

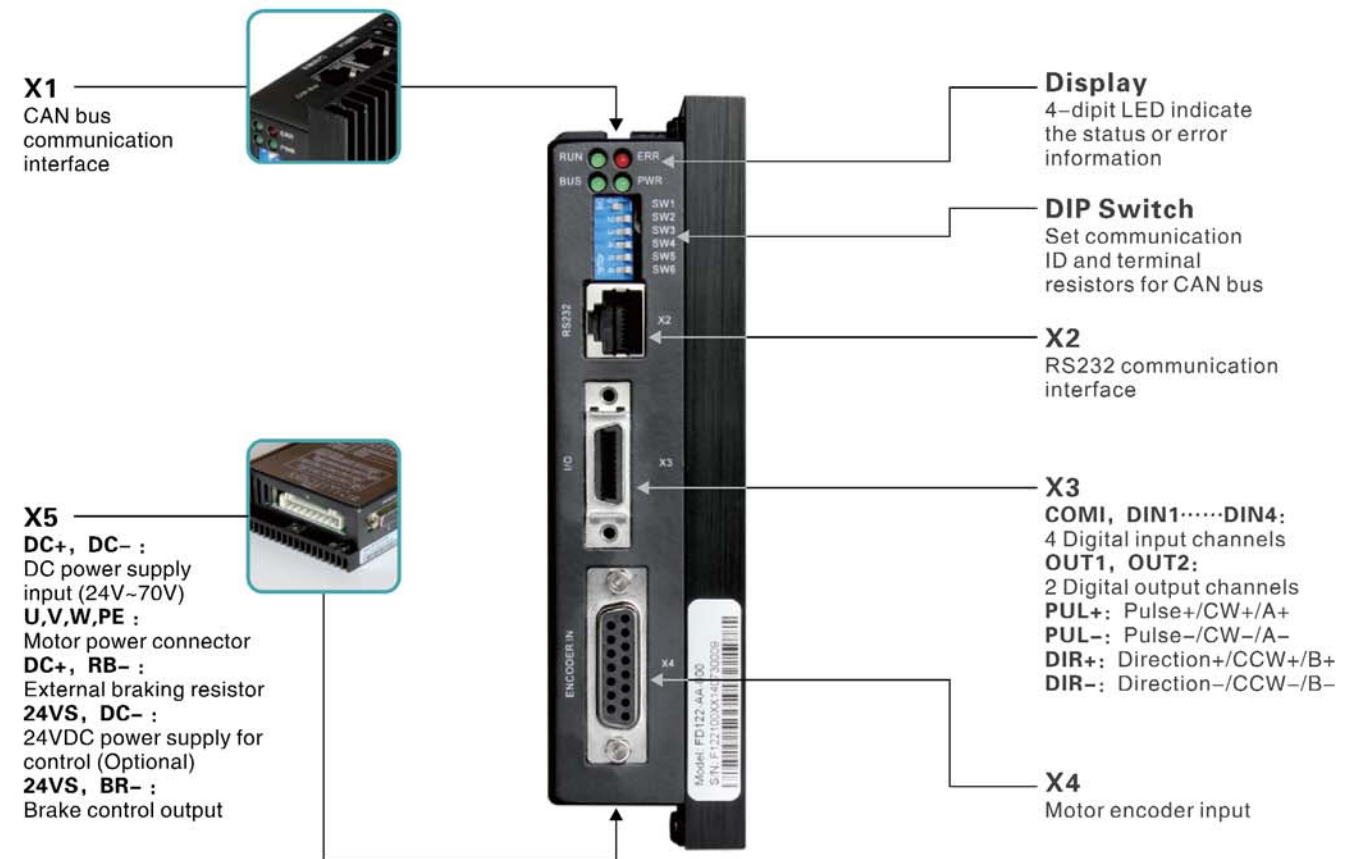
Servo Driver and Motor Selection Table

Category	Servo Driver	Servo Motor	Description	Power/brake Cable	Encoder Cable	Rated Speed/ Rated Torque/ Rated Current
Small Inertia DC60V	FD122-AA-000	SMH40S-0005-30AAK-4DKH	Cable connector	MOT-005-LL-KL-D	ENCCA-LL-KH	3000rpm/ 0.16Nm/1.2A
		SMH40S-0005-30ABK-4DKH	Cable connector and brake	MOT-005-LL-KL-D/BRA-LL-KL		3000rpm/ 0.32Nm/2.5A
		SMH40S-0010-30AAK-4DKH	Cable connector	MOT-005-LL-KL-D	ENCCF-LL-FH	3000rpm/ 0.64Nm/4.6A
		SMH40S-0010-30ABK-4DKH	Cable connector and brake	MOT-005-LL-KL-D/BRA-LL-KL		1000rpm/ 1Nm/6.5A
		SME60S-0020-30AAK-3DKH	Cable connector	MOT-005-LL-KL-D	ENCCF-LL-FC0	800rpm/ 1.5Nm/5.8A
		57S-0010-10AAK-FDFH	Cable connector	MOT-005-LL-KL-D		500rpm/ 2Nm/6A
		57S-0015-08AAK-FDFH	Cable connector	MOT-005-LL-KL-D		
85S-0020-05AAK-FLFN	HFO standard connector	MOTE-005-LL-KC0				

Panel and Interface Description



FD Series Low-voltage Servo System

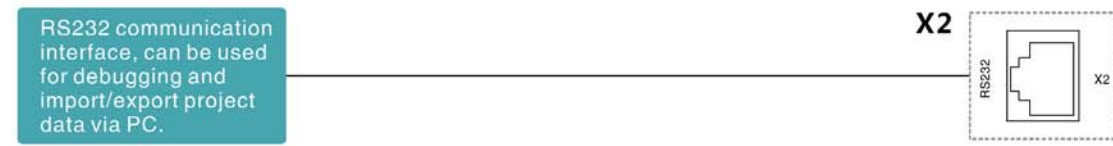


Interface Description of FD122 Servo Driver



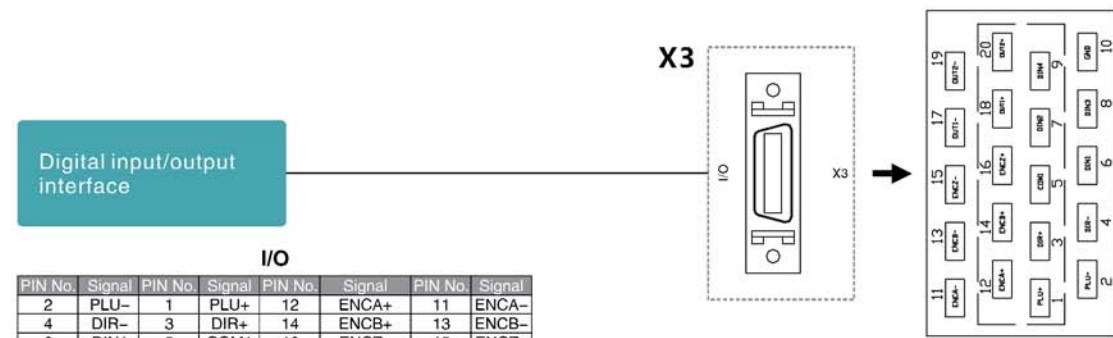
CAN

PIN No.	Signal
1	CAN_H
2	CAN_L
3	GND
Others	NC



RS232

PIN No.	Signal
3	TXD
4	GND
6	RXD
Others	NC



I/O

PIN No.	Signal	PIN No.	Signal	PIN No.	Signal	PIN No.	Signal
2	PLU-	1	PLU+	12	ENCA+	11	ENCA-
4	DIR-	3	DIR+	14	ENCB+	13	ENCB-
6	DIN1	5	COM1	16	ENCZ+	15	ENCZ-
8	DIN3	7	DIN2	18	OUT1+	17	OUT1-
10	GND	9	DIN4	20	OUT2+	19	OUT2-



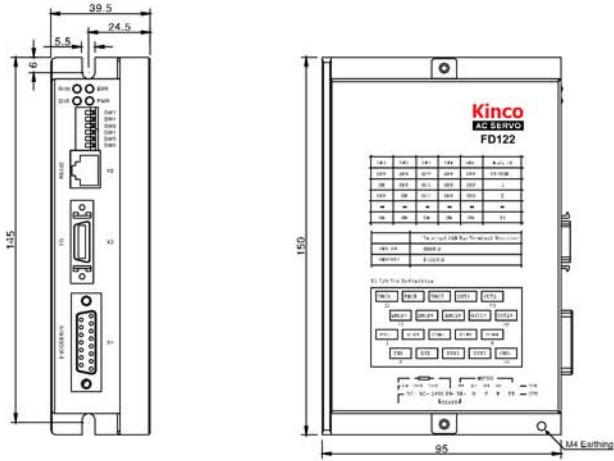
ENCODER IN

PIN No.	Signal	PIN No.	Signal
1	+5V	9	GND
2	A	10	/A
3	B	11	/B
4	Z	12	/Z
5	U	13	/U
6	V	14	/V
7	W	15	/W
8	PTC IN		

Technical Specification of FD122

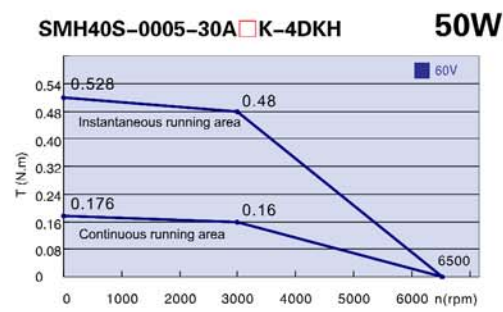
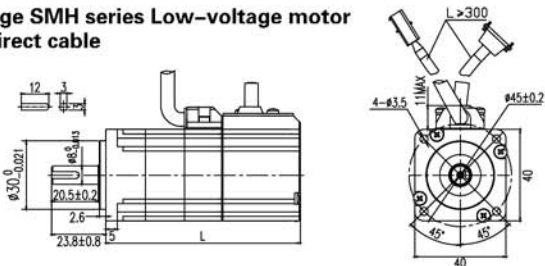
Model parameter		FD122-AA-000
Power	Main supply voltage	24VDC ~ 70VDC
	Control circuit voltage	DC24V 1A (Optional)
Current	Rated current(RMS)	6A
	Peak current(PEAK)	15A
Feedback signal		2500PPR (incremental encoder with 5V supply)
Brake chopper		Use an external braking resistor according to application, mainly in high speed start and stop application.
Brake chopper threshold		DC79V ± 2V
Over-voltage alarming threshold		DC86V ± 2V
Under-voltage alarming threshold		18V ± 2V
Cooling method		Natural air cooling
Weight		0.565 Kg
Digital Input	Input specification	4 digital inputs, with COM1 terminal for PNP (high level valid 12.5~30V) or NPN (low level valid) connection.
	Input function	Define freely according to requirement, supporting following functions: Driver enable, driver fault reset, driver mode control, proportional control, positive limit, negative limit, homing signal, reverse command, internal speed section control, internal positive section control, quick stop, start homing, active command, switch electronic gear ratio, switch gain
Digital Output	Output specification	3 digital outputs, OUT1-OUT2 current is 100mA, BR+/BR- (Brake control output) current is 500mA, can drive brake device directly
	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, maximum speed obtained in torque mode, motor brake, position limiting, reference found, multi-position reached
	Encoder Signal Output	Output the encoder signal of motor, Used in multiple axis synchronous control, supports 2M at most
	RS232	RS232, Connections with PC (2-2, 3-3, 5-5) or controller
Protection Functions		Over-voltage protection, under-voltage protection, motor over-heat protection(I ² T), short-circuit protection, drive over-heat protection, etc
CAN BUS		Supports 1M baud rate, communicates with controller via CANopen protocol
Operation Environment	Operating temperature	0 ~ 40°C
	Storage temperature	-10°C ~ 70°C
	Humidity(non-condensing)	Below 90%RH
	Protection class	IP20
	Installation environment	Installed in a dust-free, dry and lockable environment(such as in a electrical cabinet)
	Installation mode	Vertical installation
	Altitude	No power limitation below 1000m
Atmospheric pressure	86kpa ~ 106kpa	

Mechanical Dimension Diagram for FD122

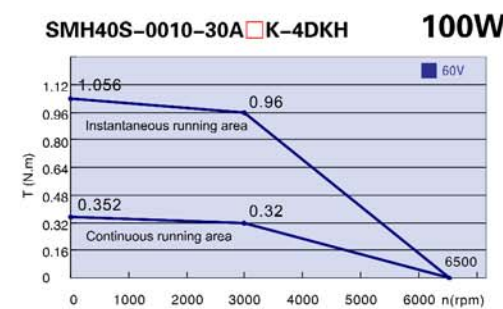
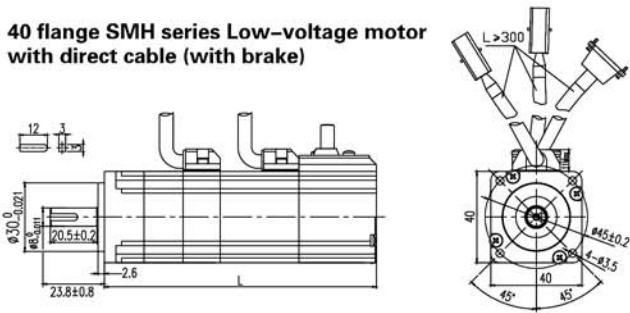


Dimensions/Torque curve of Low-voltage Servo Motor (40/60 flange)

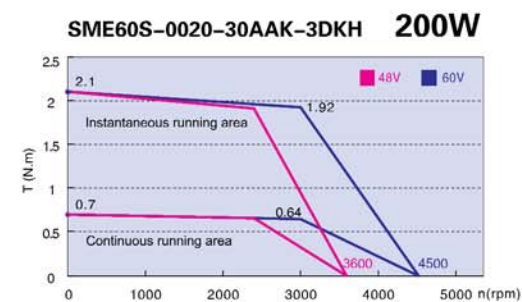
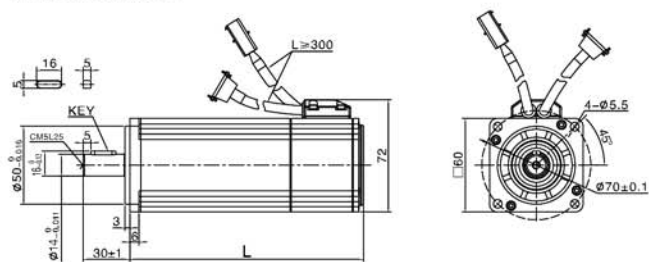
40 flange SMH series Low-voltage motor with direct cable



40 flange SMH series Low-voltage motor with direct cable (with brake)



60 flange SMH series Low-voltage motor with direct cable



Technical Specifications of SMH40/60 Series Low-voltage Servo Motor

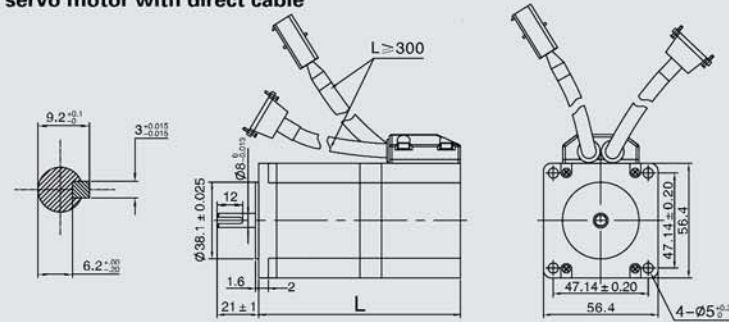
Motor series	SMH Series, small inertia, 40 flange		SMH Series, small inertia, 60 flange	
Model	SMH40S-0005-30A□K-4DKH	SMH40S-0010-30A□K-4DKH	SME60S-0020-30AAK-3DKH	
Adaptable driver	FD122-AA-000			
DC link voltage UDC	60	60	70	
Continuous performance	Rated power P _r (W)	50	100	200
	Rated torque T _r (Nm)	0.16	0.32	0.64
	Rated speed n _r (rpm)	3000	3000	3000
	Rated current I _r (A)	1.2	2.5	4.6
Maximum torque T _m (Nm)	0.48	0.96	1.92	
Maximum current I _m (A)	3.6	7.5	13.8	
Standstill torque T _s (Nm)	0.176	0.352	0.7	
Standstill current I _s (A)	1.32	2.75	5.06	
Resistance line-line R _L (Ω)	4.2	2.1	0.7	
Inductance line-line L _L (mH)	3.5	2.5	1.55	
Electrical time constant τ _e (ms)	0.84	1.2	2.21	
Mechanical time constant K _e (V/krpm)	1.28	1.22	2.05	
Reverse voltage constant K _v (Nm/A)	8	8	9	
Torque constant K _t (Nm/A)	0.1323	0.1323	0.149	
Motor moment of inertia J _m (Kg·cm ²)	0.031	0.033 (With brake)	0.059	0.061 (With brake)
Pole pair number	4	4	3	
Maximum voltage rising du/dt (KV/μs)	8	8	8	
Insulation class	F	F	F	
Maximum radial force F (N)	120	120	180	
Maximum axial force F (N)	60	60	90	
Weight G(Kg)	0.5	0.8 (With brake)	0.8	1.0 (With brake)
Length of motor L(mm)	85.3 ± 1	119 ± 1.5 (With brake)	110.8 ± 1	145 ± 1.5 (With brake)
Position feedback device	Incremental encoder 2500ppr			
Cooling method	Totally enclosed, non-ventilated			
Protection level	IP65 for body, shaft sealling IP54			
Environmental conditions for operation	Temperature	-20 ~ 40°C		
	Humidity	Below 90% RH (Non-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
 □=B: Brake

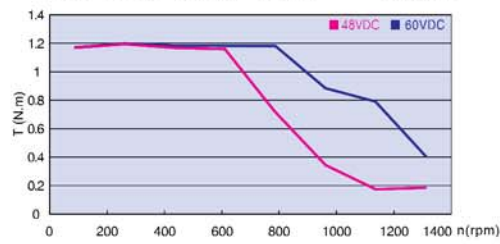
Dimensions/Torque curve of 57S/85S series Multi-pole Servo Motor

Technical Specifications of 57S/85S series Multi-pole Servo Motor

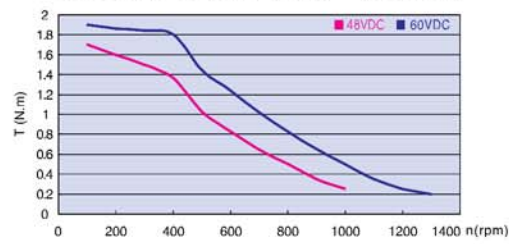
57S series Multi-pole servo motor with direct cable



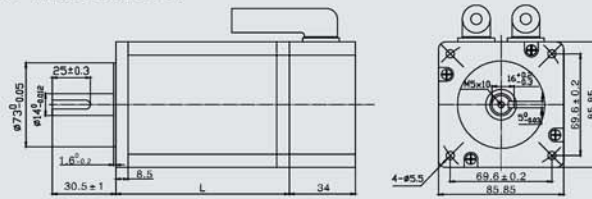
57S-0010-10AAK-FDFH 1NM



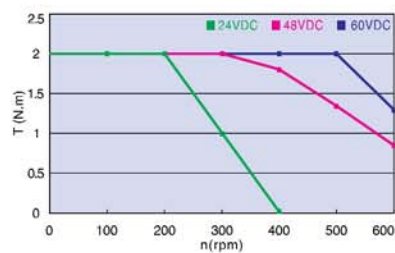
57S-0015-08AAK-FDFH 1.5NM



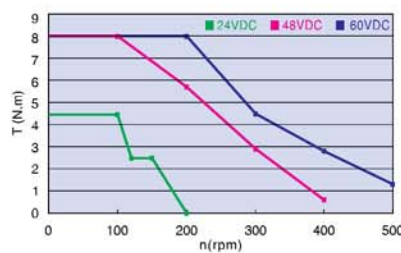
85S series Multi-pole servo motor with connector



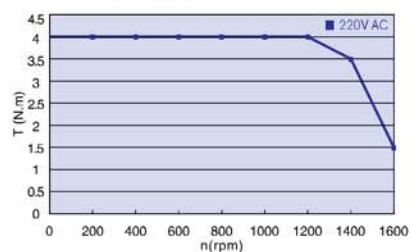
85S-0020-05AAK-FLFN 2.4NM



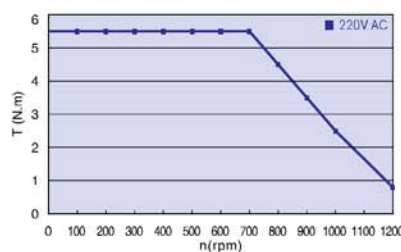
85S-0050-10AAK-FLFN-R30 8NM



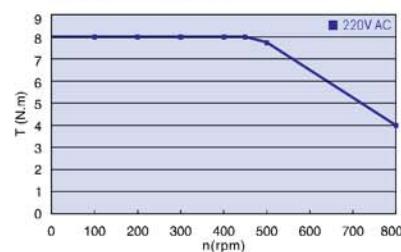
85S-0025-05AAK-FLFN 4.18NM



85S-0035-05AAK-FLFN 6NM



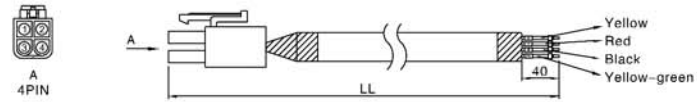
85S-0045-05AAK-FLFN 8NM



Multi-pole servo motor	Small Inertia, 57 Flange		Small Inertia, 85 Flange				
Model	57S-0010-10AAK-FDFH	57S-0015-08AAK-FDFH	85S-0020-05AAK-FLFN	85S-0025-05AAK-FLFN	85S-0035-05AAK-FLFN	85S-0045-05AAK-FLFN	85S-0050-10AAK-FLFN-R30
Rated phase current (A)	6.5	5.8	6	4	4	4	8.5
Holding torque (Nm)	1	1.5	2.4	4.18	6	8	8
Damping torque (Nm)	0.04	0.068	0.25	0.3	0.4	0.45	0.45
Resistance line-line (Ω)	0.35	0.7	0.44	1.13	2.3	1.78	0.43
Inductance line-line(mH)	1.28	2.4	3	5.75	12.4	17.1	3.9
Motor moment of inertia(Kg.cm ²)	300	480	1400	2320	3300	4400	4400
Length L (mm)	90 ± 1.5	113 ± 1.5	80 ± 1	97 ± 1	127 ± 1	157 ± 1	157 ± 1
Maximum radial force(N)	15	15	60	60	60	60	60
Maximum axial force (N)	75	75	220	220	220	220	220
Weight (Kg)	1.05	1.3	2.3	2.7	3.8	5.3	5.3
Dielectric strength	600V AC 1S 5mA		1200V AC 1S 2mA	1500V AC 1S 5mA		1800V AC 1S 5mA	
Feedback device accuracy	2500p/r (Resolution : 10000)						
Insulation class	B						
Ambient temperature	-20 ~ 50°C						
Surface temperature rising	Max. 80°C						
Insulation impedance	Min. 100MΩ , 500V DC						

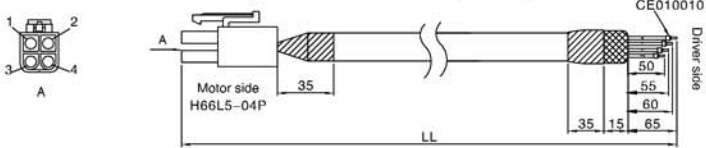
Wiring Diagram for The Power Cable

MOT-005-LL-KL-D Wire Spec.: 4 x 18AWG(41/0.167)



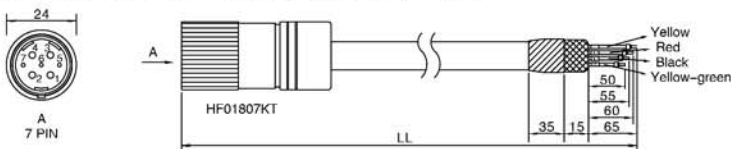
MOT-005-LL-KL-D		
Cable color	Signal	Pin#
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4

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



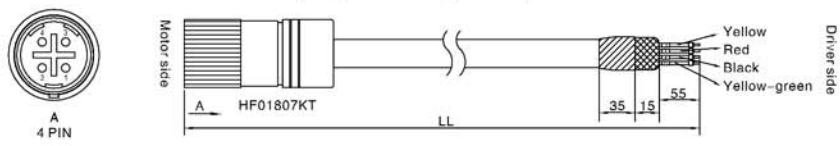
MOT-005-LL-KL		
Cable Color	Signal	PIN #
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4

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



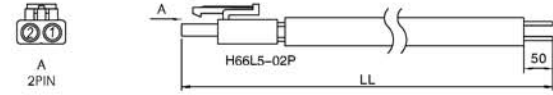
MOT-005-LL-KC0		
Cable color	Signal	Pin#
Yellow	U	PIN2
Red	V	PIN3
Black	W	PIN4
Yellow-green	PE	PIN1
metal ring	Shield	Shield cable

MOTE-005-LL-KC0 Wire Spec.: 4C x 18AWG(41/0.16T)



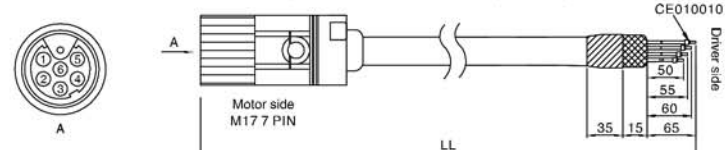
MOTE-005-LL-KC0		
Cable color	Signal	Pin#
Yellow	U	PIN2
Red	V	PIN3
Black	W	PIN4
Yellow-green	PE	PIN1
metal ring	Shield	Shield cable

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



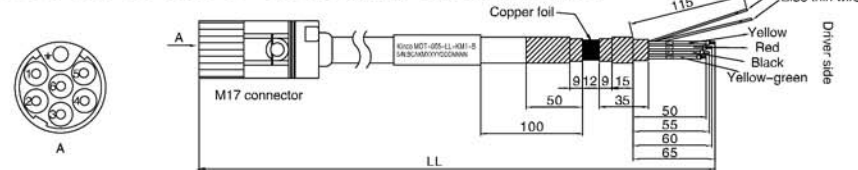
BRA-LL-KL		
Cable color	Signal	Pin#
Red	break+	PIN1
Blue	break-	PIN2

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



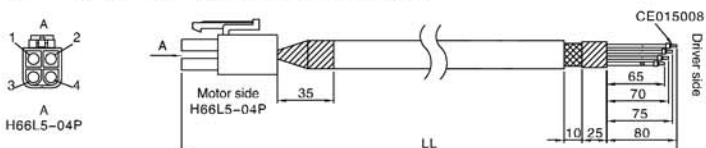
MOT-005-LL-KM1		
Cable Color	Signal	PIN #
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	⚡

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

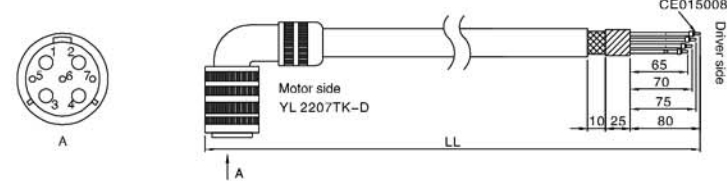
MOT-008-LL-KL Wire spec. cable 4C x 1.5mm²



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

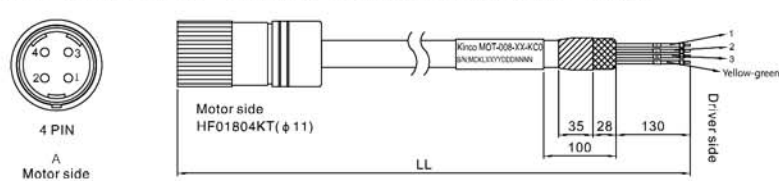
Wiring Diagram for The Power Cable

MOT-008-LL-KC1 Wire spec. cable 4C x 1.5mm²



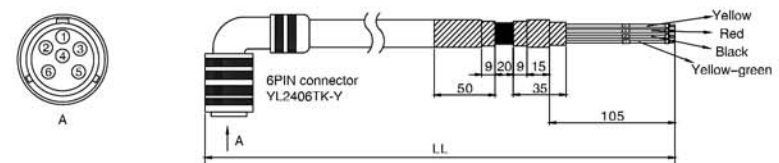
MOT-008-LL-KC1		
Cable Color	Signal	PIN #
1	U	PIN2
2	V	PIN3
3	W	PIN4
Yellow-green	PE	PIN1

MOT-008-LL-KC0 Wire Spec.: ECHU H05VV4V5-K 4 x 1.5mm² BLACK



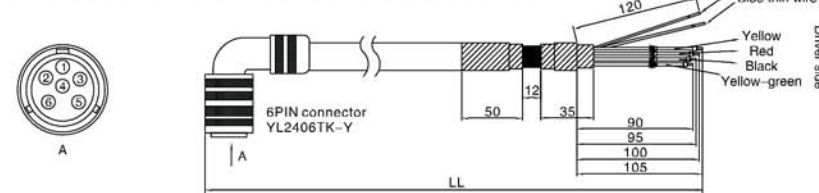
MOT-008-LL-KC0		
Cable color	Signal	Pin#
1	U	PIN2
2	V	PIN3
3	W	PIN4
Yellow-green	PE	PIN1
metal ring	Shield	Shield

MOT-008-LL-KC2 Power cable O-2395 4C x 1.5mm² (30/0.25B)



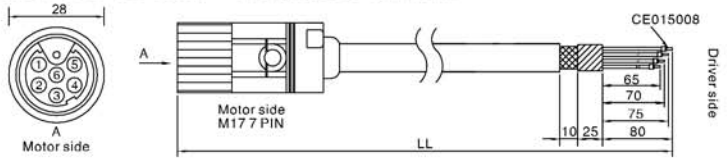
MOT-008-LL-KC2		
Cable Color	Signal	YL2406TK-Y
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4

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



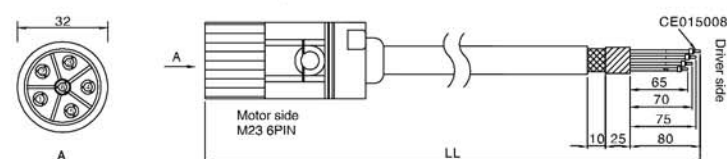
MOT-008-LL-KC2-B		
Cable Color	Signal	YL2406TK-Y
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4
Red(thin)	brake+	PIN5
Blue(thin)	brake-	PIN6
Shield terminal	Shield	metal ring

MOT-008-LL-KM1 Wire Spec.cable 4C x 1.5mm²



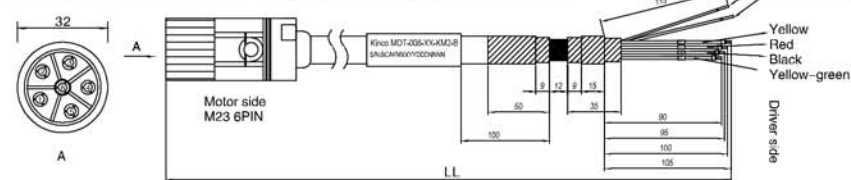
MOT-008-LL-KM1		
Cable color	Signal	M17 7Pin
1	U	PIN1
2	V	PIN2
3	W	PIN3
Yellow-green	PE	⚡

MOT-008-LL-KM2 Wire spec. cable 4C x 1.5mm²



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

MOT-008-LL-KM2-B Wire spec. ECHU RVVYP 4 x 1.5+2 x 0.5

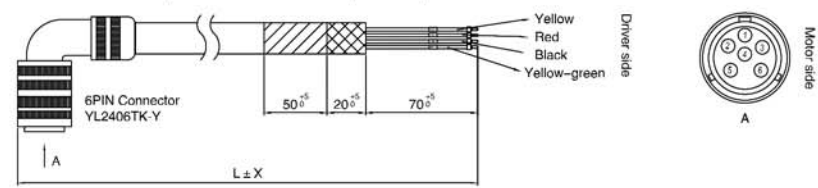


MOT-008-LL-KM2-B		
Cable Color	Signal	M23 6PIN
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN4
Yellow-green	PE	PIN3
Shield terminal	Shield	metal ring
Red(thin)	brake+	PIN5
Blue(thin)	brake-	PIN6

Wiring Diagram for The Power Cable

MOT-015-LL-KC2

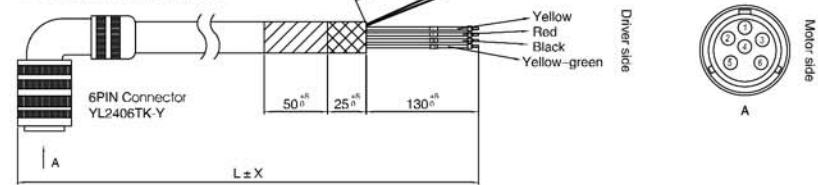
Power cable Cableplus UL2856 4 × 14AWG(50/0.25T)



MOT-015-LL-KC2		
Cable color	Signal	YL2406TK-Y
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4
Shield	Shield	Metal ring

MOT-015-LL-KC2-B

Power cable Cableplus UL2856 4 × 14AWG+2 × 0.5

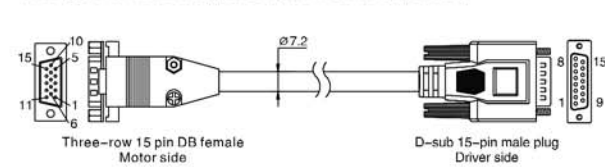


MOT-015-LL-KC2-B		
Cable color	Signal	YL2406TK-Y
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow-green	PE	PIN4
Red(thin)	brake+	PIN5
Blue(thin)	brake-	PIN6
Shield	Shield	Metal ring

Wiring Diagram for The Encoder Cable

ENCCA-LL-KH

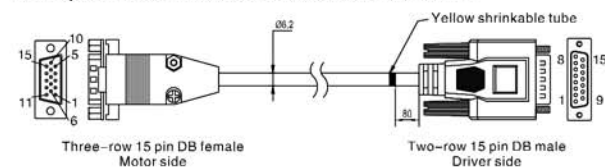
Wire spec. 1P × 24AWG(7/0.20T)+7P × 28AWG(7/0.127T)



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 × 24AWG(7/0.20T)+3P × 28AWG(7/0.127T)

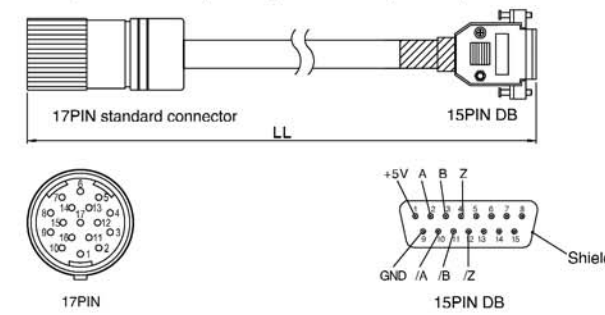


ENCCF-LL-FH				
Three-row 15 pin DB	Two-row 15 pin DB	Signal	Wire color	Motor wire color
PIN1	PIN1	+5V	Red(thick)	Red
PIN8	PIN2	A	Brown	Blue-black
PIN7	PIN3	B	Yellow	Green
PIN6	PIN4	Z	Green	Yellow
PIN2	PIN9	GND	Black(thick)	Black
PIN13	PIN10	/A	Brown-white	Blue
PIN12	PIN11	/B	Yellow-white	Green-black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

Wiring Diagram for The Encoder Cable

ENCCF-LL-FC0

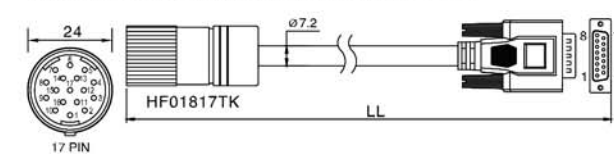
Wire spec. 1P × 24AWG(7/0.20T)+3P × 28AWG(7/0.127T)



ENCCF-LL-FC0				
17PIN standard connector	15PIN DB	Signal	External wire colour	Motor wire colour
PIN1	PIN1	+5V	Red(thick)	Red
PIN3	PIN2	A	Brown	Blue-black
PIN5	PIN3	B	Yellow	Green
PIN14	PIN4	Z	Green	Yellow
PIN2	PIN9	GND	Black(thick)	Black
PIN4	PIN10	/A	Brown-white	Blue
PIN6	PIN11	/B	Yellow-white	Green-black
PIN15	PIN12	/Z	Green-white	Yellow-black
Other pins empty	Other pins empty			
Metal coil	Shell	Shield	Shield	Shield

ENCCA-LL-KC0

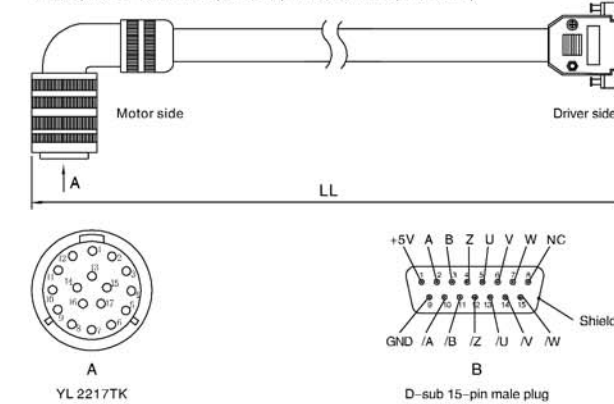
Wire spec. 1P × 24AWG(7/0.20T)+7P × 28AWG(7/0.127T)



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

ENCCA-LL-KC1

Wire spec. 1P × 24AWG(7/0.20T)+7P × 28AWG(7/0.127T)



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

ENCCA-LL-KM1

Wire spec. 1P × 24AWG(7/0.20T)+7P × 28AWG(7/0.127T)

