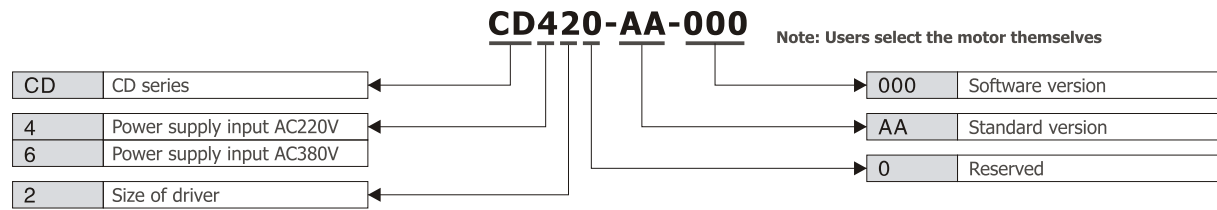




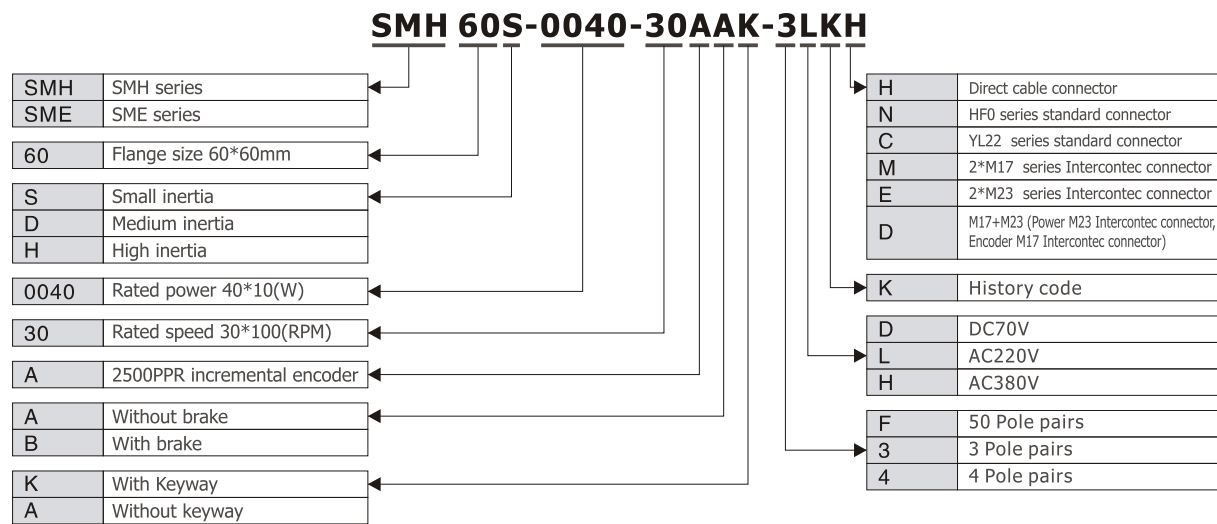
## AC Servo System

# Model Description of Servo Drivers and Motors

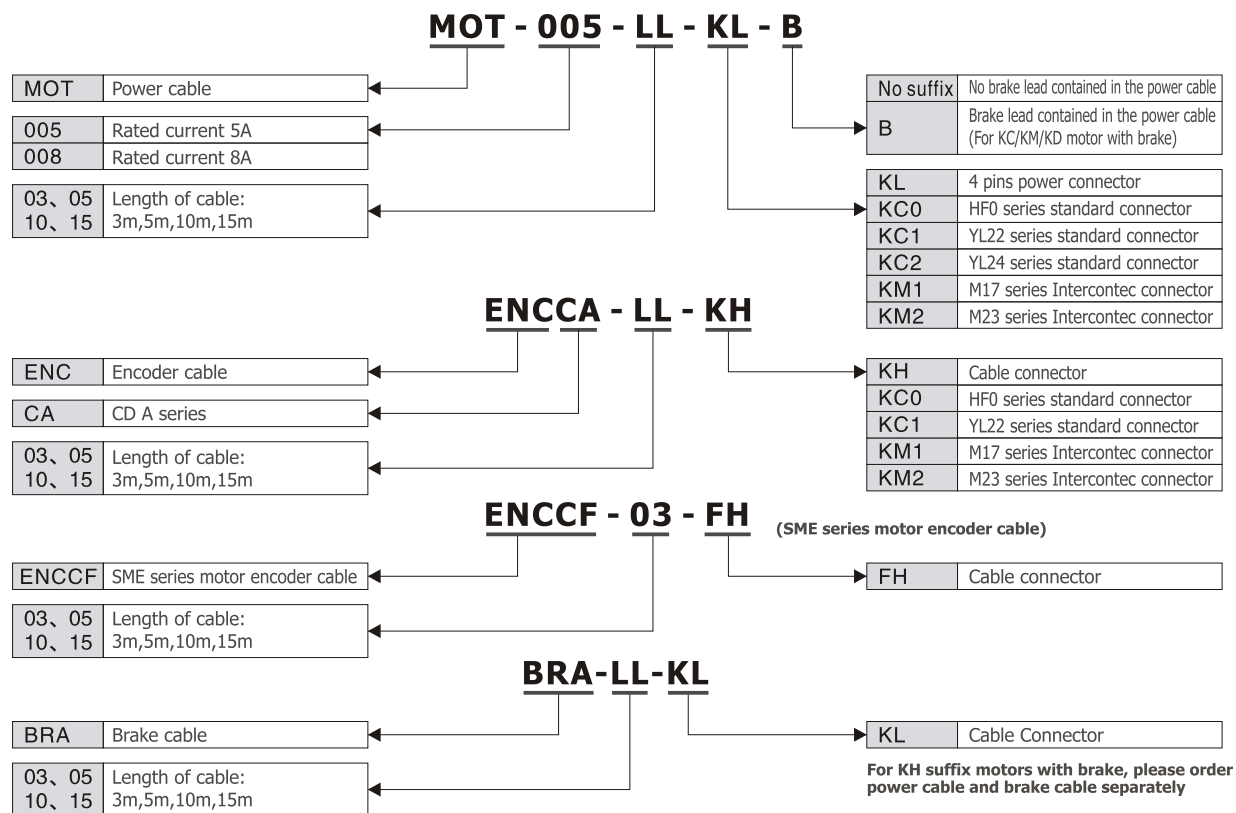
## Kinco CD Series Servo Drivers



## Kinco Servo Motors



## Power, Brake and Encoder Cable of Motors

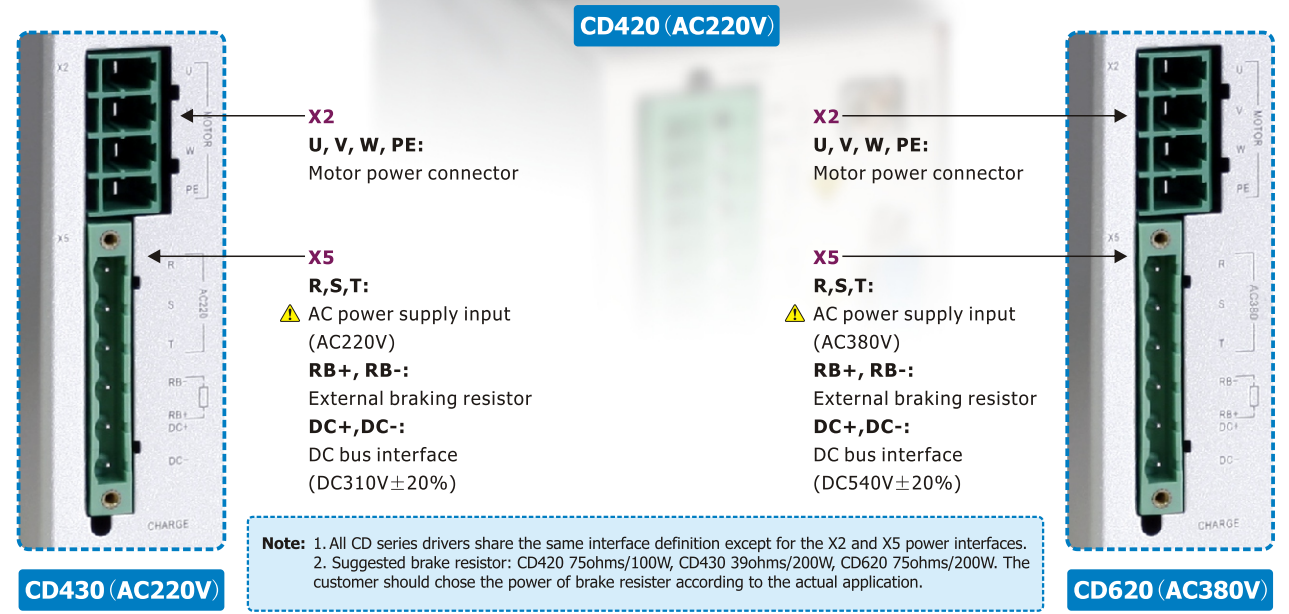
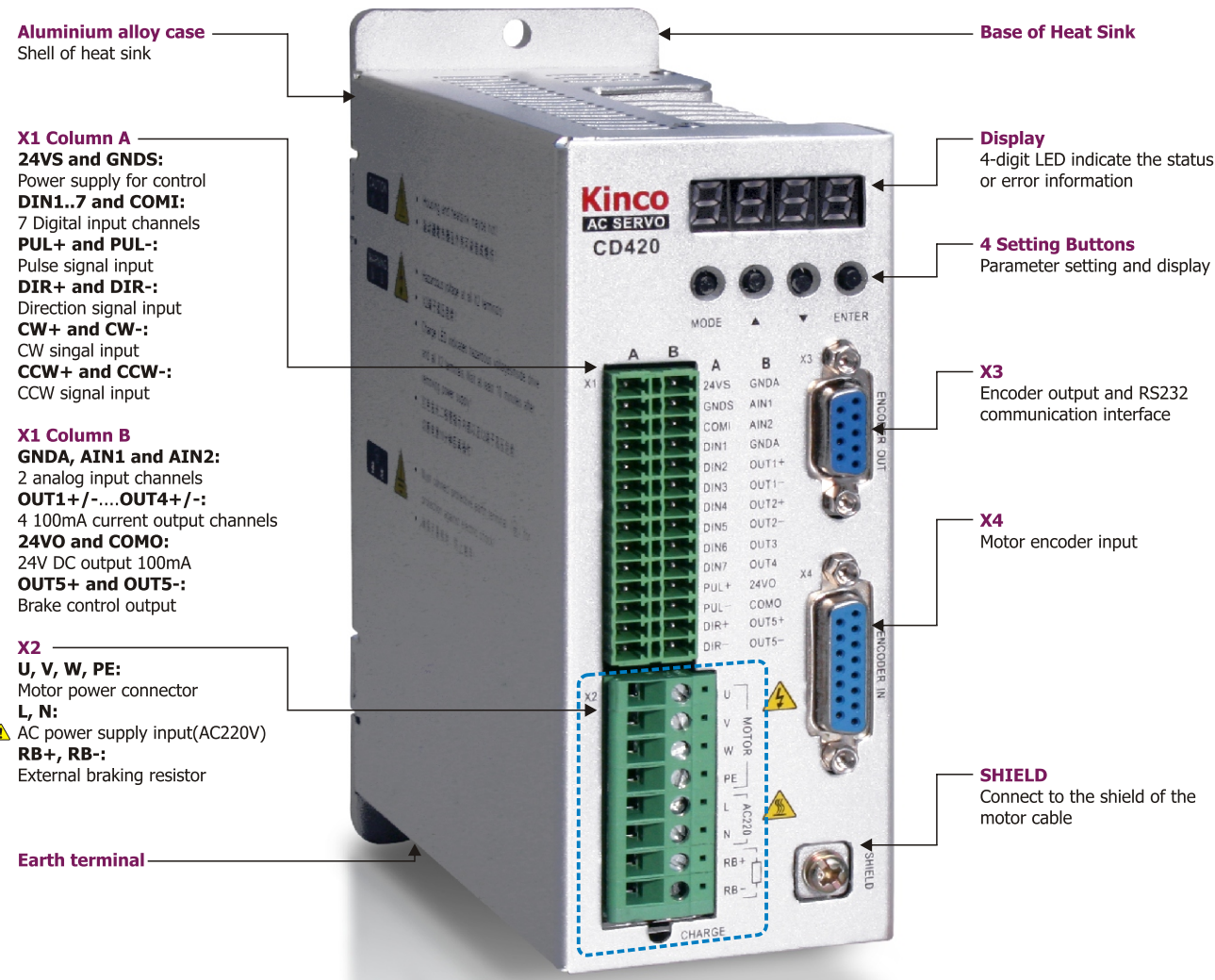


# Servo and SMH/SME Motor Selection Table

Category	Servo Driver	Servo Motor	Description	Power/brake Cable	Encoder Cable	Rated Speed/ Rated Torque/ Rated Current
Small Inertia 220V	CD420-AA-000	SMH60S-0020-30AAK-3LKH	Cable connector	MOT-005-LL-KL	ENCCA-LL-KH	3000rpm/
		SMH60S-0020-30ABK-3LKH	Cable connector and brake	MOT-005-LL-KL/BRA-LL-KL	ENCCA-LL-KH	0.64Nm/
		SMH60S-0020-30AAK-3LKN	HFO standard connector	MOT-005-LL-KC0	ENCCA-LL-KC0	1.6A
		SMH60S-0020-30AAK-3LKM	Intercontec connector	MOT-005-LL-KM1	ENCCA-LL-KM1	
		SMH60S-0020-30ABK-3LKM	Intercontec connector with brake	MOT-005-LL-KM1-B	ENCCA-LL-KM1	
		SMH60S-0040-30AAK-3LKH	Cable connector	MOT-005-LL-KL	ENCCA-LL-KH	3000rpm/
		SMH60S-0040-30ABK-3LKH	Cable connector and brake	MOT-005-LL-KL/BRA-LL-KL	ENCCA-LL-KH	1.27Nm/
		SMH60S-0040-30AAK-3LKN	HFO standard connector	MOT-005-LL-KC0	ENCCA-LL-KC0	3.1A
		SMH60S-0040-30AAK-3LKM	Intercontec connector	MOT-005-LL-KM1	ENCCA-LL-KM1	
		SMH60S-0040-30ABK-3LKM	Intercontec connector with brake	MOT-005-LL-KM1-B	ENCCA-LL-KM1	
		SMH80S-0075-30AAK-3LKH	Cable connector	MOT-005-LL-KL	ENCCA-LL-KH	3000rpm/
		SMH80S-0075-30ABK-3LKH	Cable connector and brake	MOT-005-LL-KL/BRA-LL-KL	ENCCA-LL-KH	2.39Nm/
		SMH80S-0075-30AAK-3LKN	HFO standard connector	MOT-005-LL-KC0	ENCCA-LL-KC0	3.9A
		SMH80S-0075-30AAK-3LKM	Intercontec connector	MOT-005-LL-KM1	ENCCA-LL-KM1	
		SMH80S-0075-30ABK-3LKM	Intercontec connector with brake	MOT-005-LL-KM1-B	ENCCA-LL-KM1	
		SME60S-0020-30AAK-3LKH	Cable connector	MOT-005-LL-KL	ENCCF-LL-FH	3000rpm/ 0.64Nm/ 1.6A
		SME60S-0020-30ABK-3LKH	Cable connector and brake	MOT-005-LL-KL/BRA-LL-KL	ENCCF-LL-FH	3000rpm/ 1.27Nm/ 3.1A
		SME60S-0040-30AAK-3LKH	Cable connector	MOT-005-LL-KL	ENCCF-LL-FH	3000rpm/ 2.39Nm/ 3.9A
SME60S-0040-30ABK-3LKH	Cable connector and brake	MOT-005-LL-KL/BRA-LL-KL	ENCCF-LL-FH			
SME80S-0075-30AAK-3LKH	Cable connector	MOT-005-LL-KL	ENCCF-LL-FH			
SME80S-0075-30ABK-3LKH	Cable connector and brake	MOT-005-LL-KL/BRA-LL-KL	ENCCF-LL-FH			
Medium Inertia 220V	CD430-AA-000	SMH80S-0100-30AAK-3LKH	Cable connector	MOT-008-LL-KL	ENCCA-LL-KH	3000rpm/
		SMH80S-0100-30ABK-3LKH	Cable connector and brake	MOT-008-LL-KL/BRA-LL-KL	ENCCA-LL-KH	3.18Nm/
		SMH80S-0100-30AAK-3LKN	HFO standard connector	MOT-008-LL-KC0	ENCCA-LL-KC0	6.3A
		SMH80S-0100-30AAK-3LKM	Intercontec connector	MOT-008-LL-KM1	ENCCA-LL-KM1	
		SMH80S-0100-30ABK-3LKM	Intercontec connector with brake	MOT-008-LL-KM1-B	ENCCA-LL-KM1	
		SMH110D-0105-20AAK-4LKC	YL22 standard connector	MOT-008-LL-KC1	ENCCA-LL-KC1	2000rpm/ 5Nm/ 5.9A
		SMH110D-0105-20ABK-4LKC	YL24 standard connector and brake	MOT-008-LL-KC2-B	ENCCA-LL-KC1	
		SMH110D-0105-20AAK-4LKD	Intercontec connector	MOT-008-LL-KM2	ENCCA-LL-KM1	
		SMH110D-0105-20ABK-4LKD	Intercontec connector with brake	MOT-008-LL-KM2-B	ENCCA-LL-KM1	
		SMH110D-0126-20AAK-4LKC	YL22 standard connector	MOT-008-LL-KC1	ENCCA-LL-KC1	2000rpm/ 6Nm/ 6.2A
		SMH110D-0126-20ABK-4LKC	YL24 standard connector and brake	MOT-008-LL-KC2-B	ENCCA-LL-KC1	
		SMH110D-0126-20AAK-4LKD	Intercontec connector	MOT-008-LL-KM2	ENCCA-LL-KM1	
		SMH110D-0126-20ABK-4LKD	Intercontec connector with brake	MOT-008-LL-KM2-B	ENCCA-LL-KM1	
		SMH110D-0125-30AAK-4LKC	YL22 standard connector	MOT-008-LL-KC1	ENCCA-LL-KC1	3000rpm/ 4Nm/ 6.5A
		SMH110D-0125-30ABK-4LKC	YL24 standard connector and brake	MOT-008-LL-KC2-B	ENCCA-LL-KC1	
		SMH110D-0125-30AAK-4LKD	Intercontec connector	MOT-008-LL-KM2	ENCCA-LL-KM1	
		SMH110D-0125-30ABK-4LKD	Intercontec connector with brake	MOT-008-LL-KM2-B	ENCCA-LL-KM1	
		Medium Inertia 380V	CD620-AA-000	SMH110D-0126-30AAK-4HKC	YL22 standard connector	MOT-008-LL-KC1
SMH110D-0126-30ABK-4HKC	YL24 standard connector and brake			MOT-008-LL-KC2-B	ENCCA-LL-KC1	
SMH110D-0126-30AAK-4HKD	Intercontec connector			MOT-008-LL-KM2	ENCCA-LL-KM1	
SMH110D-0126-30ABK-4HKD	Intercontec connector with brake			MOT-008-LL-KM2-B	ENCCA-LL-KM1	
SMH110D-0157-30AAK-4HKC	YL22 standard connector			MOT-008-LL-KC1	ENCCA-LL-KC1	3000rpm/ 5Nm/ 5.9A
SMH110D-0157-30ABK-4HKC	YL24 standard connector and brake			MOT-008-LL-KC2-B	ENCCA-LL-KC1	
SMH110D-0157-30AAK-4HKD	Intercontec connector			MOT-008-LL-KM2	ENCCA-LL-KM1	
SMH110D-0157-30ABK-4HKD	Intercontec connector with brake			MOT-008-LL-KM2-B	ENCCA-LL-KM1	
SMH110D-0188-30AAK-4HKC	YL22 standard connector			MOT-008-LL-KC1	ENCCA-LL-KC1	3000rpm/ 6Nm/ 6.2A
SMH110D-0188-30ABK-4HKC	YL24 standard connector and brake			MOT-008-LL-KC2-B	ENCCA-LL-KC1	
SMH110D-0188-30AAK-4HKD	Intercontec connector			MOT-008-LL-KM2	ENCCA-LL-KM1	
SMH110D-0188-30ABK-4HKD	Intercontec connector with brake			MOT-008-LL-KM2-B	ENCCA-LL-KM1	



# Panel and Interface Description of Servo Drivers

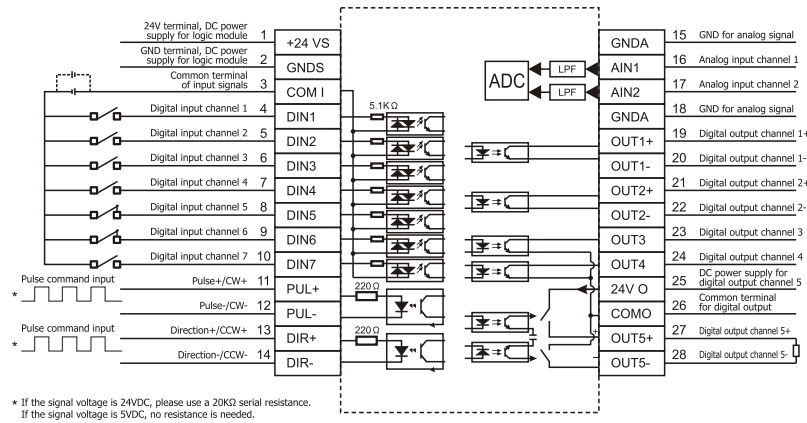


**Note:** 1. All CD series drivers share the same interface definition except for the X2 and X5 power interfaces.  
2. Suggested brake resistor: CD420 75ohms/100W, CD430 39ohms/200W, CD620 75ohms/200W. The customer should chose the power of brake resistor according to the actual application.

# Technical Specifications

Model parameter		CD420-AA-000	CD430-AA-000	CD620-AA-000
Power	Main supply voltage	Single-phase AC220V±20% 47-63Hz	Single-phase or 3-phase AC220V±20% 47-63Hz	3-phase AC380V±20% 47-63Hz
	Control circuit voltage	DC24V 1A		
Current	Max. continuous current	4A	10A	7A
	Peak current(PEAK)	15A	27.5A	25A
Feedback signal		2500PPR (incremental encoder with 5V)		
Brake chopper		Use an external braking resistor if necessary		
Brake chopper threshold		DC380V±5V		DC680V±5V
Over-voltage alarming threshold		DC400V±5V		DC700V±5V
Under-voltage alarming threshold		DC200V±5V		DC400V±5V
Cooling method		Natural air cooling	Fan	
Weight		1.2kg	2.4kg	
Position Mode	Max. frequency of input pulse	Differential signal: 500KPPS, Open-collector signal: 200KPPS		
	Pulse command mode	Pulse+direction, CCW+CW, (5V, if the input is 24V, the 2K resistor is needed) (do not support A+B phase)		
	Command smoothing	Low-pass filtering(Adjustable by internal parameter setting)		
	Feedforward gain	Adjustable by internal parameter setting		
	Electronic gear ratio	Setting range, Gear factor: -32768~32767, Gear divider: 1~32767, 1/50≤ Gear factor/Gear divider ≤50		
Speed Mode	Position loop sampling frequency	1KHz		
	Analog input voltage range	0~±10V (Resolution 12bit)		
	Input impedance	200K		
	Analog input sampling frequency	4KHz		
	Command source	External analog command / Adjustable by internal parameter setting		
Torque Mode	Command smoothing	Low-pass filtering(Adjustable by internal parameter setting)		
	Input voltage dead-zone setting	Adjustable by internal parameter setting		
	Input voltage offset setting	Adjustable by internal parameter setting		
	Speed limit	Adjustable by internal parameter setting / External analog command control		
	Torque limit	Adjustable by internal parameter setting / External analog command control		
Digital Input	Speed loop sampling frequency	4KHz		
	Analog voltage input range	0~±10V (Resolution 12bit)		
	Input impedance	200K		
	Input sampling frequency	4KHz		
	Command source	External analog command / internal command		
Digital Output	Command smoothing	Low-pass filtering(Adjustable by internal parameter setting)		
	Speed limit	Adjustable by internal parameter setting / External analog command control		
Digital Input	Input voltage dead-zone setting	Adjustable by internal parameter setting		
	Input voltage offset setting	Adjustable by internal parameter setting		
Digital Output	Input voltage dead-zone setting	Adjustable by internal parameter setting		
	Input voltage offset setting	Adjustable by internal parameter setting		
Digital Output	Current sampling frequency	16KHz		
	Input specification	7 digital inputs, with COM1 terminal for PNP or NPN connection.		
Digital Output	Input function	Define freely according to requirement, supporting following functions: Driver enable, driver fault reset, driver mode control, Proportional control, forward inhibit limit, reverse inhibit limit, negative limit position, home signal, speed command reverse, internal speed or position select		
	Output specification	5 digital outputs, OUT1~OUT4 current is 100mA, OUT5 current is 800mA, can drive brake device directly		
Digital Output	Output function	Define freely according to requirement, supporting following functions: Driver ready, driver fault, position reached, motor at zero speed, motor brake, motor speed reached, N signal		
	Protection functions	Over-voltage protection, under-voltage protection, motor over-heat protection(FT), short-circuit protection, drive over-heat protection, etc.		
Digital Output	Communication interface	RS232		
	Operating temperature	0~40℃		
Operation Environment	Storage temperature	-10℃~70℃		
	Humidity(non-condensing)	5~95%		
Operation Environment	Protection class	IP20		
	Installation environment	Installed in a dust-free, dry and lockable environment (such as in a electrical cabinet)		
Operation Environment	Installation mode	Vertical installation		
	Altitude	Below 1000m		
Operation Environment	Atmospheric pressure	86kpa~106kpa		

## Wiring Diagram for Position Control Mode



\* If the signal voltage is 24VDC, please use a 20KΩ serial resistance.  
If the signal voltage is 5VDC, no resistance is needed.

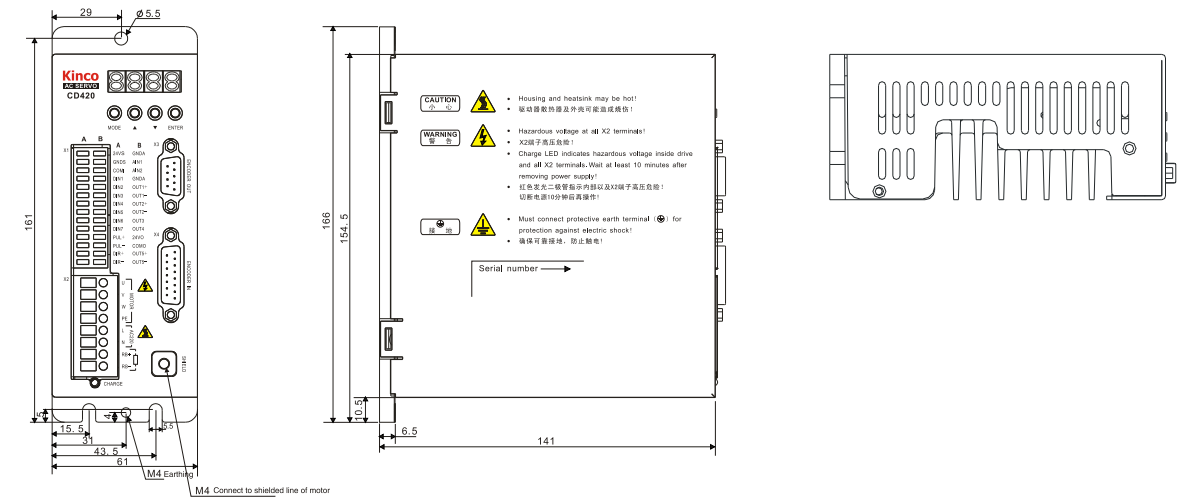
Default setting for digital inputs:  
Din 1: Driver enable  
Din 2: Fault reset  
Din 3: Operation mode  
Din 4: P control  
Din 5: Positive limit  
Din 6: Negative limit  
Din 7: Home signal

To use other functions, please redefine the digital inputs. Other functions that can be defined are as follows:  
- Reverse command  
- Internal speed section control  
- Internal position section control  
- Start homing  
- Active command  
- Quick stop

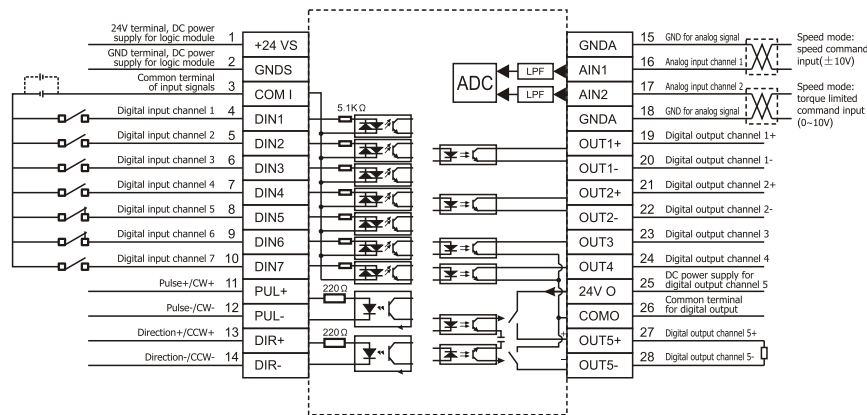
Default setting for digital output:  
Out 1: Ready  
Out 2: Error  
Out 3: Position reached  
Out 4: Zero velocity  
Out 5: Motor brake

To use other functions, please redefine the digital inputs. Other functions that can be defined are as follows:  
- Index  
- Motor brake  
- Position limiting  
- Reference found

## Mechanical Dimension Diagram for CD420 (Unit:mm)



## Wiring Diagram for Speed Control Mode



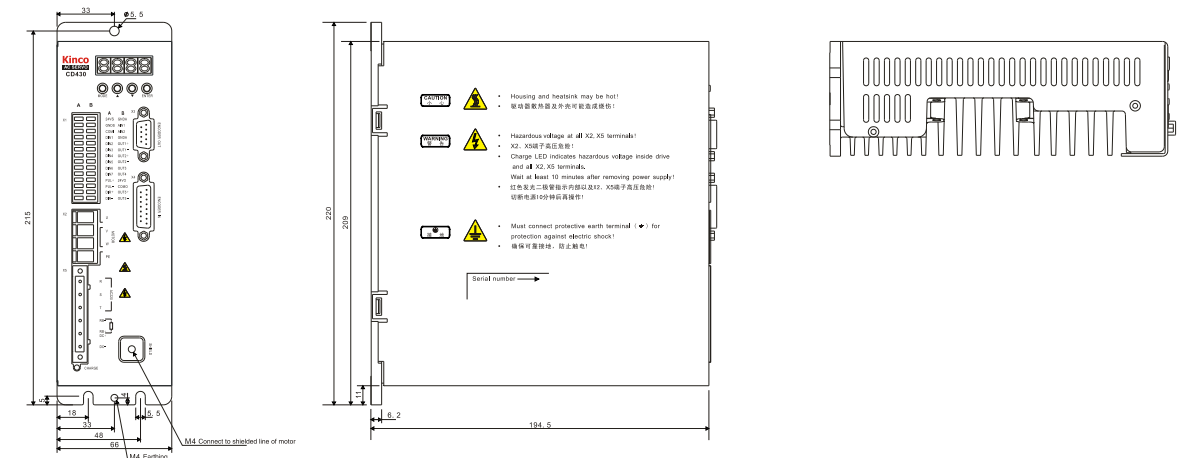
Default setting for digital inputs:  
Din 1: Driver enable  
Din 2: Fault reset  
Din 3: Operation mode  
Din 4: P control  
Din 5: Positive limit  
Din 6: Negative limit  
Din 7: Home signal

To use other functions, please redefine the digital inputs. Other functions that can be defined are as follows:  
- Reverse command  
- Internal speed section control  
- Internal position section control  
- Start homing  
- Active command  
- Quick stop

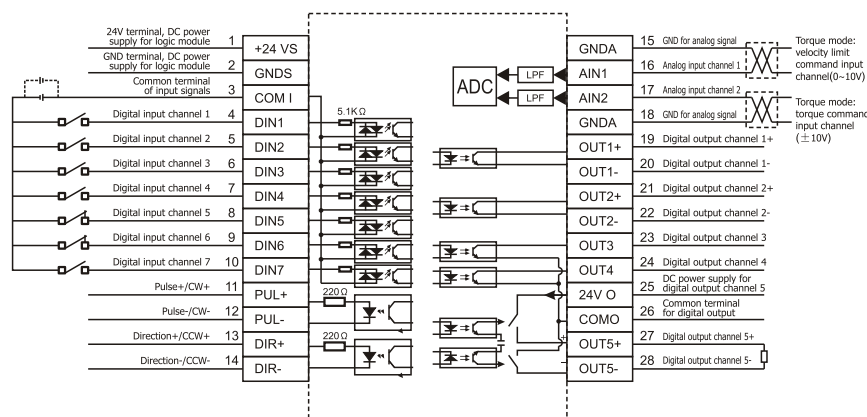
Default setting for digital output:  
Out 1: Ready  
Out 2: Error  
Out 3: Position reached  
Out 4: Zero velocity  
Out 5: Motor brake

To use other functions, please redefine the digital inputs. Other functions that can be defined are as follows:  
- Index  
- Motor brake  
- Position limiting  
- Reference found

## Mechanical Dimension Diagram for CD430 (Unit:mm)



## Wiring Diagram for Torque Control Mode



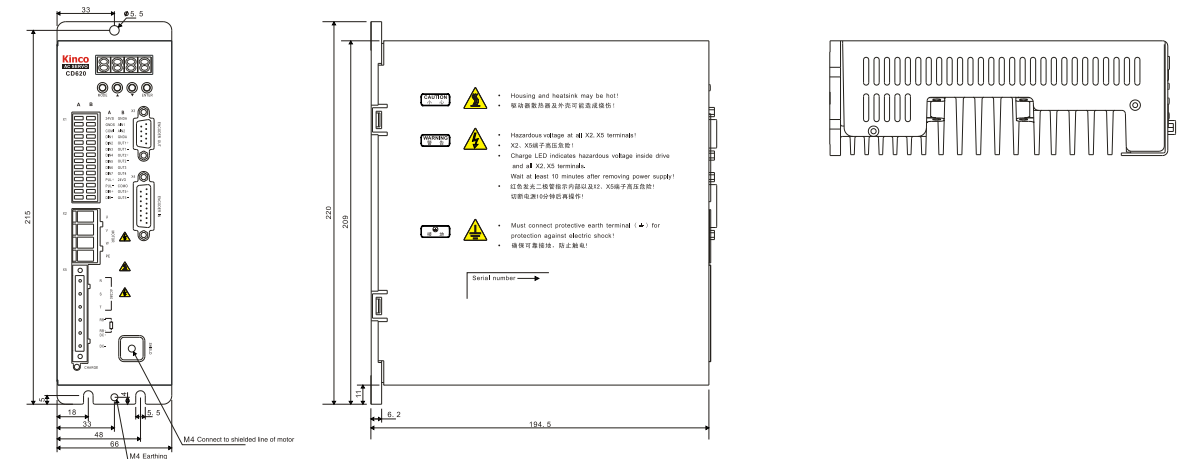
Default setting for digital inputs:  
Din 1: Driver enable  
Din 2: Fault reset  
Din 3: Operation mode  
Din 4: P control  
Din 5: Positive limit  
Din 6: Negative limit  
Din 7: Home signal

To use other functions, please redefine the digital inputs. Other functions that can be defined are as follows:  
- Reverse command  
- Internal speed section control  
- Internal position section control  
- Start homing  
- Active command  
- Quick stop

Default setting for digital output:  
Out 1: Ready  
Out 2: Error  
Out 3: Position reached  
Out 4: Zero velocity  
Out 5: Motor brake

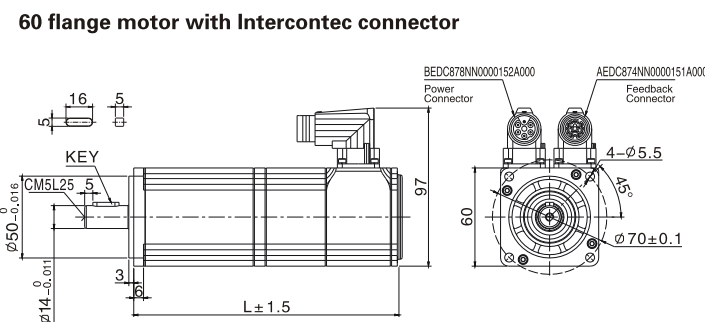
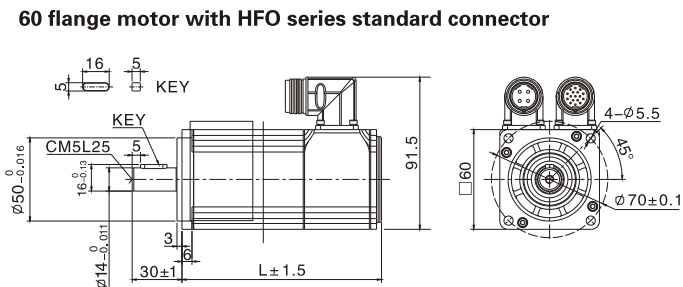
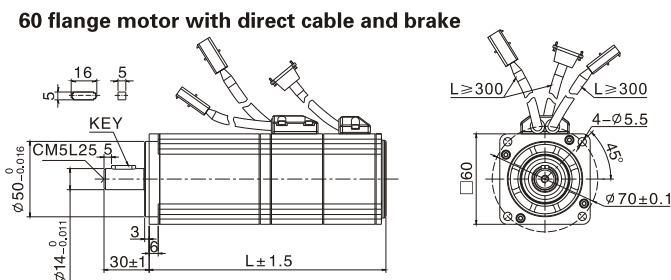
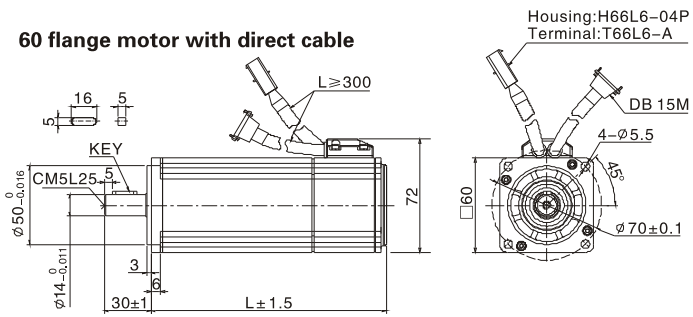
To use other functions, please redefine the digital inputs. Other functions that can be defined are as follows:  
- Index  
- Motor brake  
- Position limiting  
- Reference found

## Mechanical Dimension Diagram for CD620 (Unit:mm)

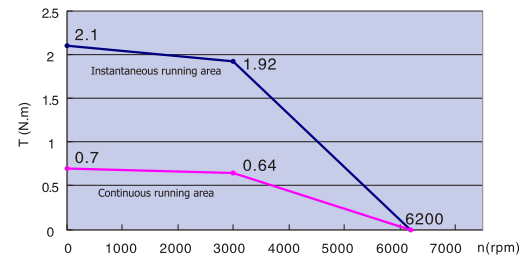




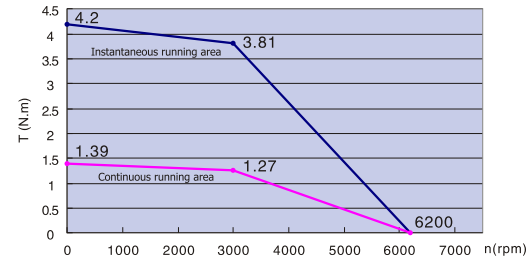
# Dimensions/Torque curve of SMH/SME 60 Servo Motors



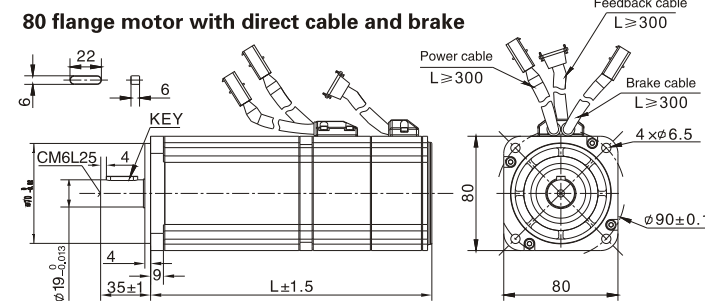
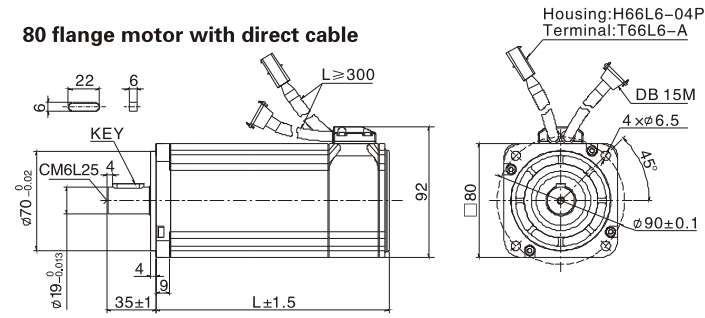
**SMH/SME60S-0020-30A K-3LK 200W**



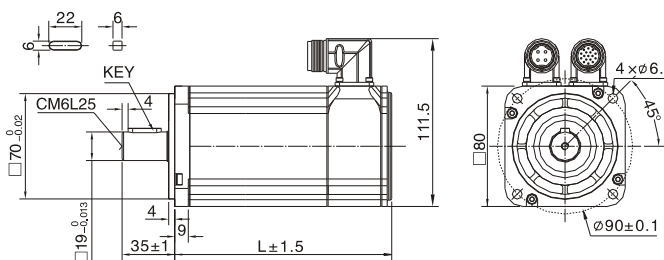
**SMH/SME60S-0040-30A K-3LK 400W**



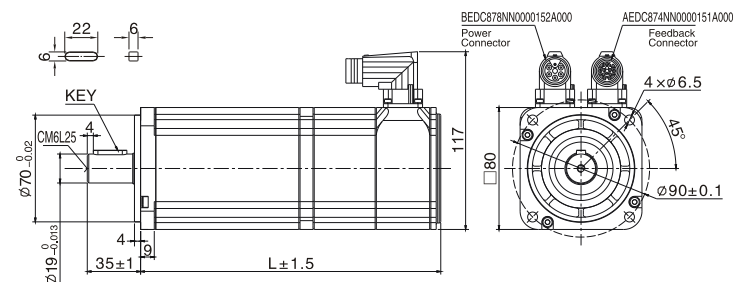
# Dimensions/Torque curve of SMH/SME 80 Servo Motors



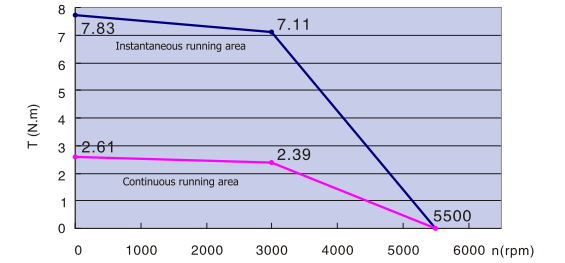
**80 flange motor with HFO series standard connector**



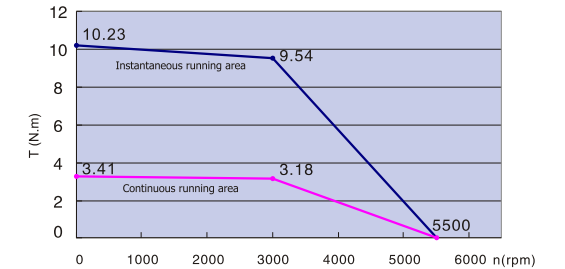
**80 flange motor with Intercontec connector**



**SMH/SME80S-0075-30A K-3LK 750W**



**SMH80S-0100-30A K-3LK 1000W**

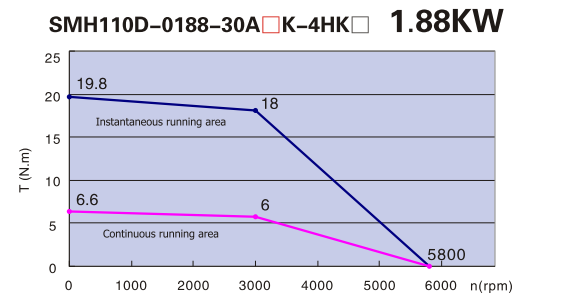
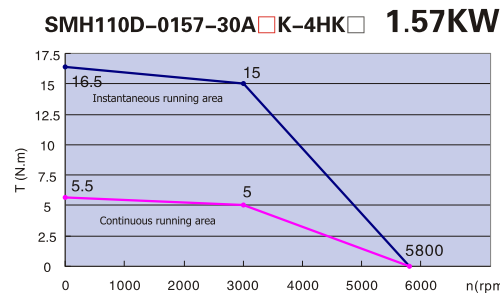
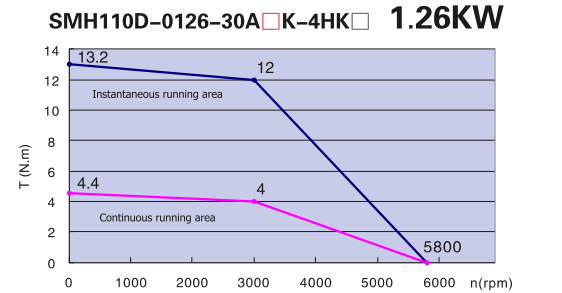
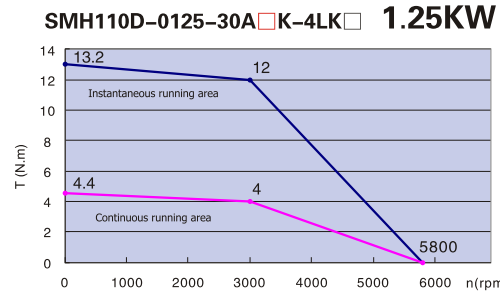
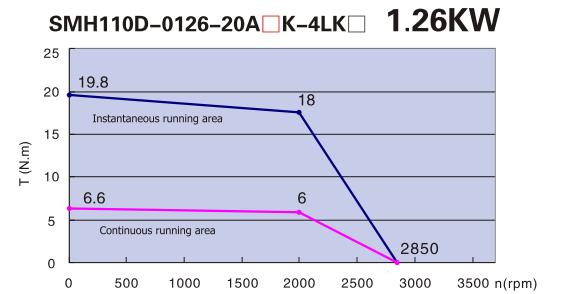
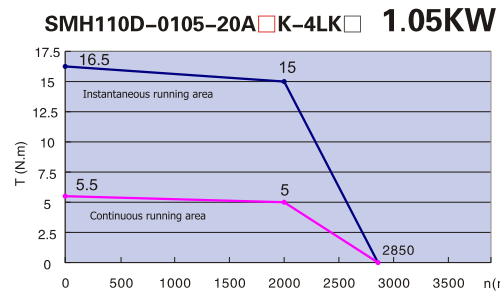
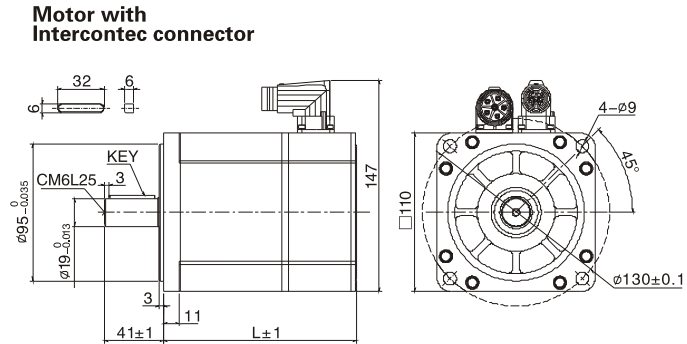
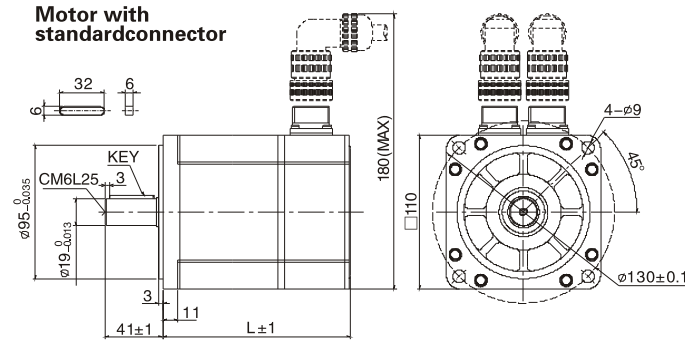


# Technical Specifications of SMH/SME60/80 Motors

# Dimensions/Torque curve of SMH110 Servo Motors

Motor series	SMH Series Motor				SME Series Motor			
	Small inertia flange size 60mm		Small inertia flange size 80mm		Small inertia flange size 60mm	Small inertia flange size 80mm		
Model	SMH60S-0020-30A□K-3LK□	SMH60S-0040-30A□K-3LK□	SMH80S-0075-30A□K-3LK□	SMH80S-0100-30A□K-3LK□	SME60S-0020-30A□K-3LK□	SME60S-0040-30A□K-3LK□	SME80S-0075-30A□K-3LK□	
Compatible driver	CD420-AA-000	CD420-AA-000	CD420-AA-000	CD430-AA-000	CD420-AA-000	CD420-AA-000	CD420-AA-000	
DC link voltage UDC	300	300	300	300	300	300	300	
Continuous performance	Rated power $P_n$ (W)	200	400	750	1000	200	400	750
	Rated torque $T_n$ (Nm)	0.64	1.27	2.39	3.18	0.64	1.27	2.39
	Rated speed $n_n$ (rpm)	3000	3000	3000	3000	3000	3000	3000
	Rated current $I_n$ (A)	1.6	3.1	3.9	6.3	1.6	3.1	3.9
Maximum torque $T_m$ (Nm)	1.92	3.82	7.17	9.48	1.92	3.81	7.17	
Maximum current $I_m$ (A)	4.8	9.3	11.7	18.9	4.8	9.3	11.7	
Standstill torque $T_s$ (Nm)	0.7	1.39	2.63	3.3	0.7	1.4	2.63	
Standstill current $I_s$ (A)	1.79	3.38	4.4	6.93	1.76	3.41	4.29	
Resistance line-line $R_L$ ( $\Omega$ )	8.02	3.52	1.4	0.86	10.4	5.8	3	
Inductance line-line $L_L$ (mH)	16.3	7.8	7.5	4.5	25.4	15	16.2	
Electrical time constant $\tau_e$ (ms)	2.03	2.22	5.35	5.23	2.44	2.59	5.4	
Mechanical time constant $\tau_m$ (ms)	2.26	1.35	0.75	0.89	2.93	1.93	1.49	
Reverse voltage constant $K_e$ (V/krpm)	29	29	40	34	29	29	40	
Torque constant $K_t$ (Nm/A)	0.48	0.48	0.662	0.562	0.48	0.48	0.662	
Rotor moment of inertia $J_m$ (Kg · cm <sup>2</sup> )	0.375	0.51	1.36	1.9	0.375	0.443	1.255	
	0.379 (with brake)	0.514 (with brake)	1.385 (with brake)	1.925 (with brake)	0.379 (with brake)	0.447 (with brake)	1.28 (with brake)	
Pole pair number	3	3	3	3	3	3	3	
Maximum voltage rising $du/dt$ (KV/ $\mu$ s)	8	8	8	8	8	8	8	
Insulation class	F	F	F	F	F	F	F	
Maximum radial force $F$ (N)	180	180	335	335	180	180	335	
Maximum axial force $F$ (N)	90	90	167.5	167.5	90	90	167.5	
Weight G(Kg)	1.3	1.8	3.3	3.9	1.3	1.6	2.9	
	1.8 (with brake)	2.3 (with brake)	4 (with brake)	4.6 (with brake)	1.8 (with brake)	2.1 (with brake)	3.6 (with brake)	
Length of motor L(mm)	120	150	147	167	120±1.5	135±1.5	132±1.5	
	159 ± 1.5(with brake)	189 ± 1.5(with brake)	197 ± 1.5(with brake)	217 ± 1.5(with brake)	159 ± 1.5(with brake)	174 ± 1.5(with brake)	182 ± 1.5(with brake)	
Position feedback device	Incremental encoder 2500ppr							
Cooling method	Totally enclosed, non-ventilated							
Protection level	IP65 for body, shaft sealing IP54							
Environmental conditions for operation	Temperature	-20°C ~ 40°C						
	Humidity	Below 90% RH (No condensing)						
	Ambient environment	Away from active gas, combustible gas, oil drops and dust						
	Altitude	Maximum altitude 4000m, Rated power at 1000m or below, Above 1000m: Decreasing 1.5% per 100m rise						

**Note:** □=A: no brake      □=H: Cable connector  
 □=B: brake              □=N: HFO series standard connector  
                                  □=M: 2XM17 series Intercontec connector





# Technical Specifications of SMH110 Servo Motors

Motor series	Medium inertia, flange size 110mm						
Model	SMH110D-0125 -30A□K-4LK□	SMH110D-0126 -30A□K-4HK□	SMH110D-0105 -20A□K-4LK□	SMH110D-0157 -30A□K-4HK□	SMH110D-0126 -20A□K-4LK□	SMH110D-0188 -30A□K-4HK□	
Compatible driver	CD430-AA-000	CD620-AA-000	CD430-AA-000	CD620-AA-000	CD430-AA-000	CD620-AA-000	
DC link voltage UDC	300	560	300	560	300	560	
Continuous performance	Rated power $P_n$ (W)	1250	1260	1050	1570	1880	
	Rated torque $T_n$ (Nm)	4.0	4.0	5.0	5.0	6.0	
	Rated speed $n_n$ (rpm)	3000	3000	2000	3000	2000	3000
	Rated current $I_n$ (A)	6.5	4.3	5.9	5.9	6.2	6.2
Maximum torque $T_m$ (Nm)	12	12	15.0	15.0	18.0	18.0	
Maximum current $I_m$ (A)	19.5	12.9	17.7	17.7	18.6	18.6	
Standstill torque $T_s$ (Nm)	4.4	4.4	5.5	5.5	6.6	6.6	
Standstill current $I_s$ (A)	6.82	4.73	6.49	6.49	6.765	6.765	
Resistance line-line $R_L$ ( $\Omega$ )	0.8	1.83	1.03	1.03	1.258	1.258	
Inductance line-line $L_L$ (mH)	6.4	13.5	7.8	7.8	9.62	9.62	
Electrical time constant $\tau_e$ (ms)	7.9	7.37	7.57	7.57	7.64	7.64	
Mechanical time constant $\tau_m$ (ms)	1.4	1.63	1.55	1.55	1.65	1.65	
Reverse voltage constant $K_e$ (V/krpm)	45	64	55	55	64	64	
Torque constant $K_t$ (Nm/A)	0.744	1.058	0.910	0.910	1.058	1.058	
Rotor moment of inertia $J_m$ (Kg · cm <sup>2</sup> )	5.8	5.8	7.2	7.2	8.5	8.5	
	5.85 (with brake)	5.85 (with brake)	7.25 (with brake)	7.25 (with brake)	8.55 (with brake)	8.55 (with brake)	
Pole pair number	4	4	4	4	4	4	
Maximum voltage rising $du/dt$ (KV/ $\mu$ s)	8	8	8	8	8	8	
Insulation class	F	F	F	F	F	F	
Maximum radial force $F$ (N)	630	630	630	630	630	630	
Maximum axial force $F$ (N)	315	315	315	315	315	315	
Weight $G$ (Kg)	6.2	6.2	7.2	7.2	8.2	8.2	
	8.2(with brake)	8.2(with brake)	9.2(with brake)	9.2(with brake)	10.2(with brake)	10.2(with brake)	
Length of motor $L$ (mm)	168	168	185	185	202	202	
	228 ± 1 (with brake)	228 ± 1 (with brake)	245 ± 1 (with brake)	245 ± 1 (with brake)	262 ± 1 (with brake)	262 ± 1 (with brake)	
Position feedback device	Incremental encoder 2500ppr						
Cooling method	Totally enclosed, non-ventilated						
Protection level	IP65 for body, shaft sealing IP54						
Environmental conditions for operation	Temperature	-20°C ~ 40°C (No ice)					
	Humidity	Below 90% RH (No condensing)					
	Ambient environment	Away from active gas, combustible gas, oil drops and dust					
	Altitude	Maximum altitude 4000m, Rated power at 1000m or below, Above 1000m: Decreasing 1.5% per 100m rise					

**Note:** □=A: no brake □=C: YL22 series standard connector  
 □=B: brake □=D: Intercontec connector

# Wiring Diagram for The Power Cable

**MOT-005-LL-KL**  
Wire spec. UI20328 4C x 18AWG(41/0.16T) black

MOT-005-LL-KL		
Cable Color	Signal	PIN #
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4

**MOT-005-LL-KC0**  
Wire spec. 4C x 18AWG(41/0.16T)

MOT-005-LL-KC0		
Cable color	Signal	Pin#
Yellow	U	PIN2
Red	V	PIN3
Black	W	PIN4
Yellow-green	PE	PIN1
metal ring	Shield	Shield cable

**BRA-LL-KL**  
Wire spec. 2 x 20AWG

BRA-LL-KL		
Cable color	Signal	Pin#
Red	break+	PIN1
Blue	break-	PIN2

**MOT-005-LL-KM1**  
Wire spec. UI20328 4C x 18AWG(41/0.16T) black

MOT-005-LL-KM1		
Cable Color	Signal	PIN #
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	⊥

**MOT-005-LL-KM1-B**  
Wire spec. RVVYP 4 x 18AWG+2 x 20AWG

MOT-005-LL-KM1-B		
Cable Color	Signal	M17 7PIN
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	⊥
Shield terminal	shield	metal ring
Red(thin)	brake+	PIN4
Blue(thin)	brake-	PIN5

**MOT-008-LL-KL**  
Wire spec. cable 4C x 1.5mm<sup>2</sup>

MOT-008-LL-KL		
Cable Color	Signal	PIN #
1	U	PIN1
2	V	PIN2
3	W	PIN3
Yellow-green	PE	PIN4

**MOT-008-LL-KC1**  
Wire spec. cable 4C x 1.5mm<sup>2</sup>

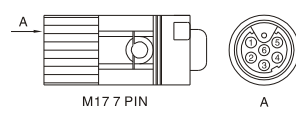
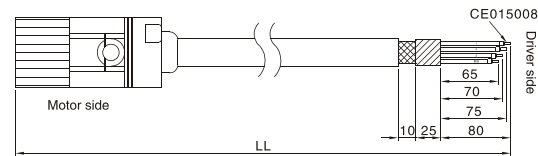
MOT-008-LL-KC1		
Cable Color	Signal	PIN #
1	U	PIN2
2	V	PIN3
3	W	PIN4
Yellow-green	PE	PIN1

**MOT-008-LL-KC2-B**  
Wire spec. ECHU RVVYP 4 x 1.5+2 x 0.5

MOT-008-LL-KC2-B		
Cable Color	Signal	YL2406TK-Y
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4
Red(thin)	brake+	PIN5
Blue(thin)	brake-	PIN6
Shield terminal	Shield	metal ring

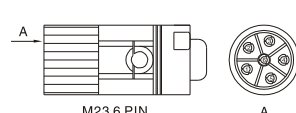
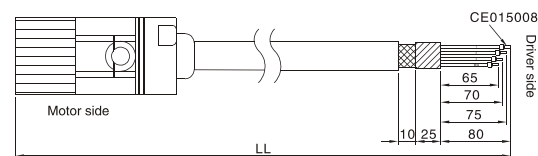
## Wiring Diagram for The Power Cable

**MOT-008-LL-KM1**  
Wire spec. cable 4C x 1.5mm<sup>2</sup>



MOT-008-LL-KM1		
Cable Color	Signal	PIN #
1	U	PIN1
2	V	PIN2
3	W	PIN3
Yellow-green	PE	⊥

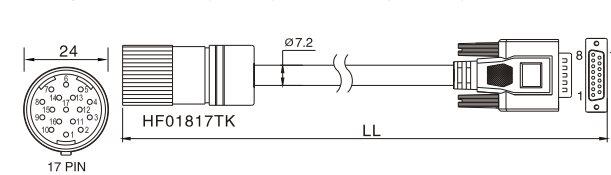
**MOT-008-LL-KM2**  
Wire spec. cable 4C x 1.5mm<sup>2</sup>



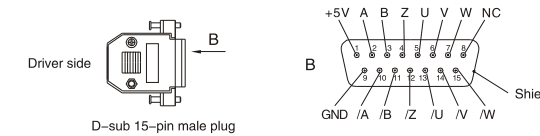
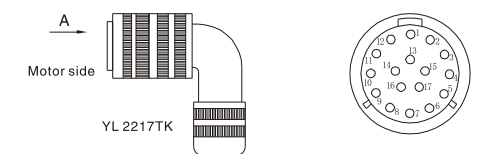
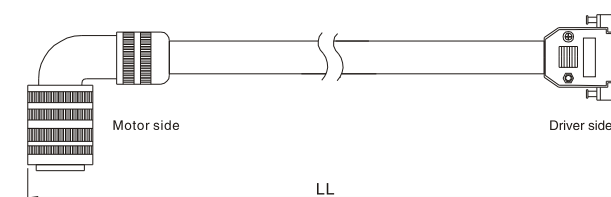
MOT-008-LL-KM2		
Cable Color	Signal	PIN #
1	U	PIN1
2	V	PIN2
3	W	PIN4
Yellow-green	PE	PIN3

## Wiring Diagram for The Encoder Cable

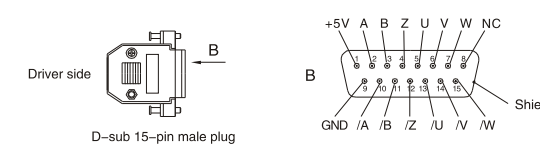
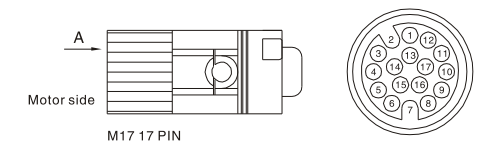
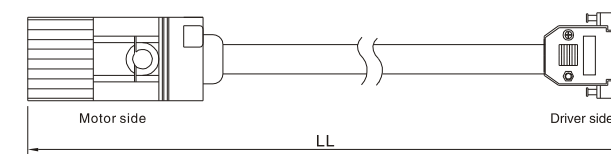
**ENCCA-LL-KC0**  
Wire spec. 1P x 24AWG(7/0.20T)+7P x 28AWG(7/0.127T)



**ENCCA-LL-KC1**  
Wire spec. 1P x 24AWG(7/0.20T)+7P x 28AWG(7/0.127T)



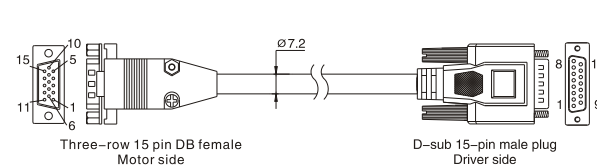
**ENCCA-LL-KM1**  
Wire spec. 1P x 24AWG(7/0.20T)+7P x 28AWG(7/0.127T)



ENCCA-LL-KC0/ENCCA-LL-KC1				
17PIN	15PIN DB	Signal	External wire colour	Motor wire colour
PIN1	PIN1	+5V	Red(thick)	Red
PIN3	PIN2	A	Orange	Blue
PIN5	PIN3	B	Yellow	Green
PIN14	PIN4	Z	Green	Yellow
PIN9	PIN5	U	Brown	Brown
PIN11	PIN6	V	Purple	Gray
PIN16	PIN7	W	Blue	White
PIN2	PIN9	GND	Black(thick)	Black
PIN4	PIN10	/A	Orange-white	Blue-black
PIN6	PIN11	/B	Yellow-white	Green-black
PIN15	PIN12	/Z	Green-white	Yellow-black
PIN10	PIN13	/U	Brown-white	Brown-black
PIN12	PIN14	/V	Purple-white	Gray-black
PIN17	PIN15	/W	Blue-white	White-black
Internal metal ring	DB metal shell	Shield	Shield	Shield

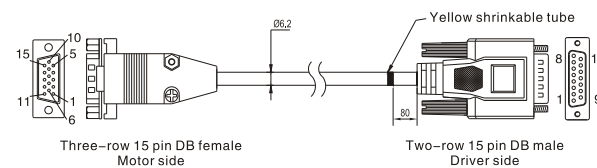
## Wiring Diagram for The Encoder Cable

**ENCCA-LL-KH**  
Wire spec. 1P x 24AWG(7/0.20T)+7P x 28AWG(7/0.127T)



ENCCA-LL-KH				
Three-row 15 pin DB	Two-row 15 pin DB	Signal	External wire color	Motor wire color
PIN1	PIN1	+5V	Red(thick)	Red
PIN8	PIN2	A	Orange	Blue-black
PIN7	PIN3	B	Yellow	Green
PIN6	PIN4	Z	Green	Yellow
PIN4	PIN5	U	Brown	Brown-black
PIN10	PIN6	V	Purple	White-black
PIN9	PIN7	W	Blue	Gray-black
PIN2	PIN9	GND	Black(thick)	Black
PIN13	PIN10	/A	Orange-white	Blue
PIN12	PIN11	/B	Yellow-white	Green-black
PIN11	PIN12	/Z	Green-white	Yellow-black
PIN5	PIN13	/U	Brown-white	Brown
PIN15	PIN14	/V	Purple-white	White
PIN14	PIN15	/W	Blue-white	Gray
PIN3 empty	PIN8 empty			
Metal shell	DB metal shell	Shield	Shield	Metal shell

**ENCCF-LL-FH**  
Wire spec. 1P x 24AWG(7/0.20T)+3P x 28AWG(7/0.127T)



ENCCF-LL-FH			
Three-row 15 pin DB	Two-row 15 pin DB	Signal	Wire color
PIN1	PIN1	+5V	Red(thick)
PIN8	PIN2	A	Brown
PIN7	PIN3	B	Yellow
PIN6	PIN4	Z	Green
PIN2	PIN9	GND	Black(thick)
PIN13	PIN10	/A	Brown-white
PIN12	PIN11	/B	Yellow-white
PIN11	PIN12	/Z	Green-white
Other pins empty	Other pins empty		
Shell	Shell	Shield	Shield

ENCCA-LL-KM1				
17PIN	15PIN DB	Signal	External wire colour	Motor wire colour
PIN1	PIN1	+5V	Red(thick)	Red
PIN3	PIN2	A	Orange	Blue
PIN5	PIN3	B	Yellow	Green
PIN14	PIN4	Z	Green	Yellow
PIN9	PIN5	U	Brown	Brown
PIN11	PIN6	V	Purple	Gray
PIN16	PIN7	W	Blue	White
PIN2	PIN9	GND	Black(thick)	Black
PIN4	PIN10	/A	Orange-white	Blue-black
PIN6	PIN11	/B	Yellow-white	Green-black
PIN15	PIN12	/Z	Green-white	Yellow-black
PIN10	PIN13	/U	Brown-white	Brown-black
PIN12	PIN14	/V	Purple-white	Gray-black
PIN17	PIN15	/W	Blue-white	White-black
Internal metal ring	DB metal shell	Shield	Shield	Shield