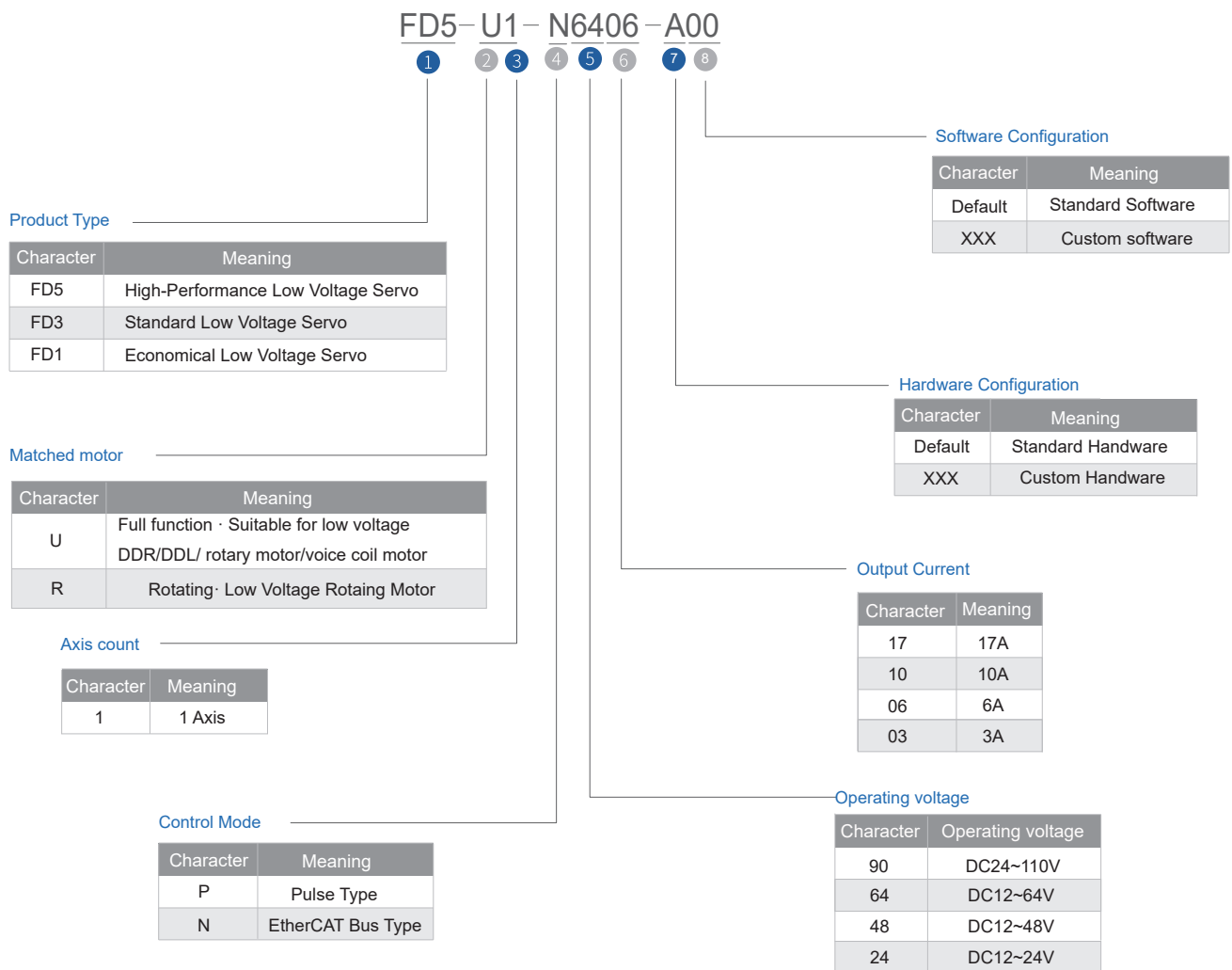




FD5 LOW VOLTAGE SERVO PRODUCT BROCHURE

Low Voltage Servo Drive

Naming convention



Low Voltage Servo Drive Electrical Specifications

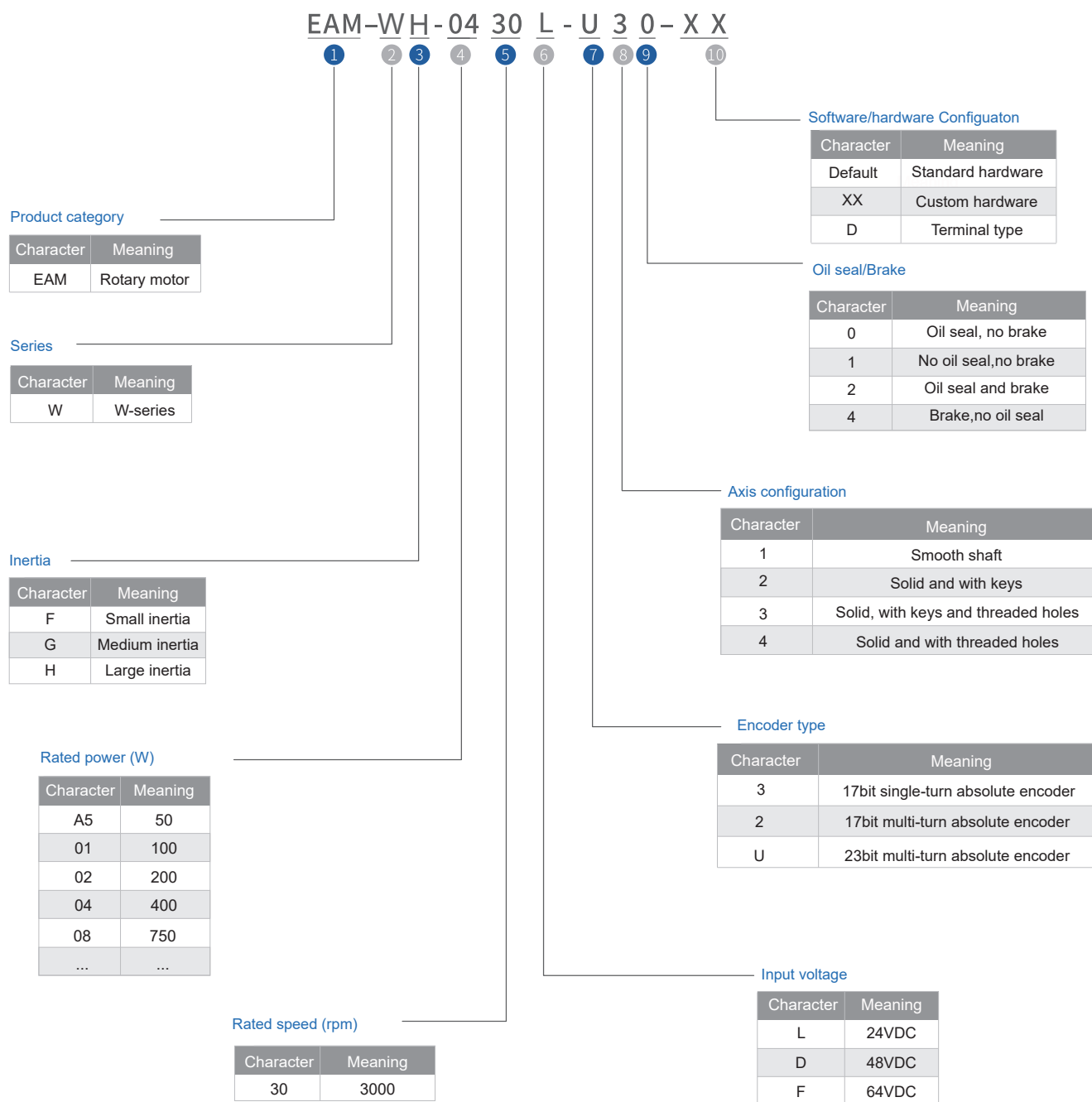
FD5-*1-64**			FD5-*1 -N6417	FD5-*1 -N6410	FD5-*1 -N6406	FD5-*1 -N6403	FD5-*1 -P6417	FD5-*1 -P6410	FD5-*1 -P6406	FD5-*1 -P6403
Power Supply	Main loop power input		12-64VDC (When only the main circuit is input, the drive can work normally, but it cannot be powered off the main circuit alone.And keep the drive in a communicable state)							
	Control loop power input		12-64VDC (When only the control power is input, the drive can be powered on self-test, communication, etc., but cannot be enabled)							
	Rated current (A)		17	10	6	3	17	10	6	3
	Maximun current (A)		34	25	16.9	9	34	25	16.9	9
Control mode	Motor	Motor type	FD5-U Series:Low voltage DDR motor, low voltage DDL motor, voice coil motor, low voltage rotary servo motor FD5-R Series: low voltage rotary servo motor							
		Magnetic pole identification method	Hall identification, pre-position identification, micromotion identification							
		Automatic configuration	Support communication encoder power-on automatically read, configure motor parameters; Support independent encoder and third-party encoder switching; Supports phase sequence identification							
	Operation mode	Optional mode	Torque mode, speed mode, position mode, (open/closed loop) force control mode							
	Torque control	Torque control bandwidth	4.5K							
		Command source	Analog, EtherCAT, internal command							
		Current control accuracy	±0.5%Rated output current							
	Speed control	Speed control bandwidth	3k							
		Internal speed control refresh cycle	16K							
		Control method	PI adjustment, torque feedforward, friction compensation, loop filtering, etc							
		Command source	Analog, Ethercat, internal multiple speed							
	Position control	The internal position controls the refresh cycle	4K							
		Control method	Proportional adjustment, speed feedforward, command smoothing, etc							
		Command source	Pulse, EtherCAT, internal multisegment position							
IO	AI	High precision AI	1 channel, ±10VDC differential, resolution 16bit; Can be used for closed loop force control							
	DI	Standard DI	3-channel fast DI (P-type machine is 4 channels), directly connected to FPGA, photoelectric isolation, support NPN/PNP mode							
		High speed DI	2 ultra-high speed DI, directly connected to FGPA, photoelectric isolation, support NPN/PNP mode							
	DO	Standard DO	4-channel fast DO (P-type machine for 4), directly connected to FPGA, photoelectric isolation, NPN, maximum load 50mA							
	Pulse & Direction		When * is P, P type machine, P type machine support pulse signal input control (including differential form, OC form); Maximum input frequency 4MHz (OC form is 200K)							
Communication Interface	EtherCAT communication		When * is N, N type machine, N type machine support EtherCAT communication control, minimum communication cycle 250us							
	Background debugging communication port		1 USB Type C port, used for software debugging of the drive							
	RS485 communication port		When it is a P-type machine, 1: n communication							
Encoder (Motor Feedback Signal) Interface	Communication type coding port		FD5-U series: RS485, support Tamagawa protocol, FLEXEM protocol, BISS C protocol; Maximum baud rate 4M FD5-R series: RS485, support Tamagawa protocol, Maximum baud rate 4M							
	Dart line differential encoder port		ABZ, Maximum input frequency 5MHz; Can be used as a second encoder input for full closed loop applications; R series without the second interface							
	Hall port		Single-ended NPN mode							
	Motor temperature sensor interface		Supported, thermistor PTC/NTC; R series without the PTC/NTC							
Status Indicator	STA1_LED		Indicates the operating status of the drive							
	STA2_LED		Indicates drive failure status							
Protection function	Protection function		Input voltage undervoltage and overvoltage, driver overcurrent, overload, input short circuit to the ground protection, motor overload, high temperature protection, overrange,The position deviation is too large, the second encoder is missing, the car protection, the main circuit self-diagnosis of power-on, etc							
	Meet certificate standard		Under way							
Environmental requirement	Environment	Ambient temperature	Operating temperature: 0-55℃: Storage temperature : -20-85℃							
		Ambient humidity	Ambient humidity: 10-90%							
		Shock resistance	Shock: 1.0g							
		Altitude	Altitude: < 2000m							
		Pollution level	PD2							
		Prohibited working environments	Working environment with corrosive or combustible gases, chemicals or oily water, iron and salt containing dust							
	Protection level		IP20							
Dimensions	Cooling mode		Fan cooling(10A-17A)		Natural cooling(3A-6A)		Fan cooling(10A-17A)		Natural cooling(3A-6A)	
			57.5*75.5*46.7 mm		57.5*75.5*36.7 mm		57.5*75.5*43.8 mm		57.5*75.5*33.8 mm	

Drive model

Model	Description
FD5-*1-N6410	DC12~DC64V,10A,, EtherCAT Bus Type
FD5-*1-N6406	DC12~DC64V,6A,, EtherCAT Bus Type
FD5-*1-N6403	DC12~DC64V,3A,, EtherCAT Bus Type
FD5-*1-N6417	DC12~DC64V,17A,, EtherCAT Bus Type
FD5-*1-P6410	DC12~DC64V,10A,Pulse Type
FD5-*1-P6406	DC12~DC64V,6A,Pulse Type
FD5-*1-P6403	DC12~DC64V,3A,Pulse Type
FD5-*1-P6417	DC12~DC64V,17A,Pulse Type
FD5-*1-N9010	DC24~DC110V,10A,, EtherCAT Bus Type
FD5-*1-N9006	DC24~DC110V,6A,, EtherCAT Bus Type
FD5-*1-N9003	DC24~DC110V,3A,, EtherCAT Bus Type
FD5-*1-P9010	DC24~DC110V,10A,Pulse Type
FD5-*1-P9006	DC24~DC110V,6A,Pulse Type
FD5-*1-P9003	DC24~DC110V,3A,Pulse Type

Low Voltage Servo Motor

Naming convention



Low Voltage Motor Parameters

Model	Flage Dimensions	Rated power (W)	Rated torque (Nm)	Max. torque (Nm)	Rated current (A)	Rated rotational speed (rpm)	Max. rotational speed (rpm)	Rotational inertia (kg.m ² ×10 ⁻⁴)	Rated voltage (VDC)
EAM-WH-A530L-□3▲-D	40	50	0.16	0.32	3.5	3000	3200	0.035(0.038)	24
EAM-WH-0130L-□3▲-D	40	100	0.32	0.64	6.5	3000	3200	0.05(0.053)	24
EAM-WH-0230D-□3▲-D	60	200	0.637	1.27	6.0	3000	3200	0.29(0.32)	48
EAM-WH-A530L-□3▲	40	50	0.16	0.32	3.5	3000	3200	0.035(0.038)	24
EAM-WH-0130L-□3▲	40	100	0.32	0.64	6.5	3000	3200	0.05(0.053)	24
EAM-WH-0230D-□3▲	60	200	0.637	1.27	6.0	3000	3200	0.29(0.32)	48
EAM-WH-0430D-□3▲	60	400	1.27	3.8	10.0	3000	3200	0.53(0.56)	48
EAM-WH-0830D-□3▲	80	750	2.4	6.2	20	3000	3200	1.62(1.72)	48

Note:

When □ is U: Supports 23-bit optical encoder

When □ is 2: Supports 17-bit optical encoder

When □ is 3: Supports 17-bit magnetic encoder

When ▲ is 0: Motor without brake

When ▲ is 2: Motor with brake

(The values after the rotating inertia indicates motors with brake)

FD5-Low Voltage Servo Drive and Servo Motor

Flange	Power (W)	Servo Motor	Servo Drive
40	50	EAM-WH-A530L-□3▲-D	FD5-*1-*6403 FD5-*1-*6406
	100	EAM-WH-0130L-□3▲-D	FD5-*1-*6406 FD5-*1-*6410
60	200	EAM-WH-0230D-□3▲-D	FD5-*1-*6406
40	50	EAM-WH-A530L-□3▲	FD5-*1-*6403 FD5-*1-*6406
	100	EAM-WH-0130L-□3▲	FD5-*1-*6406 FD5-*1-*6410
60	200	EAM-WH-0230D-□3▲	FD5-*1-*6406
	400	EAM-WH-0430D-□3▲	FD5-*1-*6410
80	750	EAM-WH-0830D-□3▲	FD5-*1-*6417

Cables and other accessories

Flange Dimensions	Motor	Cables	Motor Type	Length (L)	Cable Model	Illustration
40 60	EAM-WH-A530L-□3▲-D EAM-WH-0130L-□3▲-D EAM-WH-0230D-□3▲-D	Power Cable	Motor with brake	1m	FDL-MBA05-01-E	
				3m	FDL-MBA05-03-E	
			Motor without brake	1m	FDL-MMA05-01-E	
				3m	FDL-MMA05-03-E	
		Encoder Cable	Single-turn absolute encoder	1m	FDL-PI735-01-E	
				3m	FDL-PI735-03-E	
			Multi-turn absolute encoder (without battery)	1m	FDL-PA735-01-E	
				3m	FDL-PA735-03-E	
40 60	EAM-WH-A530L-□3▲ EAM-WH-0130L-□3▲ EAM-WH-0230D-□3▲	Power Cable	Motor with brake	1m	FDL-MBA00-01-E	
				3m	FDL-MBA00-03-E	
			Motor without brake	1m	FDL-MMA00-01-E	
				3m	FDL-MMA00-03-E	
		Encoder Cable	Single-turn absolute encoder	1m	FDL-PI730-01-E	
				3m	FDL-PI730-03-E	
			Multi-turn absolute encoder (without battery)	1m	FDL-PA730-01-E	
				3m	FDL-PA730-03-E	
60 80	EAM-WH-0430D-□3▲ EAM-WH-0830D-□3▲	Power Cable	Motor with brake	1m	FDL-MBC08-01-E	
				3m	FDL-MBC08-03-E	
			Motor without brake	1m	FDL-MMC08-01-E	
				3m	FDL-MMC08-03-E	
		Encoder Cable	Single-turn absolute encoder	1m	FDL-PI738-01-E	
				3m	FDL-PI738-03-E	
			Multi-turn absolute encoder (without battery)	1m	FDL-PA738-01-E	
				3m	FDL-PA738-03-E	

Note:

When □ is 3: 17-bit single-turn magnetic encoder

When □ is 2: 17-bit multi-turn magnetic encoder

When □ is U: Support 23-bit multi-turn absolute optical encoder

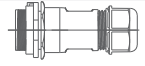
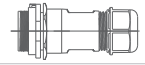
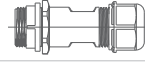
When ▲ is 0: Motor without brake

When ▲ is 2: Motor with brake

Accessories for low voltage servo cable

Model	Attachment Type	Attachment Model	Attachment Description
FD5-U Drive	Drive accessory set	FDU-T14-P	Contains 1* Sanji H1258-2x18P plug +1*Sanji H1258-2x5P plug + 1* Sanji H1258-2x6P plug +60*Sanji T1258PT pin
		FDU-T14-N	Contains 1*Sanji H1258-2x12P plug +1*Sanji H1258-2x6P plug +40*Sanji T1258PT pin

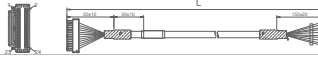
Accessories for motor cable

Flange Dimensions	Motor Type	Attachment Type	Attachment Model	Illustration
40/60	EAM-WH-A530L-□3▲-D EAM-WH-0130L-□3▲-D EAM-WH-0230D-□3▲-D	Motor side (with/without brake) Power plug	FVU-M09	
		Motor side encoder wire terminal	FVU-P08	
40/60	EAM-WH-A530L-□3▲ EAM-WH-0130L-□3▲ EAM-WH-0230D-□3▲	Motor side (without brake) power cable plug	FVU-M00	
		Motor side (with brake) power line plug	FVU-M01	
		Motor side encoder wire terminal	FVU-P00	
60/80	EAM-WH-0430D-□3▲	Motor side (without brake) power cable plug	FDU-M00	
		Motor side (with brake) power line plug	FDU-M01	
		Motor side encoder wire terminal	FDU-P02	

Accessories for communication cable

Model	Description	Illustration
FVL-CN702-01-E	PC communication cable for servo driver	
FVL-CN701-A3-E	Servo driver multi-machine parallel communication cable (0.3m)	
FDL-PE730-01-E	FD5 Series ABZ Functional interface (CN4) adapter, 1 m AMP plug 9P to H1258-2*6P	
FDL-PE732-01-E	FD5 Series ABZ Functional interface (CN4) adapter, 1 m DB15 Female head turn H1258-2*6P	

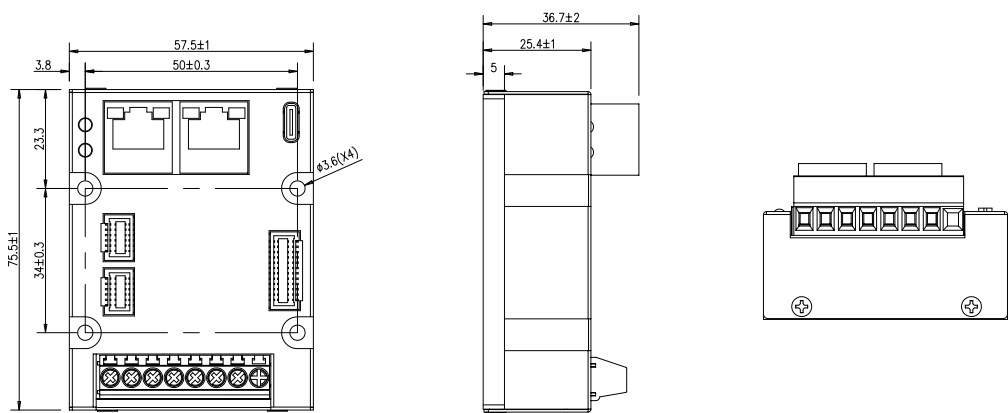
Accessories for control cable

Model	Description	Illustration
FDL-CA601P-01-E	FD5 Series P (Pulse Type) CN1-input output control signal cables (1m)	
FDL-CA601N-01-E	FD5 Series N (EtherCAT Bus Type) CN1-input output control signal cables (1m)	

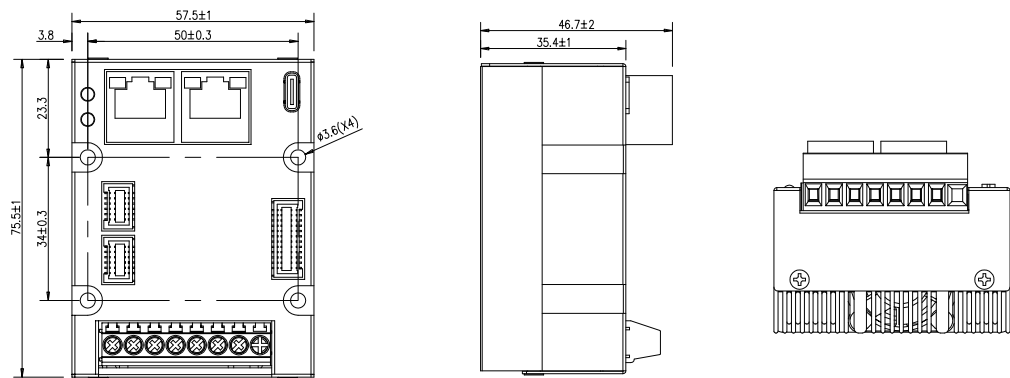
Dimensions

Unit: mm

FD5-3A/6A



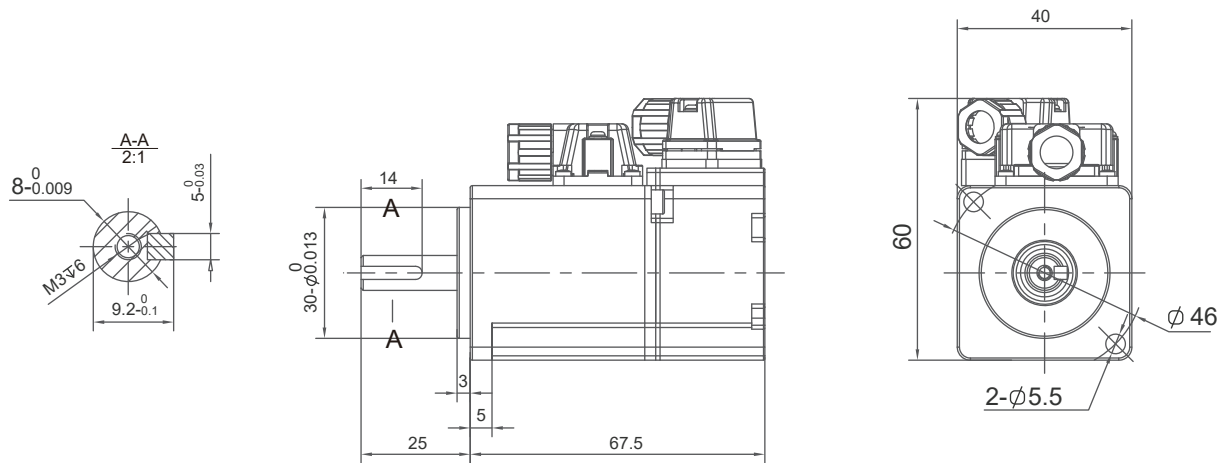
FD5-10A



Dimensions

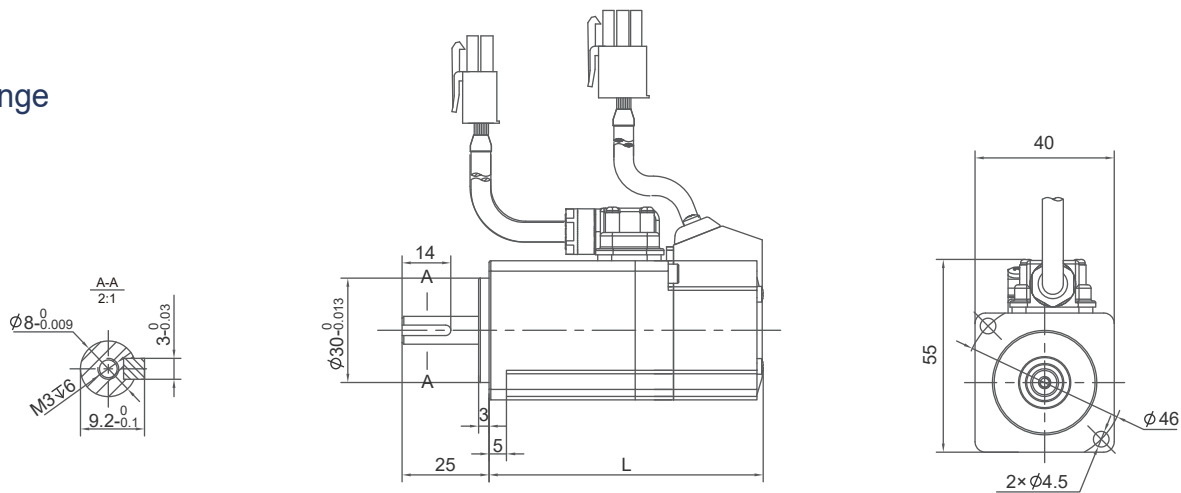
Unit: mm

40 Flange



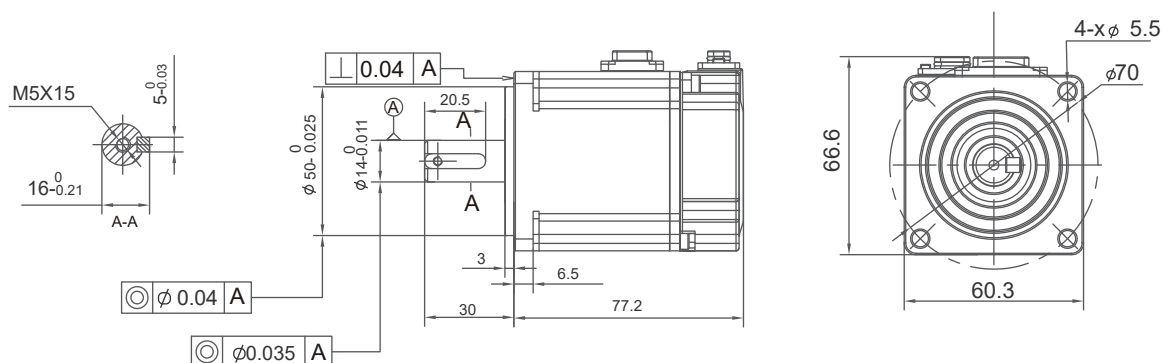
Model	Brake	L (mm)	Weight (kg)
EAM-WH-A530L-□30-D	None	67.5	0.4
EAM-WH-A530L-□32-D	Available	100.5	0.9
EAM-WH-0130L-□30-D	None	77.5	0.5
EAM-WH-0130L-□32-D	Available	110.5	1.0

40 Flange



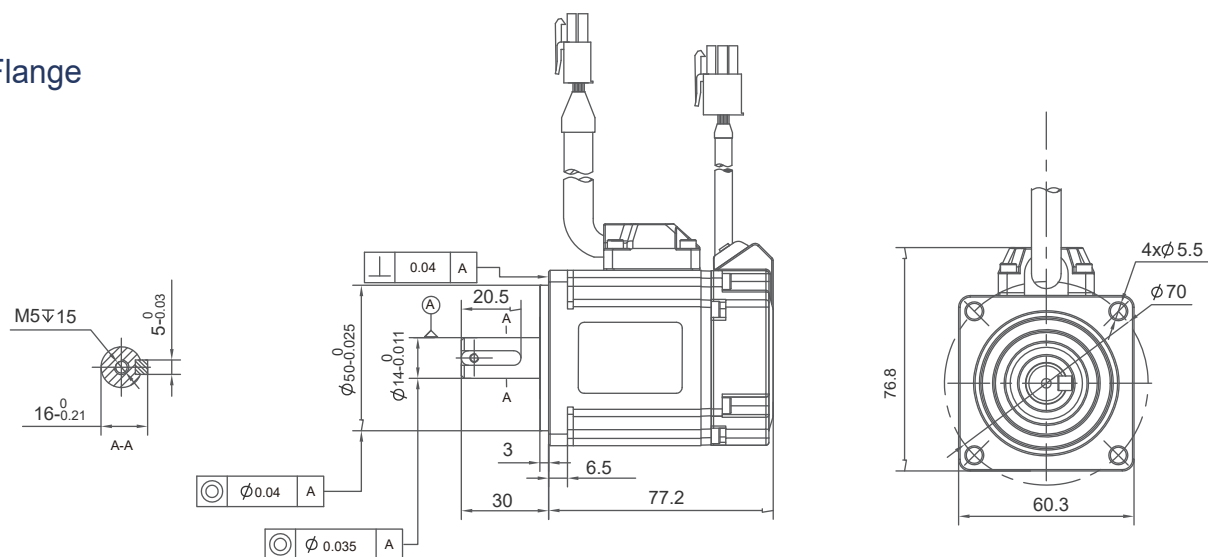
Model	Brake	L (mm)	Weight (kg)
EAM-WH-A530L-□30	None	68.5	0.4
EAM-WH-A530L-□32	Available	101.5	0.9
EAM-WH-0130L-□30	None	79.5	0.5
EAM-WH-0130L-□32	Available	112.5	1.0

60 Flange



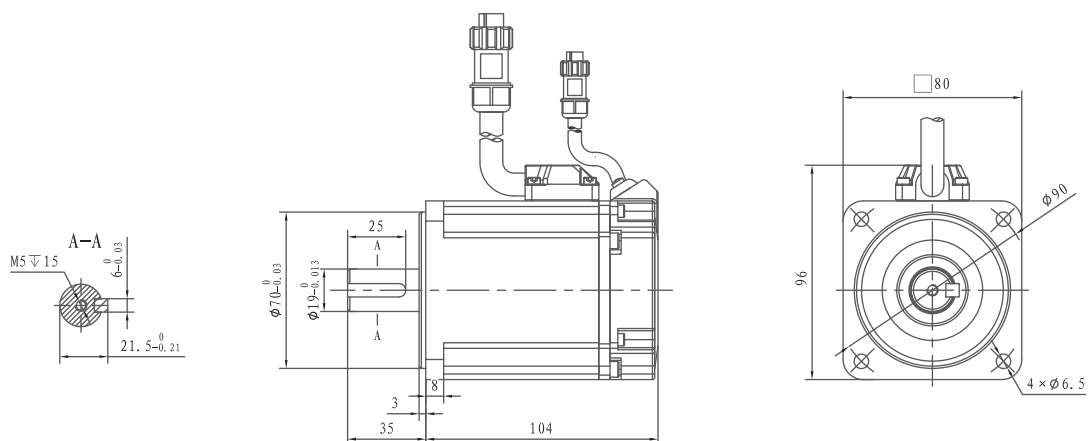
Model	Brake	L (mm)	Weight (kg)
EAM-WH-0230D-□30-D	None	77.2	1.0
EAM-WH-0230D-□32-D	Available	109.2	1.4

60 Flange



Model	Brake	L (mm)	Weight(kg)
EAM-WH-0230D-□30	None	77.2	1.0
EAM-WH-0230D-□32	Available	109.2	1.4
EAM-WH-0430D-□30	None	93.7	1.4
EAM-WH-0430D-□32	Available	125.7	1.7

80 Flange



Model	Brake	L (mm)	Weight (kg)
EAM-WH-0830D-□30	None	104	2.5
EAM-WH-0830D-□32	Available	141	3.5

Note:

When □ is U: Supports 23-bit optical encoder

When □ is 3: Supports 17-bit magnetic encoder

When □ is 2: Supports 17-bit magnetic encoder