE	PIN4

Corresponding accessory：MOT-KL

Corresponding flexible cable **MOTF-008-LL-KL-D**
Wire specification：4×1.5mm², BLACK
Wire diameter：9.3±0.5mm

MOT-015-LL-KL-SP

Wire spec：4×14AWG(50/0.25T)
14AWG cross sectional area 2.075mm²

MOT-015-LL-KL-SP		
Color	Signal	5PIN Air insertion
white	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow green	PE+Shielding	PIN4
NC	NC	PIN5

Corresponding accessory：MOT-015-KL-SP

Corresponding flexible cable **MOTF-015-LL-KL-SP**
Wire specification: 4C*14AWG(266/0.10B) five million times
Wire diameter:11.7±0.5mm

MOT-015-LL-KL-SP-1

Wire spec：4×14AWG(50/0.25T)
14AWG cross sectional area 2.075mm²

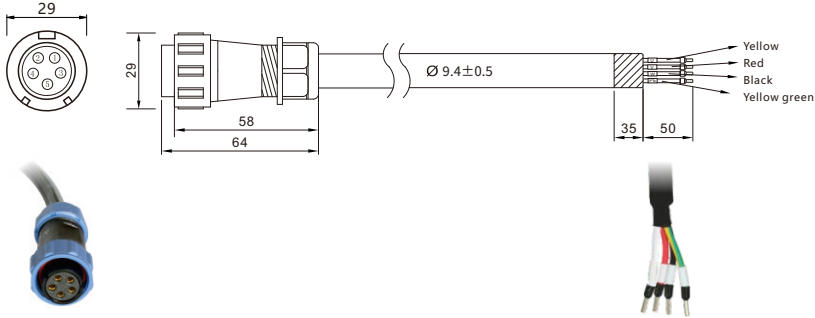| MOT-015-LL-KL-SP-1		
Color	Signal	5PIN Air insertion
white	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow green	PE+Shielding	PIN4
NC	NC	PIN5

Corresponding accessory：MOT-015-KL-SP
Corresponding flexible cable **MOTF-015-LL-KL-SP-1**
Wire specification: 4C*14AWG(266/0.10B) five million times
Wire diameter:11.7±0.5mm

MOTF-030-LL-KL-SP

Wire spec：UL2261 4×12AWG(500万次)
12AWG cross sectional area 3.332mm²
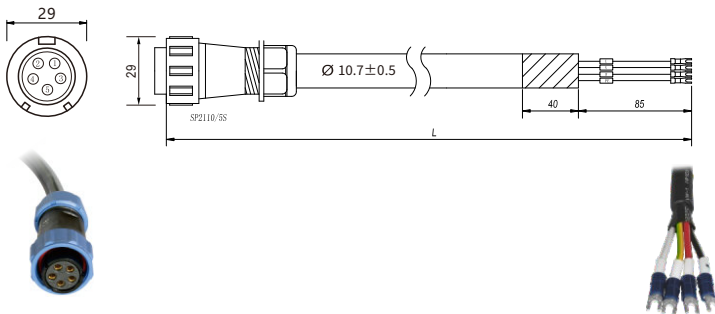
MOTF-030-LL-KL-SP		
Color	Signal	5PIN Air insertion
white	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellowgreen+Shielding	PE+Shielding	PIN4
NC	NC	PIN5

MOT-040-LL-KC5

Wire spec：3cx10AWG+3X19AGW
10AWG cross sectional area 5.26mm²
19AWG cross sectional area 0.5667mm²

Twist the final position
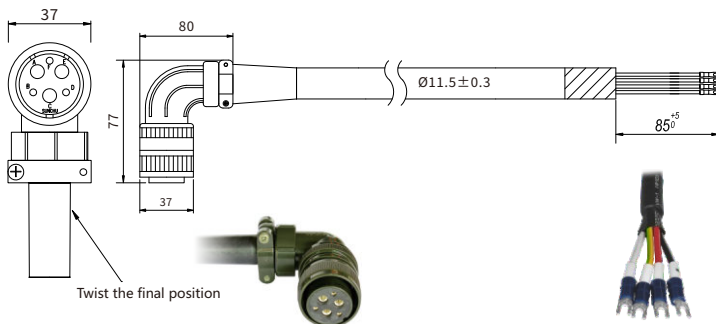
MOT-040-LL-KC5		
Color	Signal	Air insertion
white	U	PINA
Red	V	PINE
Green	W	PINC
Yellow green	PE	PINF
Shielding wire	Shielding	Metal ring

Corresponding accessory：MOT-KC5-B

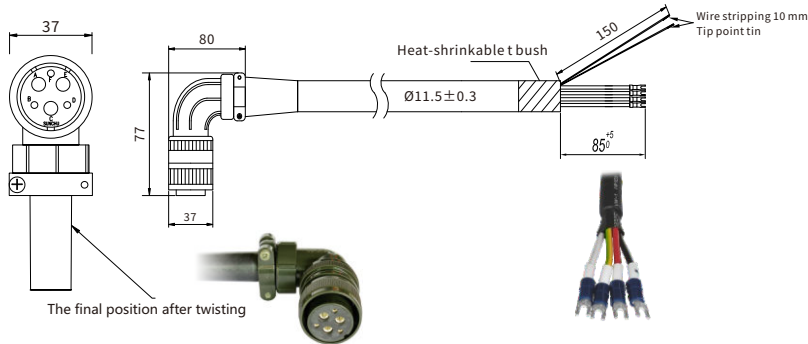## MOT-040-LL-KC5-B

Wire spec：3cx10AWG+3X19AGW
10AWG cross sectional area 5.26mm^2
19AWG cross sectional area 0.5667mm^2

The final position after twisting

MOT-040-LL-KC5-B		
Color	Signal	Air insertion
white	U	PINA
Red	V	PINE
Black	W	PINC
Yellowgreen	PE	PINF
Red	Brake+	PINB
Blue	Brake-	PIND
shielding	shielding	Shell

Corresponding accessory：MOT-KC5-B

ENCHG-(4)-GU-DC

Wire spec：3×2×0.2mm^2

SC-06 Male
Motor side

Battery compartment

Three row15PIN DB Female
Driver side
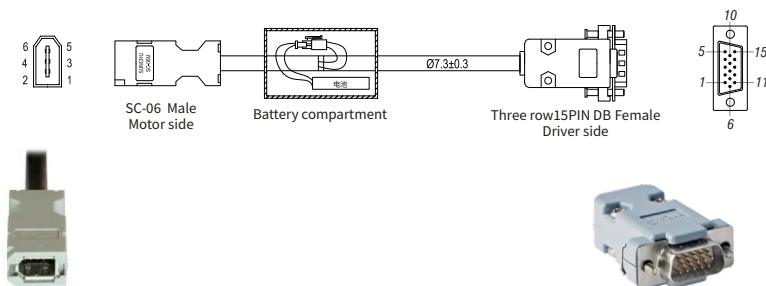
ENCHG-(4)-GU-DC					
SC-06F	Color	Black HSG	External single wire	Signal	DB15 Female
PIN1	Red			+5V	PIN1
PIN2	Black			GND	PIN2
PIN3	Brown	PIN1	Red	BAT+	
PIN4	Blue	PIN2	Black	BAT-	
PIN5	Yellow			SD	PIN9
PIN6	Green			/SD	PIN14
Shell	Shielded wire			Shielding	Shell

ENCDG-LL-GU

Wire spec：1P*20AWG(26/0.16T)+2P*24AWG(11/0.16T) (OD 7.4mm)
20AWG cross sectional area 0.5189mm^2
24AWG cross sectional area 0.2047mm^2

SC-06 F Male
Motor side

Wire diameter：
Φ8.3±0.3mm

SC-06 M Female
Driver side
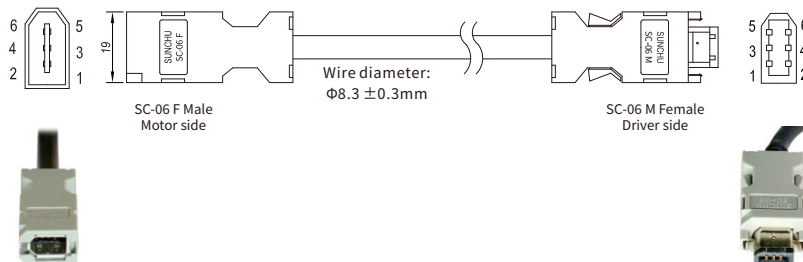
ENCDG-LL-GU			
Color	SC-06	Signal1	Signal 2
Red	PIN1	VDD	+5V
Blcak	PIN2	GND	GND
Brown	PIN3	MA_P+	BAT+
Blue	PIN4	MA_N-	BAT-
Yellow	PIN5	SLO_P+	SD
Green	PIN6	SLO_N-	/SD
Shielded wire	Shell	Shielding	Shielding

Note: Signal 1 for magnetoelectric encoders,
     signal 2 for absolute value encoders.
Corresponding accessory：ENCDG-GU

corresponding flexible cable ENCDGF-LL-GU
Wire specification：1P*20AWG(72/0.10T)+2P*24AWG(32/0.10T)
5 million times (OD 7.4mm)
Wire diameter：7.4±0.5mm

Cable (encoder cable)

ENCHG-LL-GU

Wire spec: 1P*20AWG(26/0.16T)+2P*24AWG(11/0.16T) (OD 7.4mm)
20AWG cross sectional area 0.5189mm²
24AWG cross sectional area 0.2047mm²

SC-06 Male
Motor side

Three row15PIN DB Female
Driver side

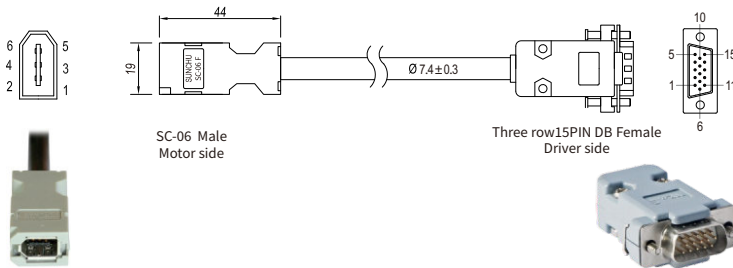| ENCHG-LL-GU				
SC-06F	Color	Signal 1	Signal 2	DB 15 公
PIN1	Red	VDD	VDD	PIN1
PIN2	Black	GND	GND	PIN2
PIN3	Brown	MA_P+		PIN10
PIN4	Blue	MA_N-		PIN15
PIN5	Yellow	SLO_P+	SD	PIN9
PIN6	Green	SLO_N-	/SD	PIN14
Shell	Shielded wire	Shielding	Shielding	Shell

Note: Signal 1 for magnetoelectric encoders,
      signal 2 for absolute value encoders.
Corresponding accessory: ENCDG-GU

corresponding flexible cable **ENCHGF-LL-GU**
Wire specification: 1P*20AWG(72/0.10T)+2P*24AWG(32/0.10T)
5 million times (OD 7.4mm)
Wire diameter: 7.4±0.5mm

ENCOG-LL-GU

Wire spec: 3×2×0.2mm²

SC-06 Female
Motor end

Double row of 16PIN plastic terminals
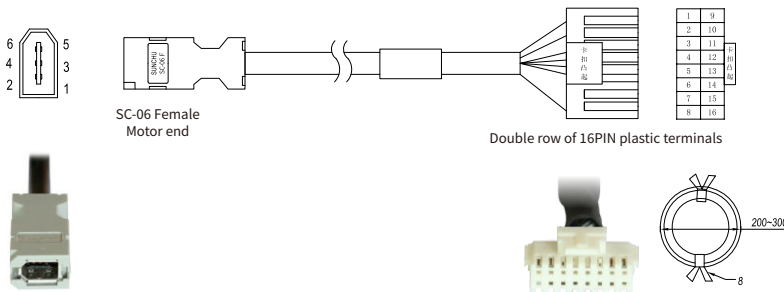
ENCOG-LL-GU				
SC-06	Color	Signal 1	Signal 2	Double row of 16PIN 16PIN
PIN1	Red	VDD	VDD	PIN1
PIN2	Black	GND	GND	PIN9
PIN3	Brown	MA_P+	BAT+	PIN6
PIN4	Blue	MA_N-	BAT-	PIN14
PIN5	Yellow	SLO_P+	SD	PIN7
PIN6	Green	SLO_N-	/SD	PIN15
Shell	Shielded wire	Shielding	Shielding	PIN16

Note: Signal 1 for magnetoelectric encoders,
      signal 2 for absolute value encoders.
Corresponding accessory package: ENCOG-GU

ENCHA-LL-KH

Wire spec: 24AWG/1P+28AWG/7P+AB 1061
24AWG cross sectional area 0.2047mm²
28AWG cross sectional area 0.0804mm²

Three Row 15PIN DB Female
Metal Shell Drive side

Three Row 15PIN Plastic Shell Drive side
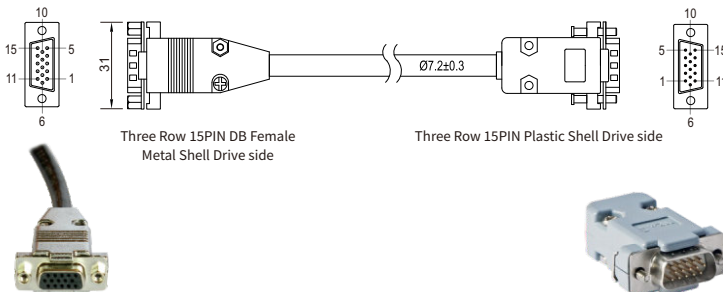
| ENCHA-LL-KH			
Three rows of 15PIN DB Female	Three rows of 15PIN DB Male	Signal	Color
PIN1	PIN1	+5V	Red (Thick)
PIN8	PIN8	A	Orange
PIN7	PIN7	B	Yellow
PIN6	PIN6	Z	Green
PIN4	PIN4	U	Brown
PIN10	PIN10	V	Purple
PIN9	PIN9	W	Blue
PIN2	PIN2	GND	Black (Thick)
PIN13	PIN13	/A	Orange white
PIN12	PIN12	/B	Yellow white
PIN11	PIN11	/Z	Green white
PIN5	PIN5	/U	Brown white
PIN15	PIN15	/V	Purple white
PIN14	PIN14	/W	Blue white
Shell	Shell	Shielded	Shielded wire

Corresponding accessory: ENCHA-KH

corresponding flexible cable **ENCHAF-LL-KH**
Wire specification: 2*24AWG+7*2*26AWG BLACK
Wire diameter: 10±0.5mm

ENCOA-LL-KH

Wire spec：24AWG/1P+28AWG/7P+AB 1061
24AWG cross sectional area 0.2047mm²
28AWG cross sectional area 0.0804mm²

Three rows pin 15 DB

Double row of 16PIN plastic terminals

Ø7.2±0.3

200~300
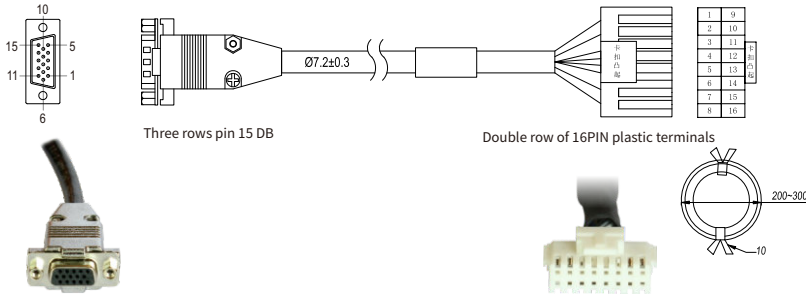
| ENCOA-LL-KH			
Three rows pin 15 DB	Double row of 16PIN plastic terminals	Signal	Color
PIN1	PIN15	+5V	Red (Thick)
PIN8	PIN13	A	Orange
PIN7	PIN11	B	Yellow
PIN6	PIN9	Z	Green
PIN4	PIN7	U	Brown
PIN10	PIN5	V	Purple
PIN9	PIN4	W	Blue
PIN2	PIN16	GND	Black (Thick)
PIN13	PIN14	/A	Orange white
PIN12	PIN12	/B	Yellow white
PIN11	PIN10	/Z	Green white
PIN5	PIN8	/U	Brown white
PIN15	PIN6	/V	Purple white
PIN14	PIN4	/W	Blue white
Shell	PIN2	Shielding	Shielded wire

Corresponding accessory package：ENCOA-KH

Corresponding flexible cable **ENCOAF-LL-KH**
Wire specification：2*24AWG+7*2*26AWG BLACK
Wire diameter：10±0.5mm

ENCHA-LL-KC0

Wire spec：24AWG/1P+28AWG/7P+AB 1061
24AWG cross sectional area 0.2047mm²
28AWG cross sectional area 0.0804mm²

17 PIN

HF01817TK
Motor side

Ø7.2±0.3

Three rows 15PIN DB Female
Driver side
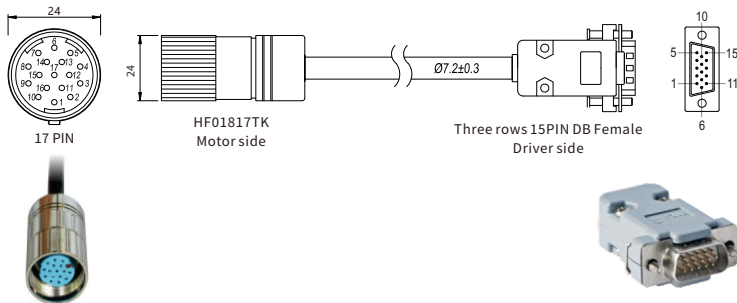
| ENCHA-LL-KC0			
17 PIN Air insertion	Three rows pin 15 DB	Signal	Color
PIN1	PIN1	+5V	Red (Thick)
PIN3	PIN8	A	Orange
PIN5	PIN7	B	Yellow
PIN14	PIN6	Z	Green
PIN9	PIN4	U	Brown
PIN11	PIN10	V	Purple
PIN16	PIN9	W	Blue
PIN2	PIN2	GND	Black (Thick)
PIN4	PIN13	/A	Orange white
PIN6	PIN12	/B	Yellow white
PIN15	PIN11	/Z	Green white
PIN10	PIN5	/U	Brown white
PIN12	PIN15	/V	Purple white
PIN17	PIN14	/W	Blue white
Belonging ring	Belonging to the shell	Shielding	Shielded wire

Corresponding accessory package：ENCHA-KC0

Corresponding flexible cable **ENCHAF-LL-KC0**
Wire specification：2*24AWG+7*2*26AWG BLACK
Wire diameter：10±0.5mm

BRA-LL-KL

Wire spec：2C×20AWG
20AWG cross sectional area 0.5189mm²

H66L5-02P

Ø5.1±0.3

50
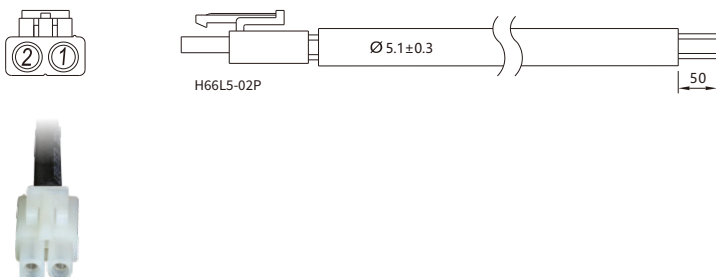
BRA-LL-KL		
Color	Signal	2PIN terminal
Red	brake +	PIN1
Blue	brake -	PIN2

Corresponding accessory package：BRA-KL

Corresponding flexible cable **BRAF-LL-KL**
Wire specification：2C*20AWG(72/0.10T) 5 million times
Wire diameter：5.5±0.5mm

MD series integrated servo motor

Innovative and practical integrated design

Compact structure
The product integrates servo drive and low-voltage servo motor, which is smaller in size and saves equipment installation space.

High reliability
Eliminate the connection line between the motor and the drive, reduce equipment failures caused by connection problems, and reduce the equipment failure rate.

Lower cost
Save connecting cables and effectively reduce equipment cost.

Integrated servo motor naming rules

MD series integrated servo drive model description

Model description: MD 60- 040 - D M A K - CA - 000
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①-Series name	MD：Integrated servo motor	⑤-EnCoder type	M：Magnetoelectric encoder	
②-Flange	60：60x60(mm) 80：80x80(mm)	⑥-Brake	A：None B：Have	
③-Rate power	0020：20x10(W) 0040：40x10(W) 0075：75x10(W)	⑦-Outgoing shaft style	K：Keyed	
		⑧ Control mode	LA：RS232、RS485、pulse CA：RS232、CANopen、pulse EA：RS232、EtherCAT PA：RS232，Profinet	
④-Supply voltage	D：DC48V			
		⑨Software version number	000：Software version number	

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

MD integrated servo motor technical prameter

| Model parameters		MD integrated servo motor		
		MD60-020-DM□K-■A-000	MD60-040-DM□K-■A-000	MD80-075-DM□K-■A-000
Power supply	Power	24VDC~60VDC	24VDC~60VDC	24VDC~60VDC
Current	Rated current (rms)	5Arms	10Arms	20Arms
	Peak current(PEAK)	21Ap	36Ap	80Ap
Brake holding torque T(Nm)		1.5	1.5	3.2
Feedback signal		Magnetoelectric encoder		
Energy consumption braking		Need for external braking resistor (depending on the operating conditions, mainly used in the case of rapid start/stop)		
Energy consumption brake voltage absorption point		DC73V ± 2V (default value, settable)		
Overvoltage alarm voltage		DC83V ± 2V		
Undervoltage alarm voltage		DC18V ± 2V		
Cooling method		Natural cooling		
Input specification		4-channel digital input,with COM1 terminal, high level:12.5~30VDC,low level:0~5VDC, max frequency:1KHZ, input impedance:5KΩ		
Output specification		2-channel digital output common COMO terminal｜Maximum output current: 100mA		
Impulsive control		Pulse+Direction、CCW+CW、Phase A+Phase B (5~24V) The input voltage：3.3V～24V; Maximum frequency：500KHz (note:MD -060-D MK-EA-000 don't support this function)		
Brake		Built-in brake power supply		
RS232		The default baud rate is 38400bps, and the maximum baud rate is 115.2Kbps. The host computer Kincoservo+		
RS485		Maximum support 115.2Kbps baud rate, can use Modbus RTU protocol to communicate with the controller		
CAN BUS		Maximum support 1Mbps baud rate, can use CANopen protocol to communicate with the controller		
EtherCAT		Support CoE(CiA402 protocol)and CSP/CSV/PP/PV/PT/HM mode，communication speed 100M		
Profinet		Support No. 1 message, No. 3 message, No. 111 message, process object, aperiodic data read and write, etc.		
Rated Speed nN(rpm)		3000		
Rated Torque Tn(Nm)		0.64	1.27	2.39
Rotational inertia Jm (Kg·cm2)		0.214	0.405	1.087
		0.218（with brake)	0.409（with brake)	1.099（with brake)
Operation environment	Operation temperature	0～40℃		
	Storage temperature	-10℃～70℃		
	Humidity(non-condensing)	Below 90%RH		
	Protection level	Shaft end IP54, protection level IP20		
	Installation environment	Dust-free, dry and lockable (such as electrical cabinets)		
	Installation mode	Vertical or horizontal installation		
	Height	The rated working altitude is below 1000m.When the working altitude is above 1000m, every 100 meters of ascent is required, and the maximum working altitude is 4000 meters above sea level		
	Atmospheric pressure	86kpa~106kpa		

Note: ■=L: communication port RS232, RS485, pulse
　　■=C: Communication port RS232, CANopen, pulse
　　■=E: Communication port RS232, EtherCAT
　　■=P: Communication port RS232, Profinet

□=A: without brake
□=B: with brake

MD series mechanical dimension diagram

MD60 mechanical dimension diagram (Unit：mm)
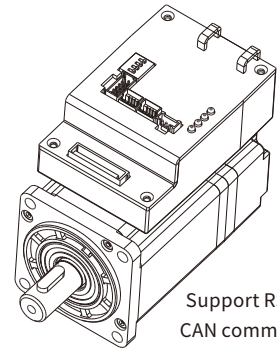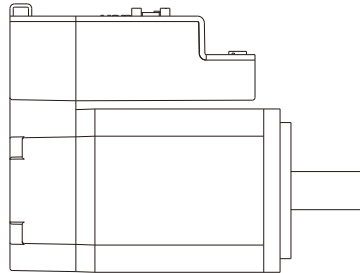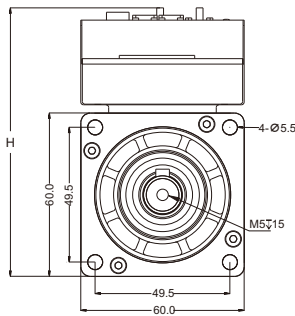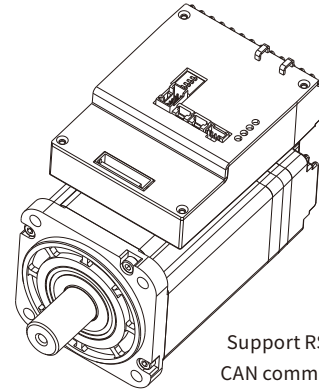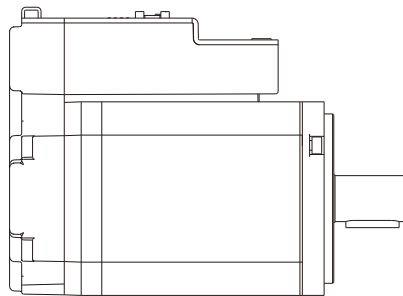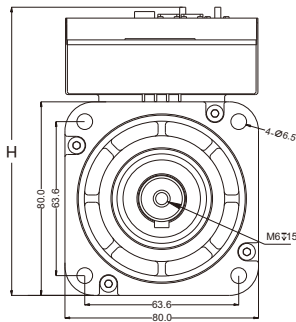

Support RS485 and CAN communication
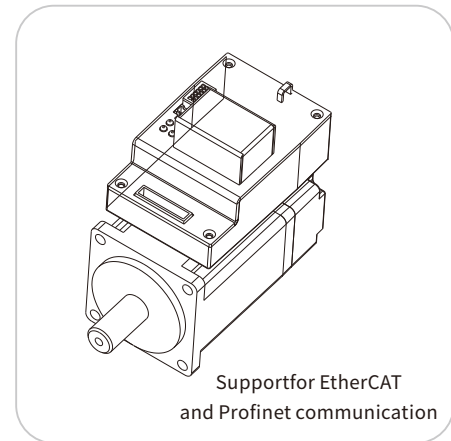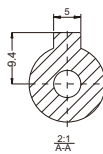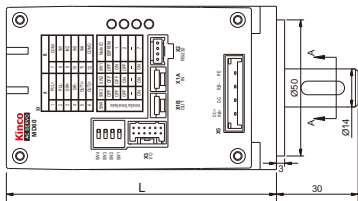
Supportfor EtherCAT and Profinet communication

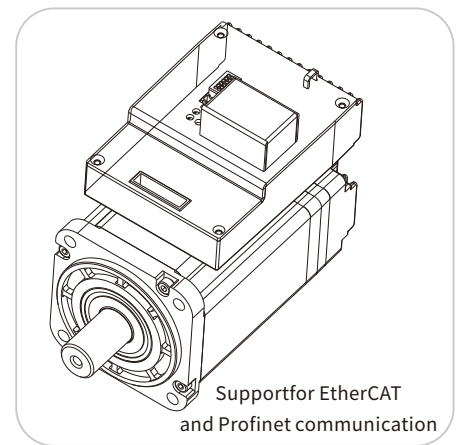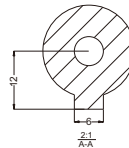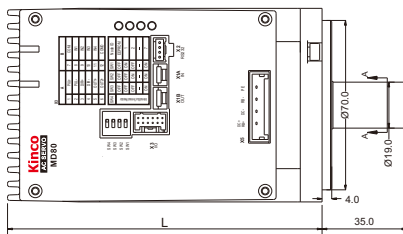| MD60 series models		Brake	Weight（KG）	Machine height H（mm）	Machine dimension L（mm）
MD60-020-DMAK-LA-000			1.2	98.6	99.2±1.5
MD60-020-DMAK-CA-000			1.2	98.6	99.2±1.5
MD60-020-DMAK-EA-000			1.25	113.1	99.2±1.5
MD60-020-DMAK-PA-000			1.25	113.1	99.2±1.5
MD60-020-DMBK-LA-000		✓	1.6	98.6	129.2±1.5
MD60-020-DMBK-CA-000		✓	1.6	98.6	129.2±1.5
MD60-020-DMBK-EA-000		✓	1.65	113.1	129.2±1.5
MD60-020-DMBK-PA-000		✓	1.65	113.1	129.2±1.5
MD60-040-DMAK-LA-000	***		1.6	98.6	125.2±1.5
MD60-040-DMAK-CA-000	***		1.6	98.6	125.2±1.5
MD60-040-DMAK-EA-000	***		1.65	113.1	125.2±1.5
MD60-040-DMAK-PA-000	***		1.65	113.1	125.2±1.5
MD60-040-DMBK-LA-000	***	✓	2	98.6	155.2±1.5
MD60-040-DMBK-CA-000	***	✓	2	98.6	155.2±1.5
MD60-040-DMBK-EA-000	***	✓	2.05	113.1	155.2±1.5
MD60-040-DMBK-PA-000	***	✓	2.05	113.1	155.2±1.5

*** Voorkeursprogramma

MD series mechanical dimension diagram

MD80 mechanical dimension diagram (Unit：mm)

Support RS485 and
CAN communication

Supportfor EtherCAT
and Profinet communication

MD80 series models		Brake	Weight (KG)	Machine height H (mm)	Machine dimension L (mm)
MD80-075-DMAK-LA-000	✱✱✱		2.9	119.1	130±1.5
MD80-075-DMAK-CA-000	✱✱✱				
MD80-075-DMAK-EA-000	✱✱✱		2.95	133.6	
MD80-075-DMAK-PA-000	✱✱✱				
MD80-075-DMBK-LA-000	✱✱✱		3.5	119.1	164.2±1.5
MD80-075-DMBK-CA-000	✱✱✱	✓			
MD80-075-DMBK-EA-000	✱✱✱		3.55	133.6	
MD80-075-DMBK-PA-000	✱✱✱				

✱✱✱ Voorkeursprogramma

MD series terminal description

Bus communication interface — X1

EtherCAT — X1B(OUT) X1A(IN)

Note: Applicable to MD series models supporting EtherCAT and Profinet communication
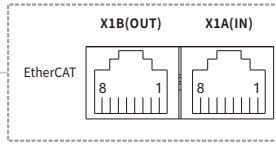
Pin No.	EtherCAT
1	TD+
2	TD-
3	RD+
4	\
5	\
6	RD-
7	\
8	\

Bus communication interface — X1

CAN BUS or RS485 — X1B OUT / X1A IN

Note: Applicable to MD series models supporting RS485 and CAN communication
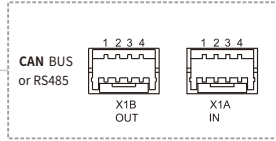
Pin No.	CAN	RS485
1	GND	GND
2	GND	GND
3	CAN_L	485+
4	CAN_H	485-

Note: Kinco communication cable: **MD-P4-(8)** can be purchased

RS232 communication port — X2

X2 RS232
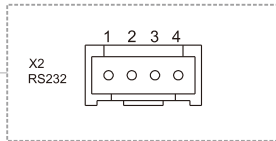
Pin No.	Signal
1	GND
2	GND
3	TX
4	RX

Note: Kinco communication cable: **OD124RS232-0.5m** can be purchased

Digital signal input/output port — X3

X3 I/O

Suitable for LA and CA

Suitable for EA and PA
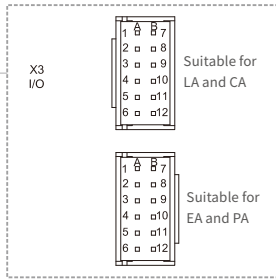
Kinco IO accessory kit can be purchased: **MD-IO-12P**

	A		B
Pin No.	Signal	Pin No.	Signal
1	PUL+	7	COMI
2	PUL-	8	IN1
3	DIR+	9	IN2
4	DIR-	10	IN3
5	OUT1+	11	IN4
6	OUT2+	12	COMO

Note 1: MD □□□□□□□□ - DM □ K-EA-000 and MD □□□□□□□□ - DM □ K-PA-000 do not support pulse function, Pins 1, 2, 3 and 4 are empty, and the brake models 1, 2, 3, 4 and 6 are empty

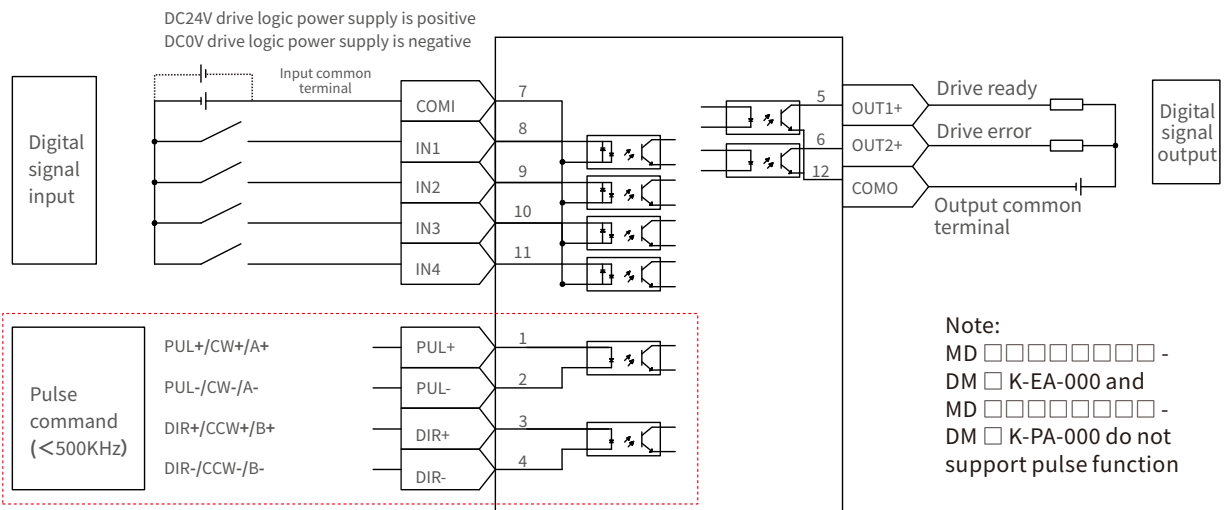| X3		
	PUL+、PUL-、DIR+、DIR-	Pulse signal input terminal Input voltage: 3.3V~24V Maximum frequency: 500KHz
	OUT1+、OUT2+、COMO	Digital signal output terminal Maximum output current: 100mA
	IN1、IN2、IN3、IN4、COMI	Digital signal input terminal High level: 12.5VDC~30VDC Low level: 0VDC~5VDC Input frequency:<1KHz

Power supply external braking resistor — X5

X5 DC+ RB+ DC- RB- PE
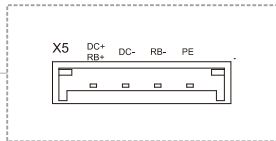
X5	
DC+、DC-	DC power input (24-70V)
PE	Grounding
RB+、RB-	External braking resistor

Input and output terminal wiring diagram (MD series)

DC24V drive logic power supply is positive
DC0V drive logic power supply is negative

Input common terminal

Digital signal input — COMI 7, IN1 8, IN2 9, IN3 10, IN4 11

Pulse command (<500KHz)
PUL+/CW+/A+ — PUL+ 1
PUL-/CW-/A- — PUL- 2
DIR+/CCW+/B+ — DIR+ 3
DIR-/CCW-/B- — DIR- 4

OUT1+ 5 — Drive ready
OUT2+ 6 — Drive error
COMO 12 — Output common terminal

Digital signal output

Note:
MD □□□□□□□□ - DM □ K-EA-000 and MD □□□□□□□□ - DM □ K-PA-000 do not support pulse function

PROVEN PERFORMANCE

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

Kinco®**Automation**

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

Zilvertron
mechanics & electronics