

## ACCURAX G5 SERVO SYSTEM

Extreme mechatronics meets **X**-Stream Automation



**accurax**

- » Sub micron precision and ms settling time
- » EtherCAT and safety built-in
- » Double registration and full closed loop

# Extreme mechatronics...

## At the heart of every great machine

Great machines are born from a perfect match between control and mechanics. Accurax G5 gives you the extra edge to build more accurate, faster, smaller and safer machines. You will benefit from an almost 25% reduction in motor weight, and gain 50% cabinet space.

You will achieve sub micron precision and ms settling time. Some might call it perfection, we just call it tireless innovation to help you build great machines.

### EtherCAT connectivity

- Compliant with CoE - CiA402 Drive Profile-
- Cyclic synchronous Position, Velocity and Torque modes
- Embedded Gear Ratio, Homing and Profile Position mode
- Distributed clock to ensure high precision synchronisation

EtherCAT<sup>®</sup>

### Rugged and smart design

- IP67 motor and connectors
- No flying leads
- 5G vibration resistance

### 40% reduction in motor cogging

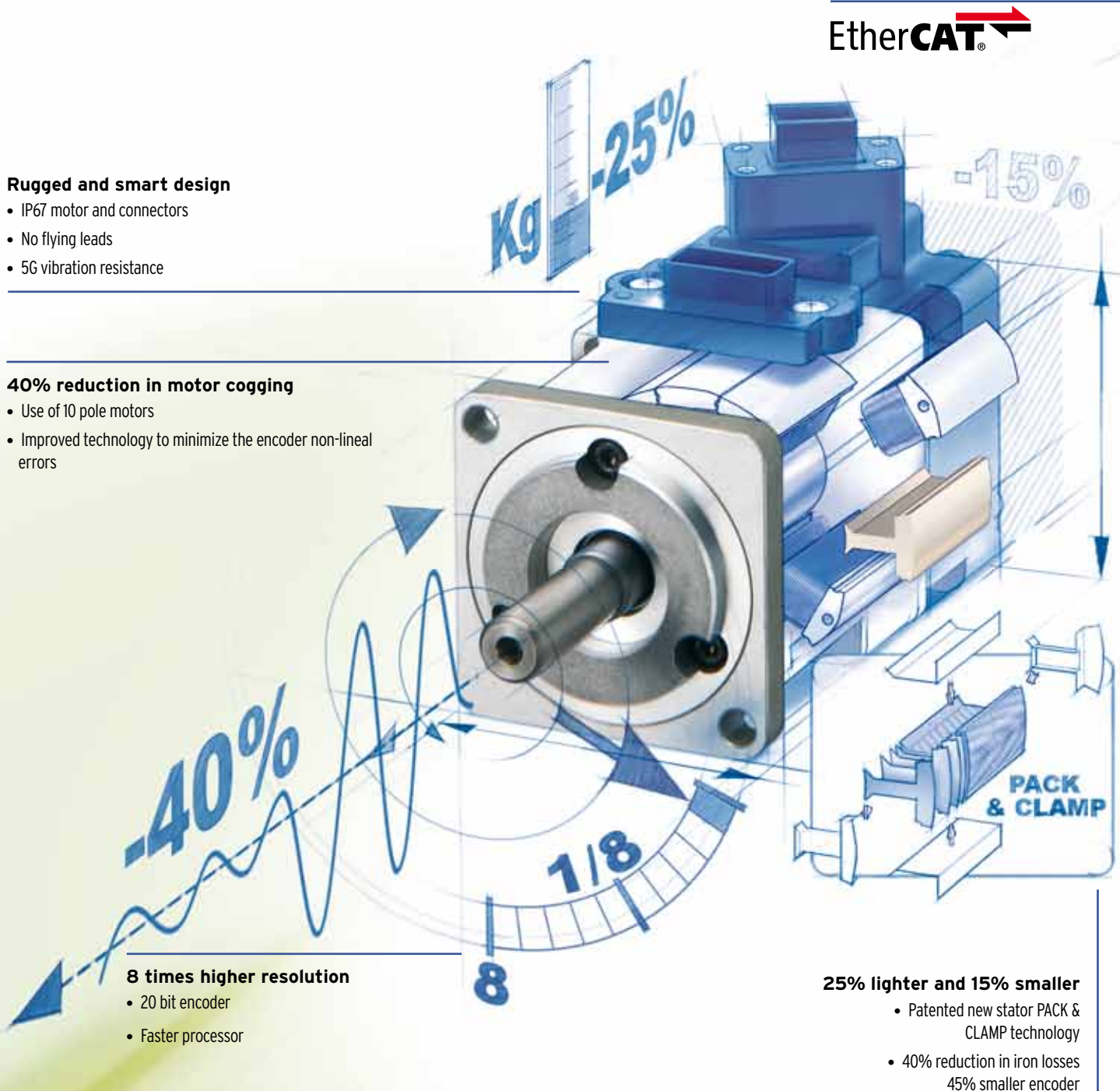
- Use of 10 pole motors
- Improved technology to minimize the encoder non-linear errors

### 8 times higher resolution

- 20 bit encoder
- Faster processor

### 25% lighter and 15% smaller

- Patented new stator PACK & CLAMP technology
- 40% reduction in iron losses  
45% smaller encoder



**Up to 50% cabinet size reduction**

- Up to 40% smaller drive
- Extra 10% saving thanks to side by side mounting

**Safety conformance**

- PL-d according ISO13849-1:2008
- STO: IEC61800-5-2:2007
- SIL2 according to EN61508:2001
- Cat.3: EN954-1:1996

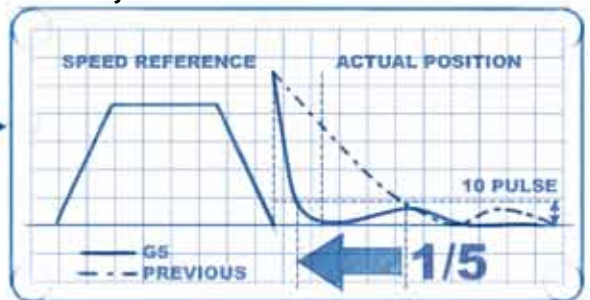


**Fast & accurate**

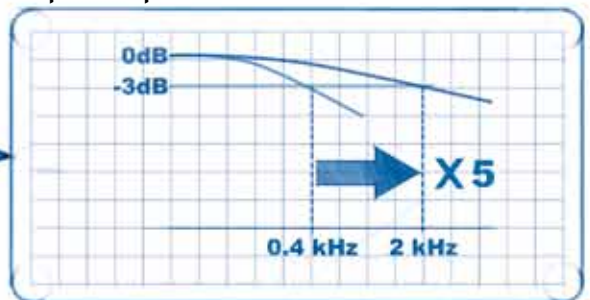
- 5 times faster settling time -0~2 ms
- 2 kHz speed response
- Torque feed forward reduces following error



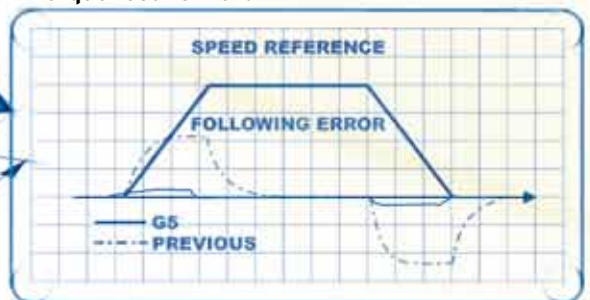
**Settling time**



**Speed response**

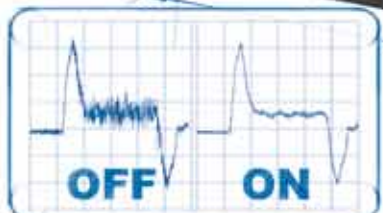


**Torque feed forward**



**100,000 hr operation in rugged industrial conditions**

- No fan below 1 kW
- Long life capacitors



Vibration suppression

**Load vibration suppression**

- Up to 4 preset frequencies
- Setting frequency from 1 to 200Hz



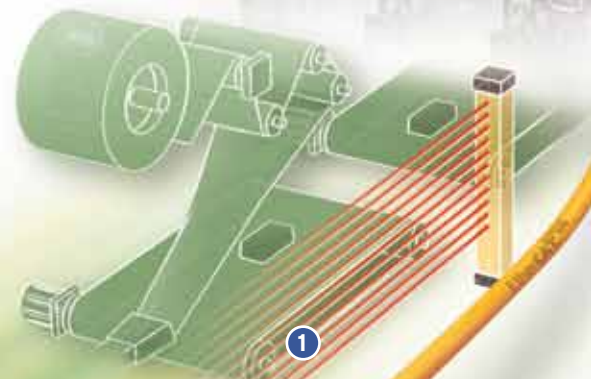
# ... meets X-Stream Automation

Accurax G5 is perfectly integrated into the new Sysmac automation platform. The servo is fully configured through the one software Sysmac Studio that includes configuration, programming, simulation and monitoring for the complete machine. The built-in EtherCAT connectivity with the distributed clock functionality allows accurate synchronisation between all servos with less than 1 $\mu$  jitter. Accurax G5 also simplifies your mechanical and electrical design by including double registration input, full closed loop and multi-drive safety functionality.

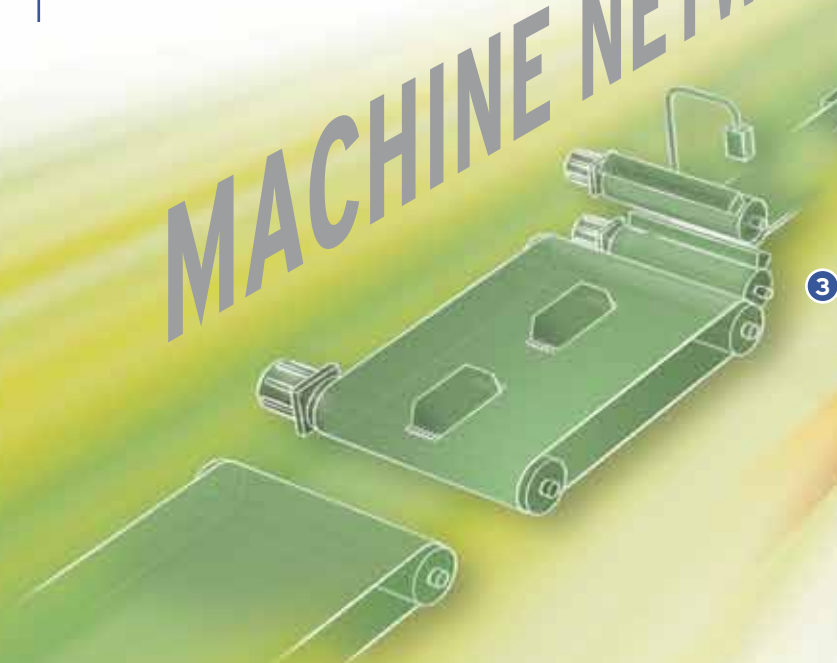
- 1 Built-in safety: multi-drives in a single safety relay circuit**  
The two safety inputs and the external device monitoring (EDM) output can be linked from one servo drive to another without using additional safety relays.

- 2 Full closed loop**  
Accurax G5 has a built-in external encoder input for full closed loop operation, for when additional accuracy is required. The external encoder input eliminates the errors caused by, for example, slip in the material.

- 3 Double registration input**  
Accurax G5 increases application versatility by providing 2 independent registration inputs per axis, especially relevant for applications such as flow wrappers. By registering the product input position and the mark position on the film, the system can make relative corrections ensuring high accuracy with a simple mechanical design.



ONE  
MACHINE NETWORK



2

3

1

EtherCAT

### NJ-Series machine controller

- Seamless integration of Logic and Motion
- Up to 64 axis motion control
- EtherNet/IP and EtherCAT ports embedded
- Electronic cams and gearboxes

NS HMI

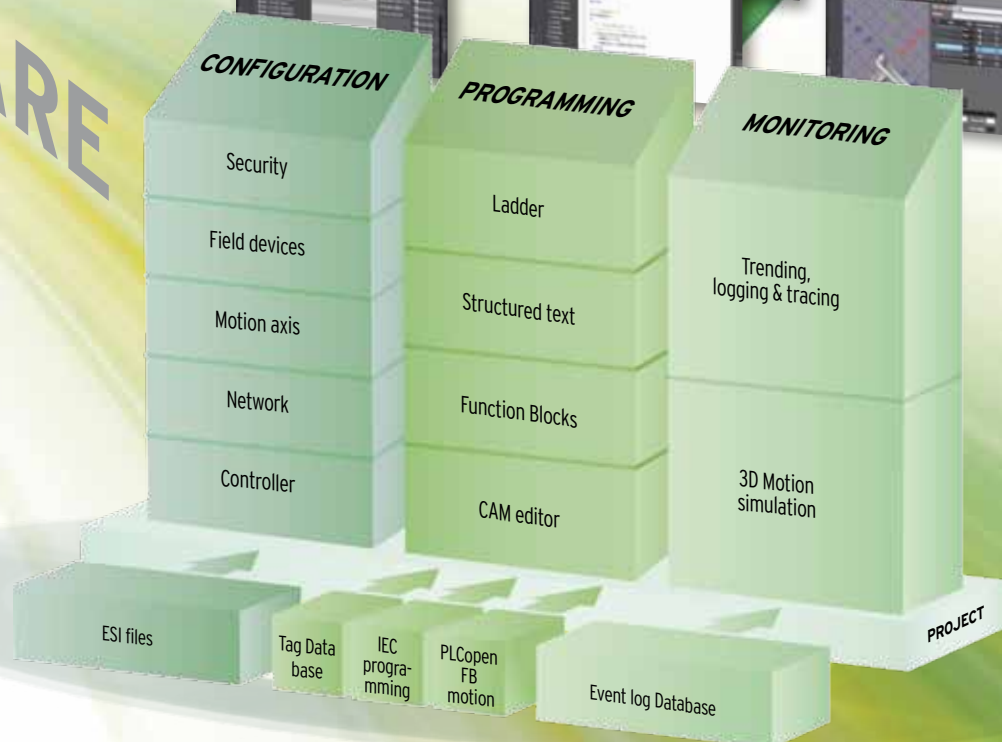
EtherNet/IP

ONE CONNECTION

### Sysmac Studio: the ONE software

- One design and operation environment for configuration, programming, 3D simulation and monitoring
- Fully compliant with standard IEC 61131-3 programming
- Certified PLCopen Function Blocks for Motion Control

ONE SOFTWARE

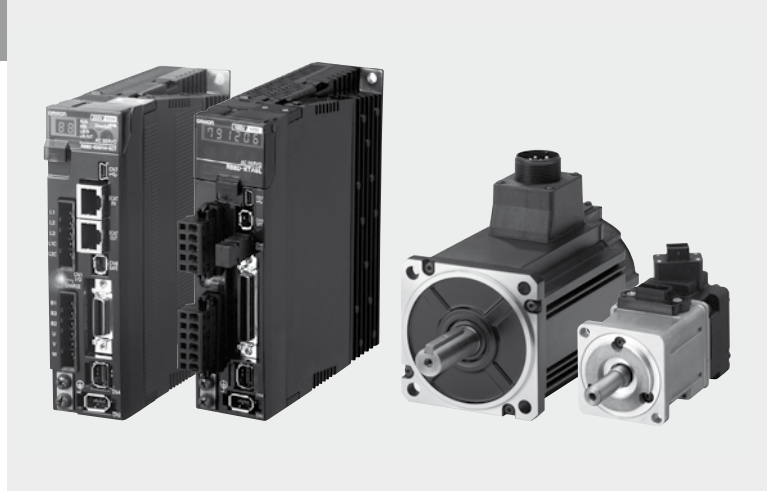


R88D-KN□□□-ECT, R88D-KN□□□-ML2, R88D-KT□, R88M-K□

# Accurax G5 servo system

**Accurate motion control in a compact size servo drive family. EtherCAT and safety built-in.**

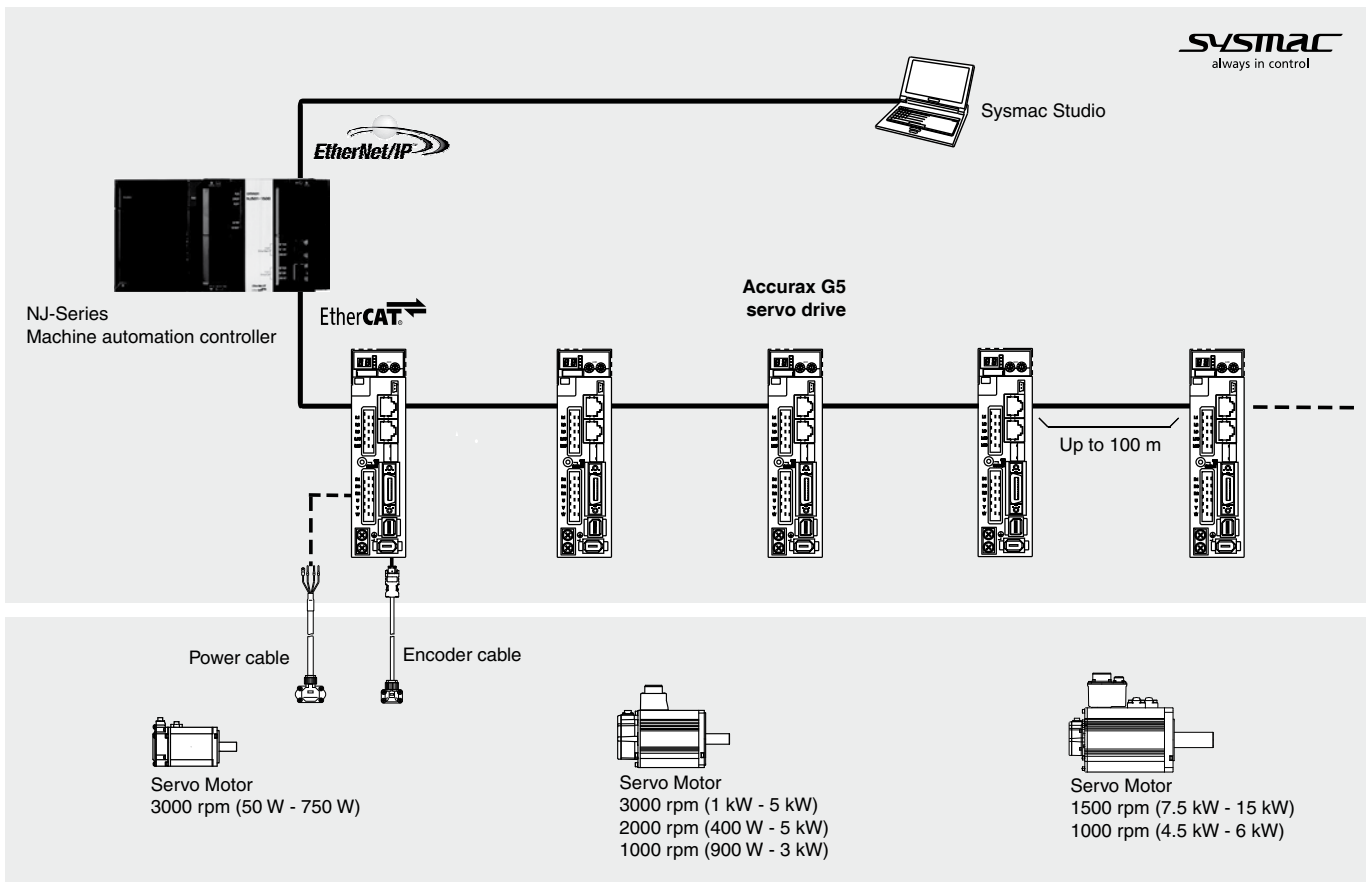
- EtherCAT, ML-II and Analog/ Pulse servo drive models
- Safety conforming ISO13849-1 PL-d
- High-response frequency of 2 kHz
- High resolution provided by 20 bits encoder
- Drive Programming: embedded indexer functionality in the Analogue/ Pulse models
- External encoder input for full closed loop
- Real time auto-tuning
- Advanced tuning algorithms (Anti-vibration function, torque feedforward, disturbance observer)
- IP67 protection in all motor models







**Ratings**

- 230 VAC single-phase 50 W to 1.5 kW (8.59 Nm)
- 400 VAC three-phase 400 W to 15 kW (95.5 Nm)

**System configuration**

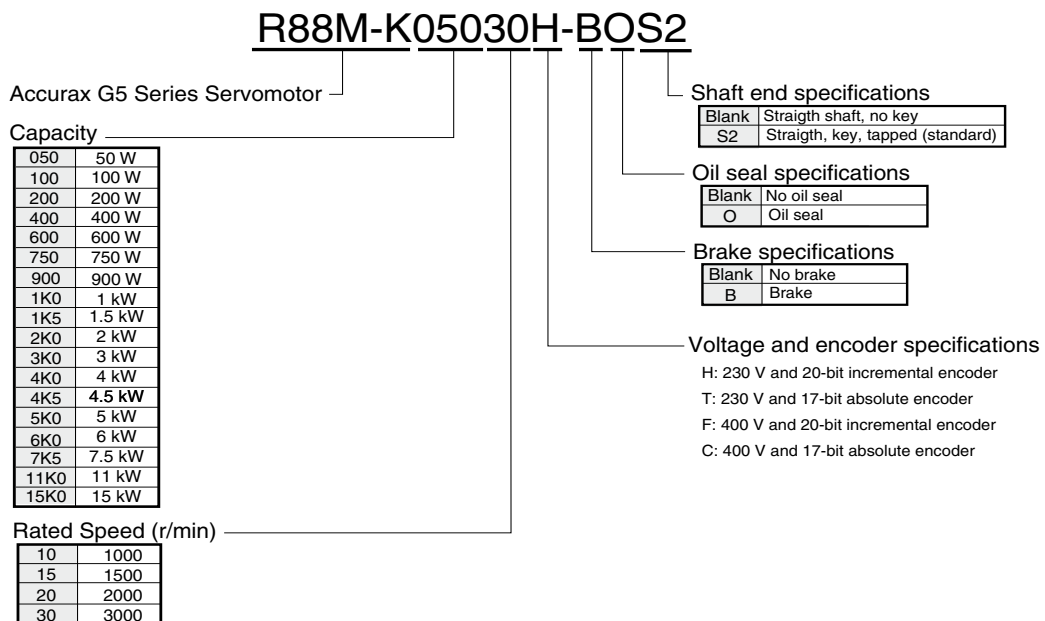


**Servo motor / servo drive combination**

Accurax G5 rotary servo motor					Accurax G5 servo drive models						
	Voltage	Speed	Rated torque	Capacity	Model	EtherCAT	Analog/Pulse	MECHATROLINK-II			
	230 V	3000 min <sup>-1</sup>	0.16 Nm	50 W	R88M-K05030(H/T)-□	R88D-KN01H-ECT	R88D-KT01H	R88D-KN01H-ML2			
			0.32 Nm	100 W	R88M-K10030(H/T)-□	R88D-KN01H-ECT	R88D-KT01H	R88D-KN01H-ML2			
			0.64 Nm	200 W	R88M-K20030(H/T)-□	R88D-KN02H-ECT	R88D-KT02H	R88D-KN02H-ML2			
			1.3 Nm	400 W	R88M-K40030(H/T)-□	R88D-KN04H-ECT	R88D-KT04H	R88D-KN04H-ML2			
			2.4 Nm	750 W	R88M-K75030(H/T)-□	R88D-KN08H-ECT	R88D-KT08H	R88D-KN08H-ML2			
 230V (1 kW - 1.5 kW) 400V (400 W - 5 kW)	400 V		3.18 Nm	1000 W	R88M-K1K030(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2			
			4.77 Nm	1500 W	R88M-K1K530(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2			
			2.39 Nm	750 W	R88M-K75030(F/C)-□	R88D-KN10F-ECT	R88D-KT10F	R88D-KN10F-ML2			
			3.18 Nm	1000 W	R88M-K1K030(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2			
			4.77 Nm	1500 W	R88M-K1K530(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2			
			6.37 Nm	2000 W	R88M-K2K030(F/C)-□	R88D-KN20F-ECT	R88D-KT20F	R88D-KN20F-ML2			
			9.55 Nm	3000 W	R88M-K3K030(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2			
			12.7 Nm	4000 W	R88M-K4K030(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2			
			15.9 Nm	5000 W	R88M-K5K030(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2			
			 7.5 kW - 15 kW	230 V	2000 min <sup>-1</sup>	4.77 Nm	1000 W	R88M-K1K020(H/T)-□	R88D-KN10H-ECT	R88D-KT10H	R88D-KN10H-ML2
						7.16 Nm	1500 W	R88M-K1K520(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
						1.91 Nm	400 W	R88M-K40020(F/C)-□	R88D-KN06F-ECT	R88D-KT06F	R88D-KN06F-ML2
2.86 Nm	600 W	R88M-K60020(F/C)-□				R88D-KN06F-ECT	R88D-KT06F	R88D-KN06F-ML2			
4.77 Nm	1000 W	R88M-K1K020(F/C)-□				R88D-KN10F-ECT	R88D-KT10F	R88D-KN10F-ML2			
7.16 Nm	1500 W	R88M-K1K520(F/C)-□				R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2			
400 V	1500 min <sup>-1</sup>	9.55 Nm		2000 W	R88M-K2K020(F/C)-□	R88D-KN20F-ECT	R88D-KT20F	R88D-KN20F-ML2			
		14.3 Nm		3000 W	R88M-K3K020(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2			
		19.1 Nm		4000 W	R88M-K4K020(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2			
		23.9 Nm		5000 W	R88M-K5K020(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2			
		47.8 Nm		7500 W	R88M-K7K515C-□	R88D-KN75F-ECT	R88D-KT75F	-			
		70.0 Nm		11000 W	R88M-K11K015C-□	R88D-KN150F-ECT	R88D-KT150F	-			
	230 V	1000 min <sup>-1</sup>	95.5 Nm	15000 W	R88M-K15K015C-□	R88D-KN150F-ECT	R88D-KT150F	-			
			8.59 Nm	900 W	R88M-K90010(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2			
			8.59 Nm	900 W	R88M-K90010(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2			
			19.1 Nm	2000 W	R88M-K2K010(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2			
			28.7 Nm	3000 W	R88M-K3K010(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2			
			43.0 Nm	4500 W	R88M-K4K510C-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2			
	400 V		57.3 Nm	6000 W	R88M-K6K010C-□	R88D-KN75F-ECT	R88D-KT75F	-			

**Servo motor type designation**

Servo motor



**Servo motor specifications**

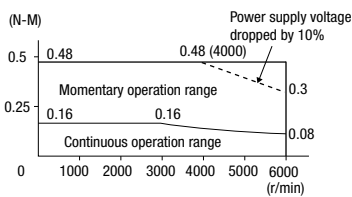
**Servo motors 3000 r/min, 230 V**

**Ratings and specifications**

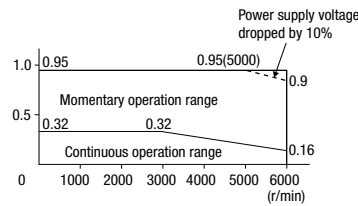
Voltage		230 V							
Servo motor model R88M-K□	20-bit incremental encoder	05030H-□	10030H-□	20030H-□	40030H-□	75030H-□	1K030H-□	1K530H-□	
	17-bit absolute encoder	05030T-□	10030T-□	20030T-□	40030T-□	75030T-□	1K030T-□	1K530T-□	
Rated output	W	50	100	200	400	750	1000	1500	
Rated torque	N·m	0.16	0.32	0.64	1.3	2.4	3.18	4.77	
Instantaneous peak torque	N·m	0.48	0.95	1.91	3.8	7.1	9.55	14.3	
Rated current	A (rms)	1.1	1.1	1.5	2.4	4.1	6.6	8.2	
Instantaneous max. current	A (rms)	4.7	4.7	6.5	10.2	17.4	28	35	
Rated speed	min <sup>-1</sup>	3000							
Max. speed	min <sup>-1</sup>	6000					5000		
Torque constant	N·m/A	0.11±10%	0.21±10%	0.31±10%	0.39±10%	0.42±10%	0.37	0.45	
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	0.025	0.051	0.14	0.26	0.87	2.03	2.84	
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	0.027	0.054	0.16	0.28	0.97	2.35	3.17	
Allowable load moment of inertia (JL)	Multiple of (JM)	30					20	15	
Rated power rate	kW/s (without brake)	10.1	19.9	29.0	62.4	65.6	49.8	80.1	
	kW/s (with brake)	9.4	18.8	25.4	58	58.8	43	71.8	
Allowable radial load	N	68			245		490		
Allowable thrust load	N	58			98		196		
Approx. mass	Kg (without brake)	0.32	0.47	0.82	1.2	2.3	3.5	4.4	
	Kg (with brake)	0.53	0.68	1.3	1.7	3.1	4.5	5.4	
Brake specifications	Rated voltage	24VDC ±10%							
	Holding brake moment of inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>		0.002		0.0018		0.33	
	Power consumption (at 20°C)	W		7		9		17	
	Current consumption (at 20°C)	A		0.3		0.36		0.70±10%	
	Static friction torque	N·m (minimum)		0.29		1.27		2.5	
	Rise time for holding torque	ms (max.)		35		50		7.8	
Release time	ms (max)		20		15				
Basic specifications	Time Rating	Continuous							
	Insulation class	Type B					Type F		
	Ambient operating/ storage temperature	0 to +40°C/ -20 to 65°C							
	Ambient operating/ storage humidity	20 to 80% (non-condensing)					20 to 85% (non-condensing)		
	Vibration class	V-15							
	Insulation resistance	20 MΩ min. at 500 VDC between the power terminals and FG terminal							
	Enclosure	Totally-enclosed, self-cooling, IP67 (excluding shaft opening)							
Vibration resistance	Vibration acceleration 49 m/s <sup>2</sup>								
Mounting	Flange-mounted								

**Torque-speed characteristics**

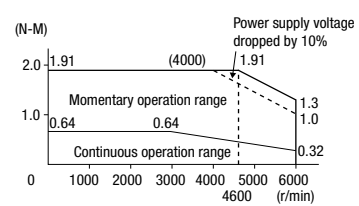
R88M-K05030H/T (50 W)



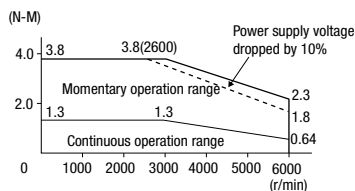
R88M-K10030H/T (100 W)



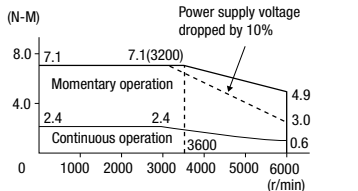
R88M-K20030H/T (200 W)



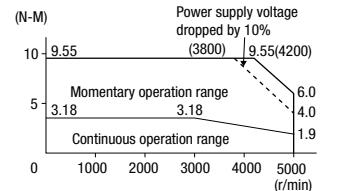
R88M-K40030H/T (400 W)



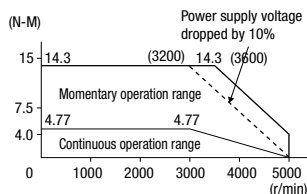
R88M-K75030H/T (750 W)



R88M-K1K030H/T (1 kW)



R88M-K1K530H/T (1.5 kW)





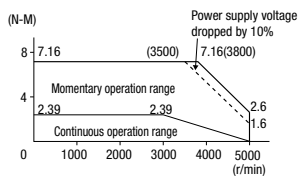
Servo motors 3000 r/min, 400 V

Ratings and specifications

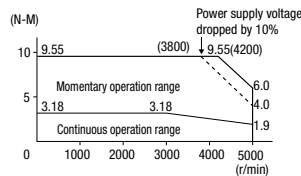
Voltage		400 V							
Servo motor model R88M-K□	20-bit incremental encoder	75030F-□	1K030F-□	1K530F-□	2K030F-□	3K030F-□	4K030F-□	5K030F-□	
	17-bit absolute encoder	75030C-□	1K030C-□	1K530C-□	2K030C-□	3K030C-□	4K030C-□	5K030C-□	
Rated output	W	750	1000	1500	2000	3000	4000	5000	
Rated torque	N·m	2.39	3.18	4.77	6.37	9.55	12.7	15.9	
Instantaneous peak torque	N·m	7.16	9.55	14.3	19.1	28.6	38.2	47.7	
Rated current	A (rms)	2.4	3.3	4.2	5.7	9.2	9.9	12	
Instantaneous max. current	A (rms)	10	14	18	24	39	42	51	
Rated speed	min <sup>-1</sup>	3000							
Max. speed	min <sup>-1</sup>	5000					4500		
Torque constant	N·m/A	0.78	0.75	0.89	0.87	0.81	0.98		
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	1.61	2.03	2.84	3.68	6.5	12.9	17.4	
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	1.93	2.35	3.17	4.01	7.85	14.2	18.6	
Allowable load moment of inertia (JL)	Multiple of (JM)	20		15					
Rated power rate	kW/s (without brake)	35.5	49.8	80.1	110	140	126	146	
	kW/s (with brake)	29.6	43	71.8	101	116	114	136	
Allowable radial load	N	490					784		
Allowable thrust load	N	196					343		
Approx. mass	Kg (without brake)	3.1	3.5	4.4	5.3	8.3	11	14	
	Kg (with brake)	4.1	4.5	5.4	6.3	9.4	12.6	16	
Brake specifications	Rated voltage	24VDC±10%							
	Holding brake moment of inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>					0.33		1.35
	Power consumption (at 20°C)	W	17		19			22	
	Current consumption (at 20°C)	A	0.70±10%		0.81±10%			0.90±10%	
	Static friction torque	N·m (minimum)	2.5		7.8		11.8		16.1
Basic specifications	Rise time for holding torque	ms (max.)					50		
	Release time	ms (max)					15		
	Time Rating	Continuous							
Insulation class	Type F								
Ambient operating/ storage temperature	0 to +40°C/ -20 to 65°C								
Ambient operating/ storage humidity	20% to 85% (non-condensing)								
Vibration class	V-15								
Insulation resistance	20 MΩ min. at 500 VDC between the power terminals and FG terminal								
Enclosure	Totally-enclosed, self-cooling, IP67(excluding shaft opening)								
Vibration resistance	Vibration acceleration 49 m/s <sup>2</sup>								
Mounting	Flange-mounted								

Torque-speed characteristics

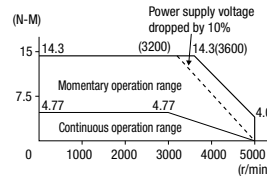
R88M-K75030F/C (750 W)



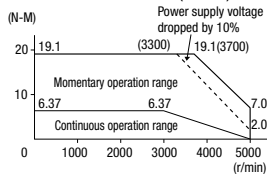
R88M-K1K030F/C (1 kW)



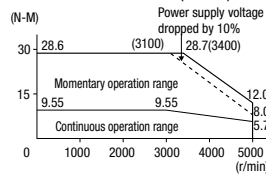
R88M-K1K530F/C (1.5 kW)



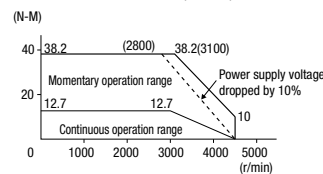
R88M-K2K030F/C (2 kW)



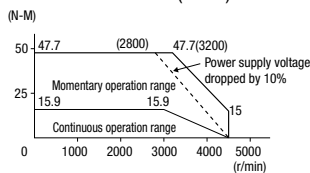
R88M-K3K030F/C (3 kW)



R88M-K4K030F/C (4 kW)



R88M-K5K030F/C (5 kW)

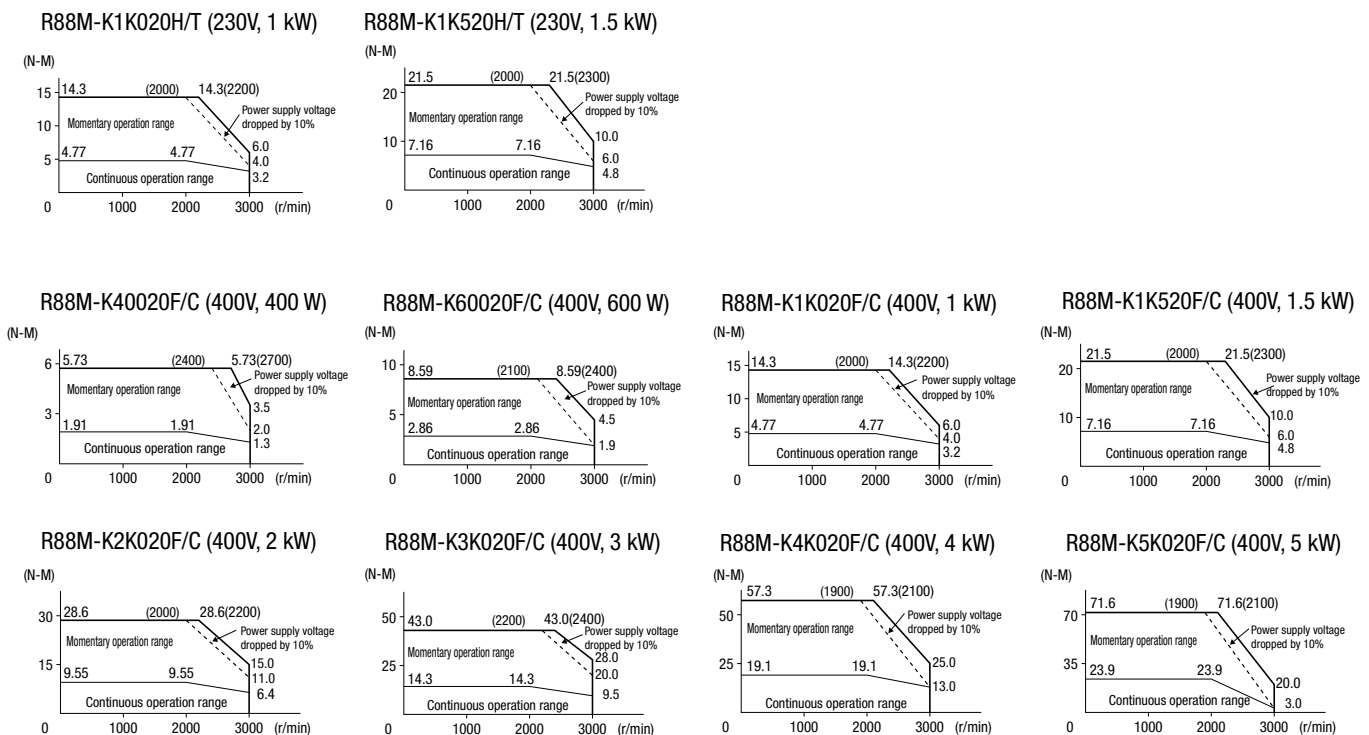


## Servo motors 2000 r/min, 230V/ 400 V

### Ratings and specifications

Voltage		230 V					400 V				
Servo motor model R88M-K□	20-bit incremental encoder	1K020H-□	1K520H-□	40020F-□	60020F-□	1K020F-□	1K520F-□	2K020F-□	3K020F-□	4K020F-□	5K020F-□
	17-bit absolute encoder	1K020T-□	1K520T-□	40020C-□	60020C-□	1K020C-□	1K520C-□	2K020C-□	3K020C-□	4K020C-□	5K020C-□
Rated output	W	1000	1500	400	600	1000	1500	2000	3000	4000	5000
Rated torque	N·m	4.77	7.16	1.91	2.86	4.77	7.16	9.55	14.3	19.1	23.9
Instantaneous peak torque	N·m	14.3	21.5	5.73	8.59	14.3	21.5	28.7	43	57.3	71.6
Rated current	A (rms)	5.7	9.4	1.2	1.5	2.8	4.7	5.9	8.7	10.6	13
Instantaneous max. current	A (rms)	24	40	4.9	6.5	12	20	25	37	45	55
Rated speed	min <sup>-1</sup>	2000									
Max. speed	min <sup>-1</sup>	3000									
Torque constant	N·m/A	0.63	0.58	1.27	1.38	1.27	1.16	1.27	1.18	1.40	1.46
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	4.60	6.70	1.61	2.03	4.60	6.70	8.72	12.9	37.6	48
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	5.90	7.99	1.90	2.35	5.90	7.99	10	14.2	38.6	48.8
Max. load moment of inertia (JL)	Multiple of (JM)	10									
Rated power rate	kW/s (without brake)	49.5	76.5	22.7	40.3	49.5	76.5	105	159	97.1	119
	kW/s (with brake)	38.6	64.2	19.2	34.8	38.6	64.2	91.2	144	94.5	117
Allowable radial load	N	490					784				
Allowable thrust load	N	196					343				
Approx. mass	kg (without brake)	5.2	6.7	3.1	3.5	5.2	6.7	8	11	15.5	18.6
	kg (with brake)	6.7	8.2	4.1	4.5	6.7	8.2	9.5	12.6	18.7	21.8
Rated voltage		24VDC ±10%									
Holding brake moment inertia	(J) kg·m <sup>2</sup> ×10 <sup>-4</sup>	1.35					4.7				
Power consumption (20°C)	W	14	19	17	40.3	14	19	22	31		
Current consumption (20°C)	A	0.59±10%	0.79±10%	0.70±10%	0.59±10%	0.79±10%	0.90±10%	1.3±10%	1.3±10%		
Static friction torque	N·m (minimum)	4.9	13.7	2.5	4.9	13.7	16.2	24.5			
Rise time for holding torque	ms (max.)	80	100	50	80	100	110	80			
Release time	ms (max)	70	50	15	70	50	25				
Time Rating		Continuous									
Insulation class		TypeF									
Ambient operating/ storage temperature		0 to +40 °C/ -20 to 85°C									
Ambient operating/ storage humidity		20% to 85% (non-condensing)									
Vibration class		V-15									
Insulation resistance		20 MΩ min. at 500 VDC between the power terminals and FG terminal									
Enclosure		Totally-enclosed, self-cooling, IP67 (excluding shaft opening)									
Vibration resistance		Vibration acceleration 49 m/s <sup>2</sup>									
Mounting		Flange-mounted									

### Torque-speed characteristics

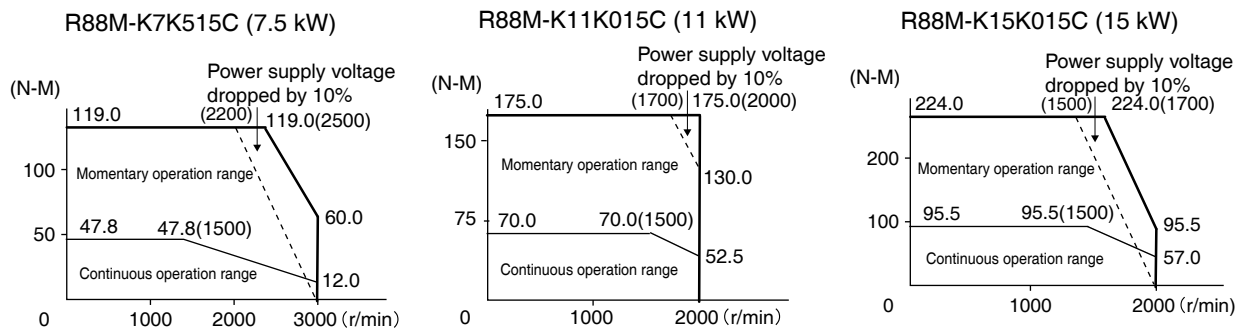


Servo motors 1500 r/min, 400 V

Ratings and specifications

Applied voltage		400 V		
Servo motor model R88M-K□	17-bit absolute encoder	7K515C-□	11K015C-□	15K015C-□
Rated output	W	7500	11000	15000
Rated torque	N·m	47.8	70.0	95.5
Instantaneous peak torque	N·m	119.0	175.0	224.0
Rated current	A (rms)	22.0	27.1	33.1
Instantaneous max. current	A (rms)	83	101	118
Rated speed	min <sup>-1</sup>	1500		
Max. speed	min <sup>-1</sup>	3000	2000	
Torque constant	N·m/A	1.54	1.84	2.10
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	101	212	302
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	107	220	311
Allowable load moment of inertia (JL)	Multiple of (JM)	10		
Rated power rate	kW/s (without brake)	226	231	302
	kW/s (with brake)	213	223	293
Allowable radial load	N	1176	2254	
Allowable thrust load	N	490	686	
Approx. mass	kg (without brake)	36.4	52.7	70.2
	kg (with brake)	40.4	58.9	76.3
Brake specifications	Rated voltage	24VDC ±10%		
	Holding brake moment of inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>	4.7	7.1
	Power consumption (at 20°C)	W	34	26
	Current consumption (at 20°C)	A	1.4±10%	1.08±10%
	Static friction torque	N·m (minimum)	58.8	100
	Rise time for holding torque	ms (max.)	150	300
Release time	ms (max)	50	140	
Basic specifications	Time Rating	Continuous		
	Insulation class	Type F		
	Ambient operating/ storage temperature	0 to +40 °C/ -20 to 65°C		
	Ambient operating/ storage humidity	20% to 85% RH (non-condensing)		
	Vibration class	V-15		
	Insulation resistance	20 MΩ min. at 500 VDC between the power terminals and FG terminal		
	Enclosure	Totally-enclosed, self-cooling, IP67 (excluding shaft opening)		
	Vibration resistance	Vibration acceleration 49 m/s <sup>2</sup>		
Mounting	Flange-mounted			

Torque-speed characteristics

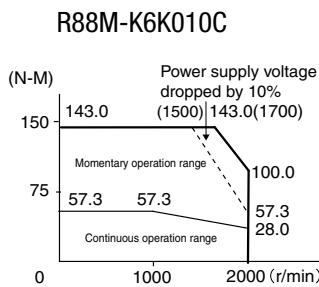
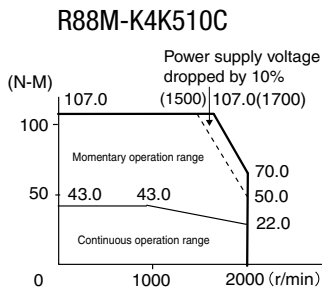
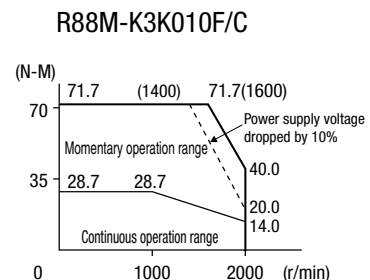
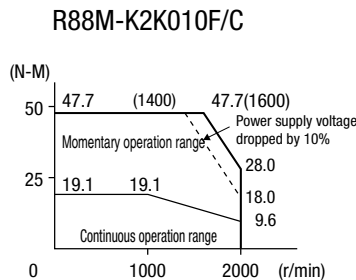
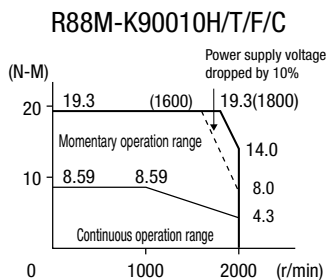


Servo motors 1000 r/min, 230V/ 400 V

Ratings and specifications

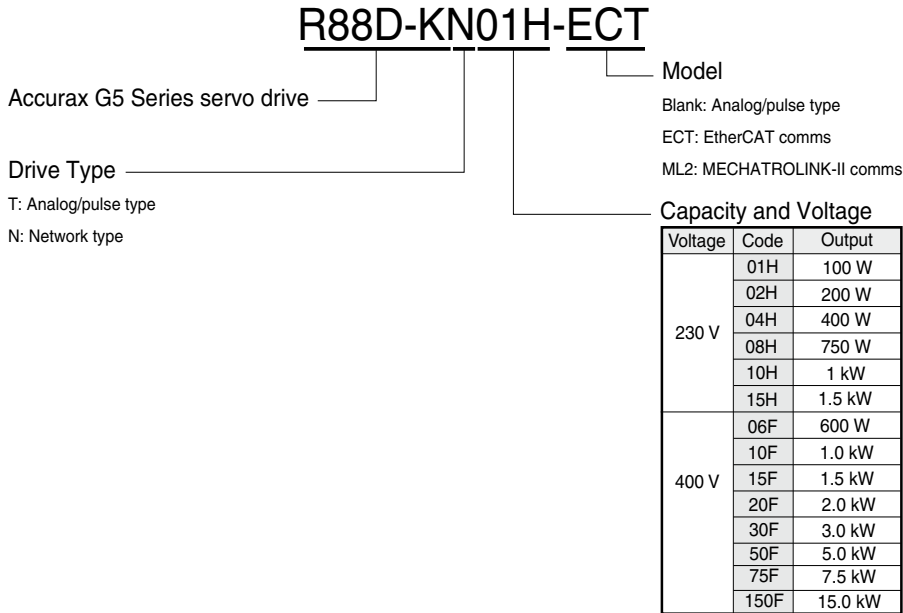
Applied voltage		230 V		400 V			
Servo motor model R88M-K□	20-bit incremental encoder	90010H-□	90010F-□	2K010F-□	3K010F-□		
	17-bit absolute encoder	90010T-□	90010C-□	2K010C-□	3K010C-□	4K510C-□	6K010C-□
Rated output	W	900	900	2000	3000	4500	6000
Rated torque	N·m	8.59		19.1	28.7	43.0	57.3
Instantaneous peak torque	N·m	19.3		47.7	71.7	107.0	143.0
Rated current	A (rms)	7.6	3.8	8.5	11.3	14.8	19.4
Instantaneous max. current	A (rms)	24	12	30	40	55	74
Rated speed	min <sup>-1</sup>	1000					
Max. speed	min <sup>-1</sup>	2000					
Torque constant	N·m/A	0.86	1.72	1.76	1.92	2.05	2.08
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	6.70		30.3	48.4	79.1	101
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	7.99		31.4	49.2	84.4	107
Allowable load moment of inertia (JL)	Multiple of (JM)	10					
Rated power rate	kW/s (without brake)	110		120	170	233	325
	kW/s (with brake)	92.4		116	167	219	307
Allowable radial load	N	686		1176	1470		1764
Allowable thrust load	N	196		490			588
Approx. mass	kg (without brake)	6.7		14	20	29.4	36.4
	kg (with brake)	8.2		17.5	23.5	33.3	40.4
Brake specifications	Rated voltage	24VDC ±10%					
	Holding brake moment of inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>		1.35			
	Power consumption (at 20°C)	W		19	31	34	
	Current consumption (at 20°C)	A		0.79±10%		1.4±10%	
	Static friction torque	N·m (minimum)		13.7		24.5	
	Rise time for holding torque	ms (max.)		100		150	
Release time	ms (max)		50		25		
Basic specifications	Time Rating	Continuous					
	Insulation class	Type F					
	Ambient operating/ storage temperature	0 to +40 °C/ -20 to 65°C					
	Ambient operating/ storage humidity	20% to 85% RH (non-condensing)					
	Vibration class	V-15					
	Insulation resistance	20 MΩ min. at 500 VDC between the power terminals and FG terminal					
	Enclosure	Totally-enclosed, self-cooling, IP67 (excluding shaft opening)					
	Vibration resistance	Vibration acceleration 49 m/s <sup>2</sup>					
Mounting	Flange-mounted						

Torque-speed characteristics



**Servo drive type designation**

**Servo drive**



**Servo drive specifications**

**Single-phase, 230 V**

Servo drive type		R88D-K□	01H□	02H□	04H□	08H□	10H□	15H□	
Applicable servo motor	R88M-K□	05030(H/T)□	20030(H/T)□	40030(H/T)□	75030(H/T)□	1K020(H/T)□	1K030(H/T)□	1K530(H/T)□	
		10030(H/T)□	-	-	-	-	-	1K520(H/T)□	
		-	-	-	-	-	-	90010(H/T)□	
		-	-	-	-	-	-	-	
Max. applicable motor capacity	W	100	200	400	750	1000	1500		
Continuous output current	Arms	1.2	1.6	2.6	4.1	5.9	9.4		
Input power	Main circuit	Single-phase/3-phase, 200 to 240 VAC + 10 to -15% (50/60 Hz)							
Supply	Control circuit	Single-phase, 200 to 240 VAC + 10 to -15% (50/60 Hz)							
Control method		IGBT-driven PWM method, sinusoidal drive							
Feedback		Serial encoder (incremental/absolute value)							
Conditions	Usage/storage temperature	0 to +55°C / -20 to 65°C							
	Usage/storage humidity	90% RH or less (non-condensing)							
	Altitude	1000m or less above sea level							
Vibration/shock resistance	(max.)	5.88 m/s <sup>2</sup> 10-60 Hz (Continuous operation at resonance point is not allowed) / 19.6 m/s <sup>2</sup>							
Configuration		Base mounted							
Approx. weight	Kg		0.8		1.1		1.6		1.8

**Three-phase, 400 V**

Servo drive type		R88D-K□	06F-□	10F-□	15F-□	20F-□	30F-□	50F-□	75F-□	150F-□
Applicable servo motor	R88M-K□	40020(F/C)-□	75030(F/C)-□	1K030(F/C)-□	2K030(F/C)-□	3K030(F/C)-□	4K030(F/C)-□	6K010C-□	11K015C-□	15K015C-□
		60020(F/C)-□	1K020(F/C)-□	1K520(F/C)-□	2K020(F/C)-□	3K020(F/C)-□	5K030(F/C)-□	7K515C-□	-	-
		-	-	90010(F/C)-□	-	-	-	-	-	-
		-	-	-	-	-	-	4K510C-□	-	-
		-	-	-	-	-	-	3K010(F/C)-□	-	-
		-	-	-	-	-	-	-	-	-
Max. applicable motor capacity	kW	0.6	1.0	1.5	2.0	3.0	5.0	7.5	15.0	
Continuous output current	Arms	1.5	2.9	4.7	6.7	9.4	16.5	22.0	33.4	
Input power	Main circuit	3-phase, 380 to 480 VAC + 10 to -15% (50/60Hz)								
Supply	Control circuit	24 VDC ±15%								
Control method		IGBT-driven PWM method, sinusoidal drive								
Feedback	Serial encoder	Incremental or absolute encoder							Absolute encoder	
Conditions	Usage/storage temperature	0 to +55°C / -20 to +65°C								
	Usage/storage humidity	90% RH or less (non-condensing)								
	Altitude	1000 m or less above sea level								
Vibration/shock resistance		5.88 m/s <sup>2</sup> 10-60 Hz (Continuous operation at resonance point is not allowed) / 19.6 m/s <sup>2</sup>								
Configuration		Base mounted								
Approx. weight	Kg		1.9		2.7		4.7		13.5	21.0

General specifications (for EtherCAT servo drives)

<b>Performance</b>		Frequency characteristics	2 kHz	
<b>EtherCAT interface</b>	Command input		EtherCAT commands (for sequence, motion, data setting/reference, monitor, adjustment, and other commands).	
	*1 Drive Profile		CSP, CSV, CST, Homing and Position Profile modes (CiA402 Drive Profile) Homing mode Position profile mode Dual touch probe function (Latch function) Torque limit function	
<b>I/O signal</b>	Sequence input signal		- Multi-function input x 8 by parameter setting (forward/reverse drive prohibition, emergency stop, external latch, origin proximity, forward/reverse torque limit, general purpose monitor input).	
	Sequence output signal		1 x servo drive error output 2 x multi-function outputs by parameters setting (servo ready, brake release, torque limit detection, zero speed detection, warning output, position completion, error clear attributed, programmable output...)	
<b>integrated functions</b>	USB communications	Interface	Personal computer/ Connector mini-USB	
		Communications standard	Compliant with USB 2.0 standard	
		Function	Parameter setting, status monitoring and tuning	
	EtherCAT communications	Communications protocol	IEC 61158 Type 12, IEC 61800-7	
		Physical layer	100BASE-TX (IEEE802.3)	
		Connectors	RJ45 x 2 ECAT IN: EtherCAT input x 1 ECAT OUT: EtherCAT output x 1	
		Communications media	Category 5 or higher(cable with double, aluminium tape and braided shielding is recommended)	
		Communications distance	Distance between nodes: 100 m max.	
	LED indicators		RUN x 1 ERR x 1 L/A IN (Link/Activity IN) x 1 L/A OUT (Link/activity OUT) x 1	
	Autotuning		Automatic motor parameter setting. One parameter rigidity setting. Inertia detection.	
	Dynamic brake (DB)		Built-in. Operates during main power OFF, servo alarm, servo OFF or overtravel.	
	Regenerative processing		Internal resistor included in models from 600 W to 5 kW. Regenerative resistor externally mounted (option).	
	Overtravel (OT) prevention function		DB stop, deceleration stop or coast to stop during P-OT, N-OT operation	
Encoder divider function		Gear ratio		
Protective functions		Overcurrent, overvoltage, undervoltage, overspeed, overload, encoder error, overheat...		
Analog monitor functions for supervision		Analog monitor of motor speed, speed reference, torque reference, command following error, analog input... The monitoring signals to output and their scaling can be specified with parameters. Number of channels: 2 (Output voltage: ±10V DC)		
Panel operator	Display functions	2 x digit 7-segment LED display shows the drive status, alarm codes, parameters...		
	Switches	2 x rotary switches for setting the node address		
CHARGE lamp		Lits when the main circuit power supply is turned ON.		
Safety terminal	Functions	Safety Torque OFF function to cut off the motor current and stop the motor. Output signal for failure monitoring function.		
	Conformed standards	EN ISO13849-1:2008 (PL- d, Performance Level d), IEC61800-5 -2:2007 (function STO, Safe Torque OFF), EN61508:2001 (Safety Integrity Level 2, SIL2), EN954-1:1996 (CAT3).		
External encoder feedback		Serial signal and line-driver A-B-Z encoder for full-closed control		

\*1 The CSV, CST and Homing modes are supported in the servo drive with version 2.0 or higher. The Position profile mode is supported in the servo drive version 2.1 or higher.

**General specifications (for MECHATROLINK-II servo drives)**

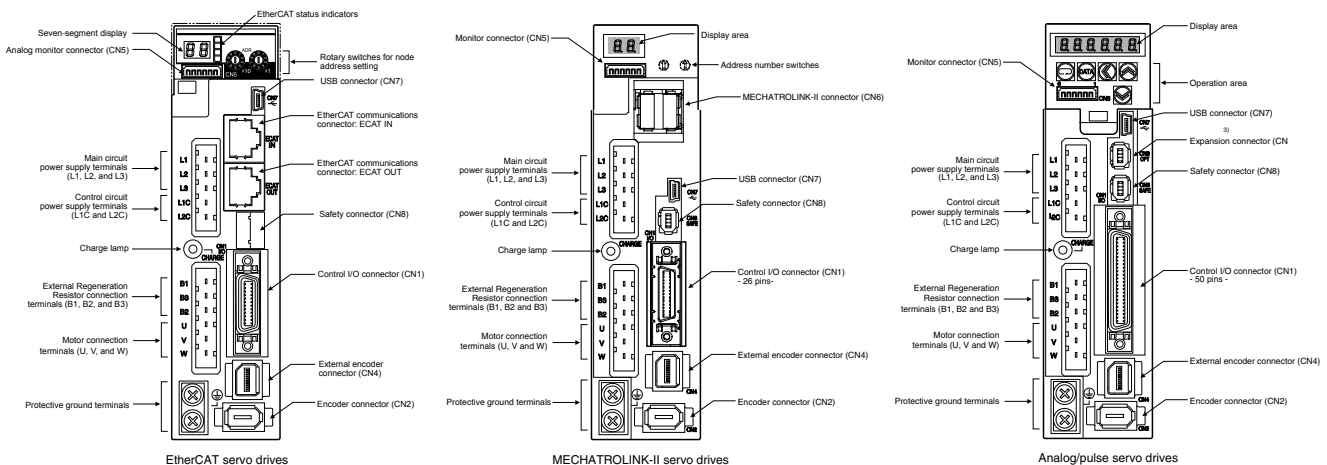
<b>Control mode</b>		Position control, velocity control, torque control, full-closed control.	
<b>Performance</b>	Frequency characteristics	2 kHz	
	Speed zero clamp	Preset velocity command can be clamped to zero by the speed zero clamp input.	
	soft start time setting	0 to 10 s (acceleration, deceleration can be set separately).	
<b>Command input</b>	MECHATROLINK-II communication	MECHATROLINK-II commands (for sequence, motion, data setting/reference, monitor, adjustment and other commands)	
<b>I/O signal</b>	Sequence input signal	- Multi-function input x 8 by parameter setting (forward/reverse drive prohibition, emergency stop, external latch, origin proximity, forward/reverse torque limit, general purpose monitor input).	
	Sequence output signal	It is possible to output three types of signal form incl.: brake release, servo ready, servo alarm, positioning complete, motor rotation speed detection, torque limit detection, zero speed detection, speed coincidence detection, warning, position command status, speed limit detection, alarm output, speed command status.	
<b>Integrated functions</b>	USB communications	Interface	Personal computer/ Connector mini-USB
		Communications standard	Compliant with USB 2.0 standard
		Function	Parameter setting, status monitoring and tuning
	MECHATROLINK-II communications	Communications protocol	MECHATROLINK-II
		Station address	41H to 51 FH (max. number of slaves: 30)
		Transmission speed	10 Mbps
		Transmission cycle	1, 2 & 4 ms
		Data length	32 bytes
	Autotuning		Automatic motor parameter setting. One parameter rigidity setting. Inertia detection.
	Dynamic brake (DB)		Built-in. Operates during main power OFF, servo alarm, servo OFF or overtravel.
Regenerative processing		Internal resistor included in models from 600 W to 5 kW. Regenerative resistor externally mounted (option).	
Overtravel (OT) prevention function		DB stop, deceleration stop or coast to stop during P-OT, N-OT operation	
Encoder divider function		Optional division possible	
Protective functions		Overcurrent, overvoltage, undervoltage, overspeed, overload, encoder error, overheat...	
Analog monitor functions for supervision		Analog monitor of motor speed, speed reference, torque reference, command following error, analog input... The monitoring signals to output and their scaling can be specified with parameters. Number of channels: 2 (Output voltage: ±10V DC)	
Panel operator	Display functions	2-digit 7-segment LED display shows the drive status, alarm codes, parameters...	
	Switches	MECHATROLINK-II communications status LED indicator (COM) 2 x rotary switches for setting the MECHATROLINK-II node address	
CHARGE lamp		Lits when the main circuit power supply is turned ON.	
Safety terminal	Functions	Safety Torque OFF function to cut off the motor current and stop the motor. Output signal for failure monitoring function.	
	Conformed standards	EN ISO13849-1:2008 (PL- d, Performance Level d), IEC61800-5 -2:2007 (function STO, Safe Torque OFF), EN61508:2001 (Safety Integrity Level 2, SIL2), EN954-1:1996 (CAT3).	
External encoder feedback		Serial signal and line-driver A-B-Z encoder for full-closed control	

**General specifications (for analog/pulse servo drives)**

<b>Control modes</b>		External control	(1) position control, (2) velocity control, (3) torque control, (4) position/velocity control, (5) position/torque control, (6) velocity/torque control and (7) full-closed control.
		Internal positioning	Drive Programming: indexer functionality enabled by parameter.
<b>Speed/torque control</b>	<b>Performance</b>	Frequency characteristics	2 kHz
		Speed zero clamp	Preset velocity command can be clamped to zero by the speed zero clamp input.
		Soft start time setting	0 to 10 s (acceleration, deceleration can be set separately). S-curve acceleration/deceleration is also available.
	Speed control	Speed reference voltage	6 VDC at rated speed: set at delivery (the scale and polarity can be set by parameters)
		Torque limit	3 VDC at rated torque (torque can be limited separately in positive/negative direction).
		Preset speed control	Preset speed is selectable from 8 internal settings by digital inputs.
Torque control	Torque reference voltage	3 VDC at rated torque: set at delivery (the scale and polarity can be set by parameters).	
	Speed limit	Speed limit can be set by parameter.	
	Command pulse	Input pulse type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
<b>Position control</b>	Input pulse	Input pulse frequency	4 Mpps max. (200 Kpps max. at open collector).
		Command pulse scaling (Electronic Gear)	Applicable scaling ratio: 1/1000 - 1000 Any value of 1-2 <sup>30</sup> can be set for numerator (encoder resolution) and denominator (command pulse resolution per motor revolution). The combination has to be within the range shown above.
		Input pulse type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
<b>Full-closed control</b>	Input pulse	Input pulse frequency	4 Mpps max. (200 Kpps max. at open collector).
		Command pulse scaling (Electronic Gear)	Applicable scaling ratio: 1/1000 - 1000 Any value of 1-2 <sup>30</sup> can be set for numerator (encoder resolution) and denominator (command pulse resolution). The combination has to be within the range shown above.
		External encoder scaling	Applicable scaling ratio: 1/20 - 160 Any value of 1-2 <sup>30</sup> can be set for numerator (encoder resolution) and denominator (external encoder resolution per motor revolution). The combination has to be within the range shown above.
<b>Drive Programming</b>	Functionality selection		Functionality enabled by parameter.
	Supported functionality		G5 Analogue/ Pulse servo drive with firmware 1.10 or higher.
	Software		CX-Drive version 2.30 or higher.
	Communication		The program can be downloaded via USB communication (CX-Drive)
	Command types		Move relative, Move absolute, Jog, Homing, Deceleration stop, Velocity update, Timer, Output signal control, Jump, Conditional branching,
	Number of commands		Up to 32 commands (0 to 31)
	Command execution		Strobe input to execute the selected command or to execute a complex sequence (combination of various commands).
Command selection		Up to 5 digital inputs to select the individual commands or sequences	

I/O signal	Position signal output		A-phase, B-phase, Z-phase line driver output and Z-phase open-collector output.
	Sequence input signal	External control	- Multi-function input x 10 by parameter setting: servo ON, control mode switching, forward/reverse drive prohibition, vibration filter switching, gain switching, electronic gear switching, error counter reset, pulse prohibition, alarm reset, internal speed selection, torque limit switching, zero speed, emergency stop, inertia ratio switching, velocity/torque command sign.  - Dedicated input x 1 (SEN: sensor ON, ABS data request).
		Internal positioning (Drive programming mode)	- Multi-function input x 10 by parameter setting: servo ON, forward/reverse drive prohibition, damping filter switching, gain switching, alarm reset, torque limit switching, emergency stop, immediate stop, deceleration stop input, inertia ratio switching, latch input, origin proximity input, strobe and 5 x input command selection.  - Dedicated input x 1 (SEN: sensor ON, ABS data request).
	Sequence output signal	External control	- 3 x outputs signals configured by parameter settings: brake release, servo ready, servo alarm, positioning complete, motor rotation speed detection, torque limit detection, zero speed detection, speed coincidence detection, warning, position command status, speed limit detection, speed command status.  - 1 output fixed to Alarm output.
Internal positioning (Drive programming enabled)		3 x outputs signals configured by parameter settings: ready, Brake, position completed, motor speed detection, torque limit status, zero speed detection, speed conformity, warning, position command status, position completed, drive programming command output and output during drive programming.  - 1 output fixed to Alarm output.	
Integrated functions	USB Communications	Interface	Personal computer/ Connector mini-USB
		Communications standard	Compliant with USB 2.0 standard
		Function	Parameter setting, status monitoring and tuning
	Autotuning		Automatic motor parameter setting. One parameter rigidity setting. Inertia detection.
	Dynamic brake (DB)		Built-in. Operates during main power OFF, servo alarm, servo OFF or overtravel.
	Regenerative processing		Internal resistor included in models from 600 W to 5 kW. Regenerative resistor externally mounted (option).
	Overtravel (OT) prevention function		DB stop, deceleration stop or coast to stop during P-OT, N-OT operation
	Encoder divider function		Optional division possible
	Electronic gearing (Numerator/Denominator)		Up to 4 electronic gear numerators by combining with inputs.
	Internal speed setting function		8 speeds may be set internally
	Protective functions		Overcurrent, overvoltage, undervoltage, overspeed, overload, encoder error, overheat...
	Analog monitor functions for supervision		Analog monitor of motor speed, speed reference, torque reference, command following error, analog input... The monitoring signals to output and their scaling can be specified by parameters. Number of channels: 2 (Output voltage: ±10V DC)
	Panel operator	Display functions	6-digit 7-segment LED display shows the drive status, alarm codes, parameters...
		Panel operator keys	Used to set/monitor parameters and drive condition (5 key switches).
	CHARGE lamp		Lits when the main circuit power supply is turned ON.
	Safety terminal	Functions	Safety torque OFF function to cut off the motor current and stop the motor. Output signal for failure monitoring function.
		Conformed standards	EN ISO13849-1:2008 (PL- d, Performance Level d), IEC61800-5 -2:2007 (function STO, Safe Torque OFF), EN61508:2001 (Safety Integrity Level 2, SIL2), EN954-1:1996 (CAT3).
External encoder feedback		Serial signal and line-driver A-B-Z encoder for full-closed control	
Expansion connector		Serial bus for option board	

Servo drive part names



**Note:** the above pictures show 230 V servo drives models only. The 400 V servo drives have 24 VDC power input terminals for control circuit instead of L1C and L2C terminals.

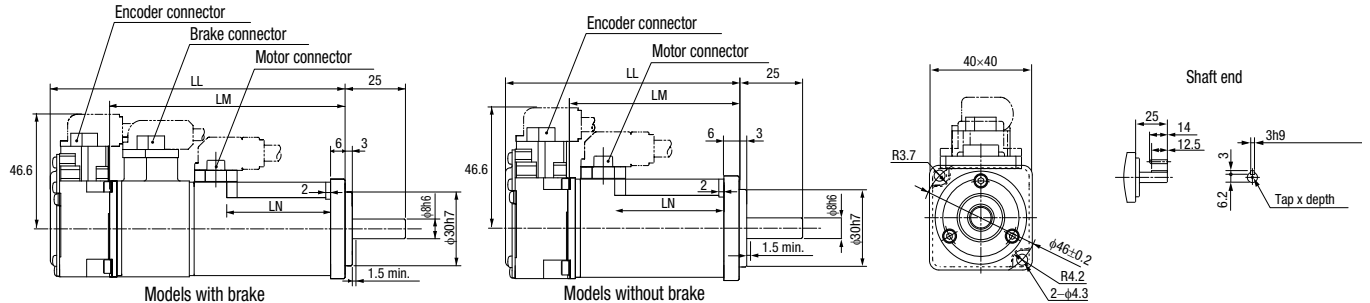


**Dimensions**

**Servomotors**

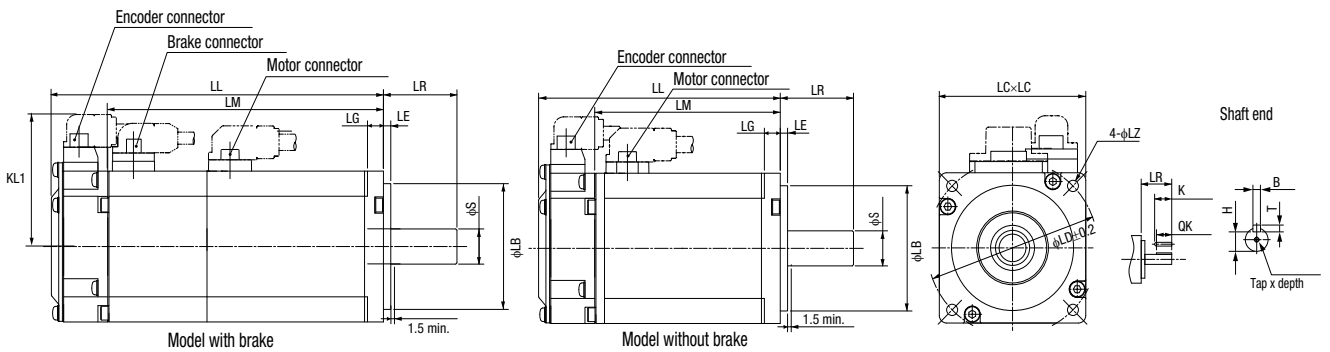
**Type 3000 r/min motors (230 V, 50 - 100 W)**

Dimensions (mm)	Without brake		With brake		LN	Shaft End Dimensions	Approx. Mass (Kg)	
	LL	LM	LL	LM			Without brake	With brake
R88M-K05030(H/T)-□S2	72	48	102	78	23	M3 x 6L	0.32	0.53
R88M-K10030(H/T)-□S2	92	68	122	98	43		0.47	0.68



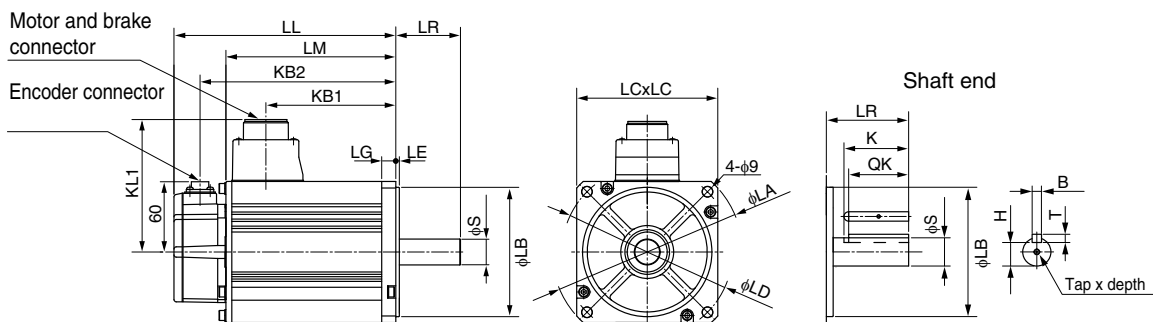
**Type 3000 r/min motors (230 V, 200 - 750 W)**

Dimensions (mm)	Without brake			With brake			LR	Flange surface						Shaft End Dimensions						Approx. Mass Kg		
	LL	LM	KL1	LL	LM	KL1		LB	LC	LD	LE	LG	LZ	S	K	QK	H	B	T	Tap x Depth	Without brake	With brake
R88M-K20030(H/T)-□S2	79.5	56.5	52.5	116	93	52.5	30	50 <sup>h7</sup>	60	70	3	6.5	4.5	11 <sup>h6</sup>	20	18	8.5	4 <sup>h9</sup>	4	M4x8L	0.82	1.3
R88M-K40030(H/T)-□S2	99	76	52.5	135.5	112.5	52.5								14 <sup>h6</sup>	25	22.5	11	5 <sup>h9</sup>	5	M5x10L	1.2	1.7
R88M-K75030(H/T)-□S2	112.2	86.2	60	148.2	122.2	61.6	35	70 <sup>h7</sup>	80	90		8	6	19 <sup>h6</sup>		22	15.5	6 <sup>h9</sup>	6		2.3	3.1



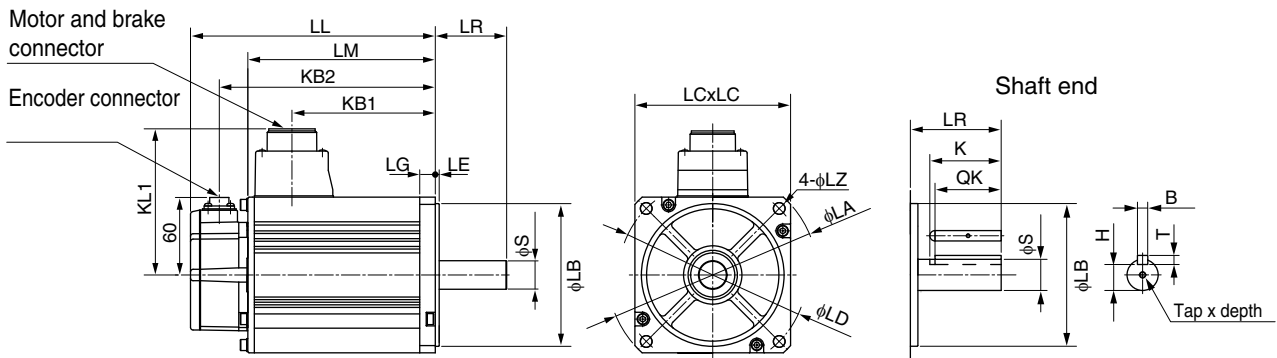
**Type 3000 r/min motors (230 V, 1 - 1.5 kW/ 400V, 750 W - 5 kW)**

Voltage	Model	Without brake					With brake					LR	Flange surface						Shaft End Dimensions						Approx. Mass (Kg)										
		LL	LM	KB1	KB2	KL1	LL	LM	KB1	KB2	KL1		LA	LB	LC	LD	LE	LG	S	Tap x Depth	K	QK	H	B	T	Without brake	With brake								
230	1K030(H/T)-□S2	141	97	66	119	101	168	124	66	146	101	55	135	95 <sup>h7</sup>	100	115	3	10	19 <sup>h6</sup>	M5x 12L	45	42	15.5	6 <sup>h9</sup>	6	3.5	4.5								
	1K530(H/T)-□S2	159.5	115.5	84.5	137.5		186.5	142.5	84.5	164.5																					4.4	5.4			
400	75030(F/C)-□S2	131.5	87.5	56.5	109.5		158.5	114.5	53.5	136.5	103									M8x 20L	55	51	20	8 <sup>h9</sup>	7	3.1	4.1								
	1K030(F/C)-□S2	141	97	66	119		168	124	63	146																						3.5	4.5		
	1K530(F/C)-□S2	159.5	115.5	84.5	137.5		186.5	142.5	81.5	164.5																							4.4	5.4	
	2K030(F/C)-□S2	178.5	134.5	103.5	156.5		205.5	161.5	100.5	183.5																								5.3	6.3
	3K030(F/C)-□S2	190	146	112	168	113	215	171	112	193	113	65	162	110 <sup>h7</sup>	120	145	12	22 <sup>h6</sup>																8.3	9.4
	4K030(F/C)-□S2	208	164	127	186	118	233	189	127	211	118	65	165		130	6	24 <sup>h6</sup>											11	12.6						
	5K030(F/C)-□S2	243	199	162	221		268	224	162	246																		14	16						



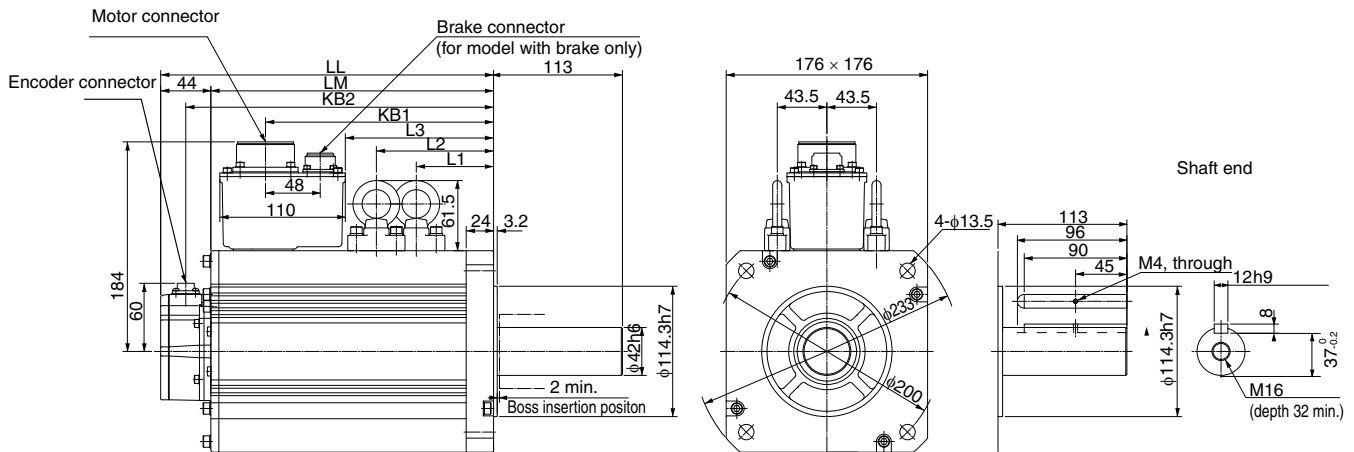
Type 2000 r/min motors (230 V, 1 - 1.5 kW / 400 V, 400W - 5 kW)

Dimensions (mm)		Without brake					With brake					LR	Flange surface							Shaft End Dimensions						Approx. Mass (Kg)		
Voltage	Model	LL	LM	KB1	KB2	KL1	LL	LM	KB1	KB2	KL1		LA	LB	LC	LD	LE	LG	LZ	S	Tap x Depth	K	QK	H	B	T	Without brake	With brake
230	1K020(H/T)-□S2	138	94	60	116	116	163	119	60	141	116	55	165	110 <sup>h7</sup>	130	145	6	12	9	22 <sup>h6</sup>	M5x12L	45	41	18	8 <sup>h9</sup>	7	5.2	6.7
	1K520(H/T)-□S2	155.5	111.5	77.5	133.5		180.5	136.5	77.5	158.5																	6.7	8.2
400	40020(F/C)-□S2	131.5	87.5	56.5	109.5	101	158.5	114.5	53.5	136.5	103		135	95 <sup>h7</sup>	100	115	3	10		19 <sup>h6</sup>			42	15.5	6 <sup>h9</sup>	6	3.1	4.1
	60020(F/C)-□S2	141	97	66	119		168	124	63	146																3.5	4.5	
	1K020(F/C)-□S2	138	94	60	116	116	163	119	57	141	118		165	110 <sup>h7</sup>	130	145	6	12		22 <sup>h6</sup>			41	18	8 <sup>h9</sup>	7	5.2	6.7
	1K520(F/C)-□S2	155.5	111.5	77.5	133.5		180.5	136.5	74.5	158.5																	6.7	8.2
	2K020(F/C)-□S2	173	129	95	151		198	154	92	176																	8	9.5
	3K020(F/C)-□S2	208	164	127	186	118	233	189	127	211		65									24 <sup>h6</sup>	M8x20L	55	51	20			11
	4K020(F/C)-□S2	177	133	96	155	140	202	158	96	180	140	70	233	114.3 <sup>h7</sup>	176	200	3.2	18	13.5	35 <sup>h6</sup>	M12x25L		50	30	10 <sup>h9</sup>	8	15.5	18.7
	5K020(F/C)-□S2	196	152	115	174		221	177	115	199																	18.6	21.8



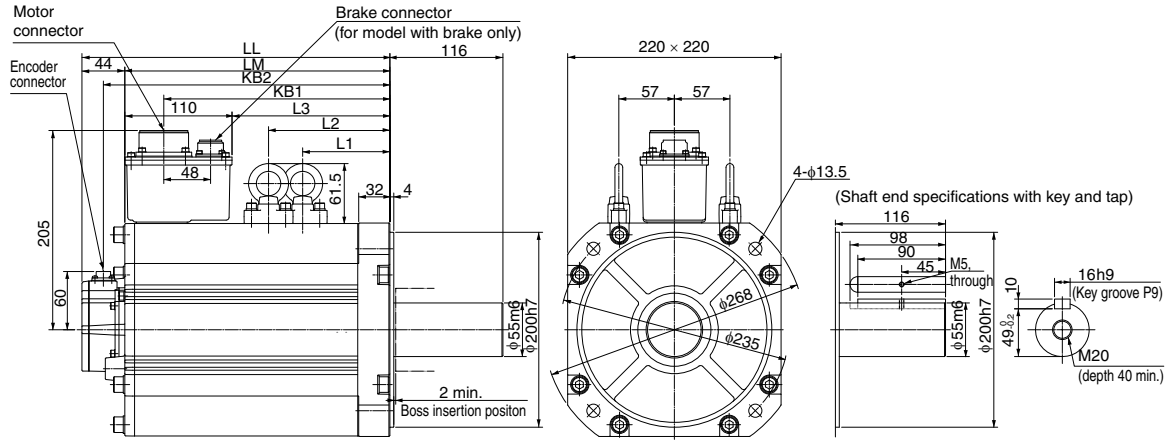
Type 1500 r/min motors (400 V, 7.5kW)

Dimensions (mm)		Without brake							With brake						Approx. Mass (Kg)		
Voltage	Model	LL	LM	KB1	KB2	L1	L2	L3	LL	LM	KB1	KB2	L1	L2	L3	Without brake	With brake
400	7K515C-□S2	312	268	219	290	117.5	117.5	149	337	293	253	315	117.5	152.5	183	36.4	40.4



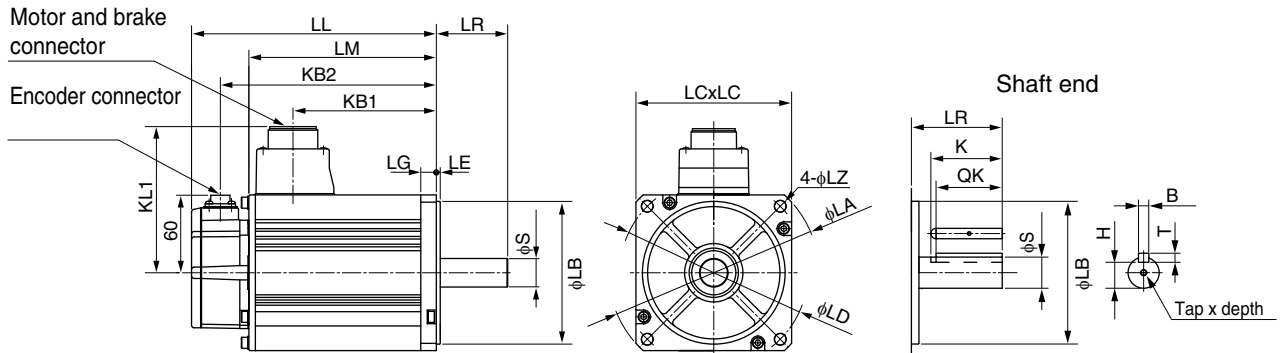
Type 1500 r/min motors (400 V, 11 - 15 kW)

Dimensions (mm)		Without brake							With brake							Approx. Mass (Kg)	
Voltage	Model	LL	LM	KB1	KB2	L1	L2	L3	LL	LM	KB1	KB2	L1	L2	L3	Whithout brake	With brake
400	R88M-K□																
	11K015C-□S2	316	272	232	294	124.5	124.5	162	364	320	266	342	124.5	159.5	196	52.7	58.9
	15K015C-□S2	384	340	300	362	158.5	158.5	230	432	388	334	410	158.5	193.5	264	70.2	76.3



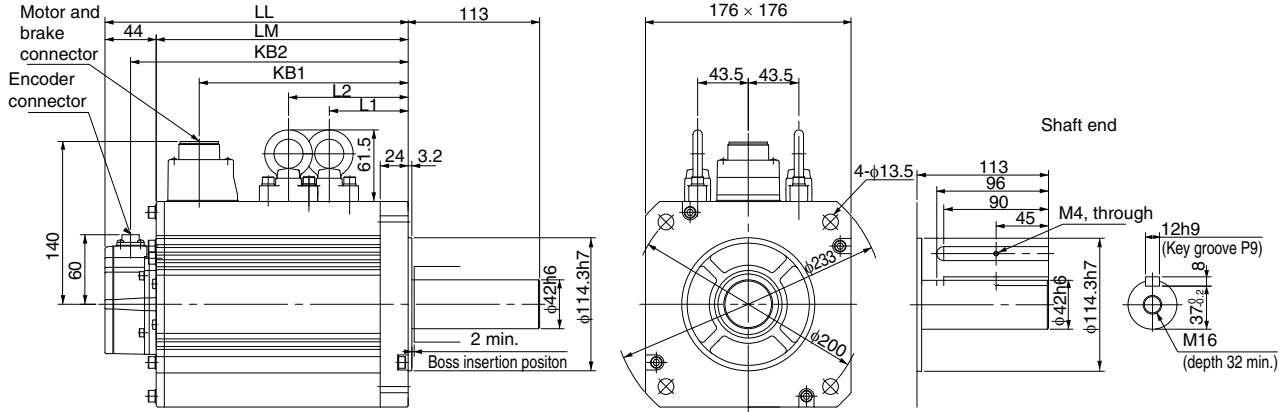
Type 1000 r/min motors (230 V, 900W / 400 V, 900W - 3 kW)

Dimensions (mm)		Without brake					With brake					LR	Flange surface								Shaft End Dimensions					Approx. Mass (Kg)		
Voltage	Model	LL	LM	KB1	KB2	KL1	LL	LM	KB1	KB2	KL1	LR	LA	LB	LC	LD	LE	LG	LZ	S	Tap x Depth	K	QK	H	B	T	Without brake	With brake
230	R88M-K□																											
	90010(H/T)-□S2	155.5	111.5	77.5	133.5	116	180.5	136.5	77.5	158.5	116	70	165	110 <sup>h7</sup>	130	145	6	12	9	22 <sup>h8</sup>	M5x12L	45	41	18	8 <sup>h9</sup>	7	6.7	8.2
	90010(F/C)-□S2								74.5		118																	
	2K010(F/C)-□S2	163.5	119.5	82.5	141.5	140	188.5	144.5	82.5	166.5	140	80	233	114.3 <sup>h7</sup>	176	200	3.2	18	13.5	35 <sup>h8</sup>	M12x25L	55	50	30	10 <sup>h9</sup>	8	14	17.5
400	3K010(F/C)-□S2	209.5	165.5	128.5	187.5		234.5	190.5	128.5	212.5																		



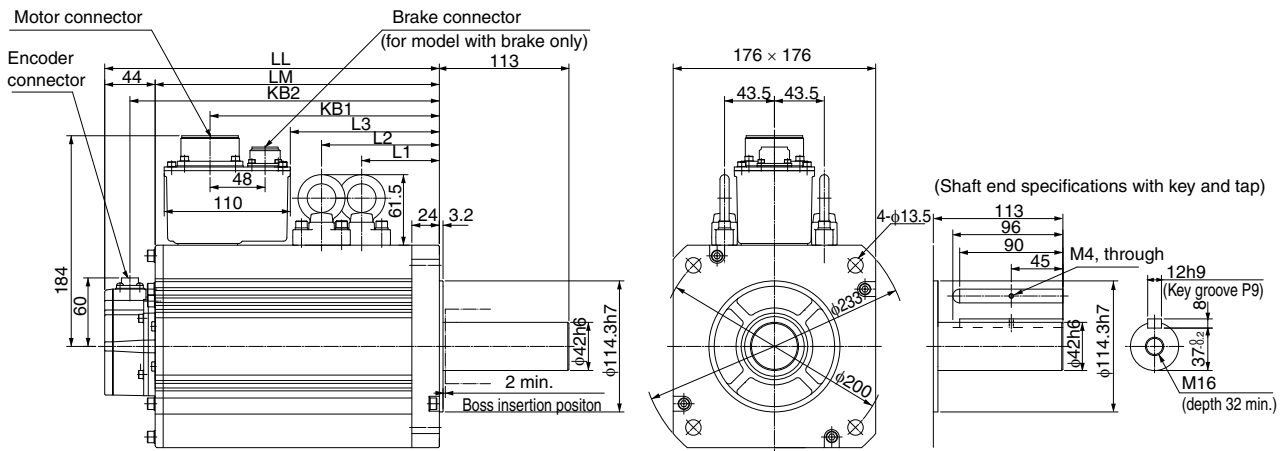
Type 1000 r/min motors ( 400 V, 4.5 kW)

Dimensions (mm)		Without brake						With brake						Approx. Mass (Kg)	
Voltage	Model	LL	LM	KB1	KB2	L1	L2	LL	LM	KB1	KB2	L1	L2	Whithout brake	With brake
	R88M-K□														
400	4K510C-□S2	266	222	185	244	98	98	291	247	185	269	98	133	29.4	33.3



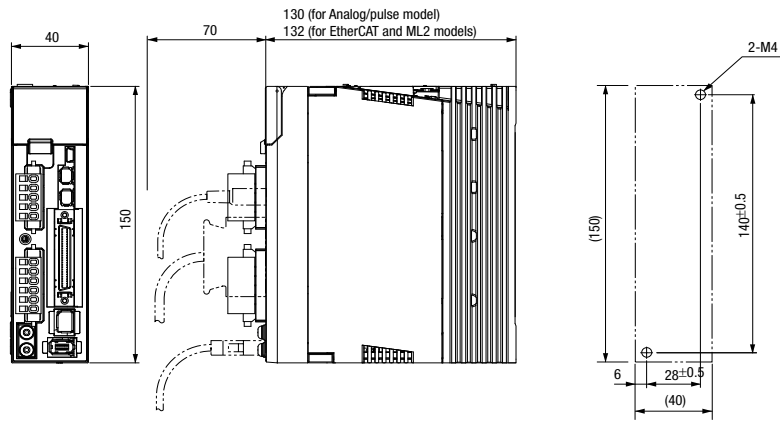
Type 1000 r/min motors (400 V, 6 kW)

Dimensions (mm)		Without brake						With brake						Approx. Mass (Kg)			
Voltage	Model	LL	LM	KB1	KB2	L1	L2	L3	LL	LM	KB1	KB2	L1	L2	L3	Whithout brake	With brake
	R88M-K□																
400	6K010C-□S2	312	268	219	290	117.5	117.5	149	337	293	253	315	117.5	152.5	183	36.4	40.4

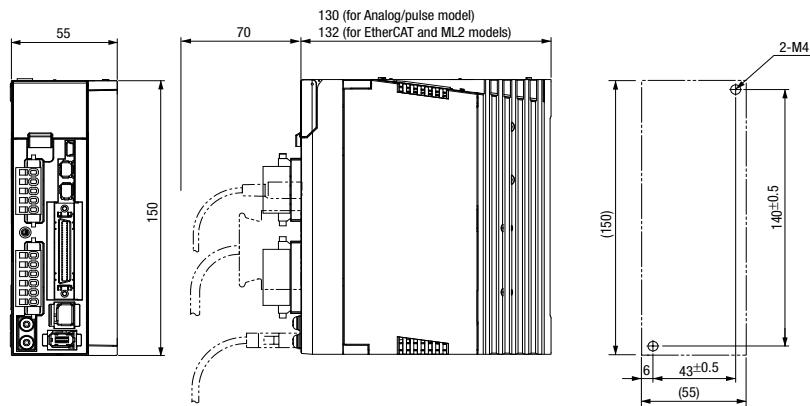


Servo drives

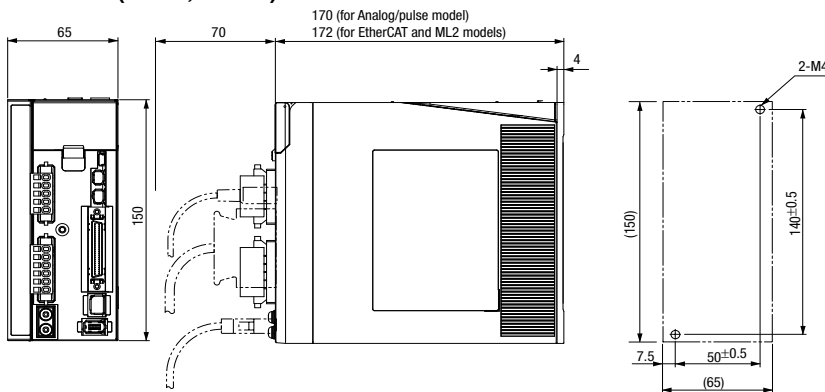
R88D-KT01/02H, R88D-KN01/02H-□ (230 V, 100 - 200W)



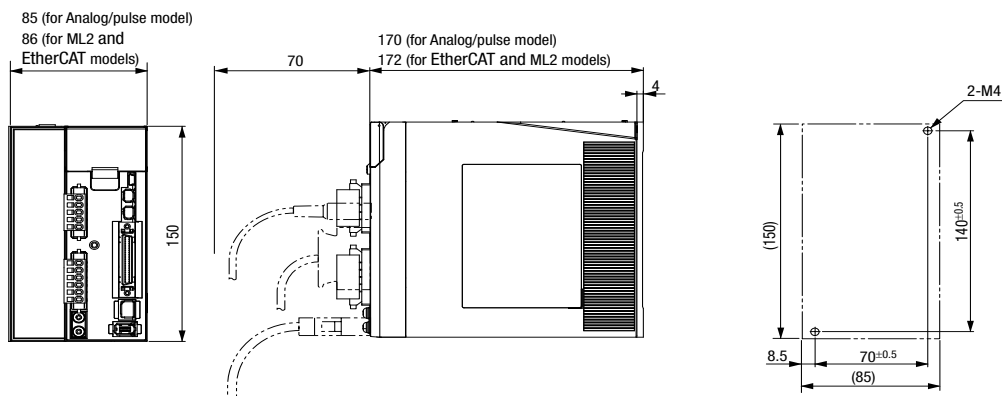
R88D-KT04H, R88D-KN04H-□ (230 V, 400 W)



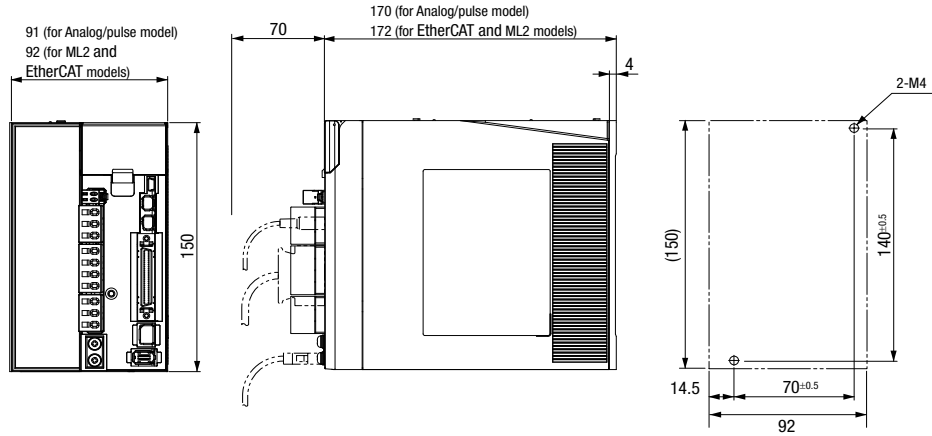
R88D-KT08H, R88D-KN08H-□ (230 V, 750 W)



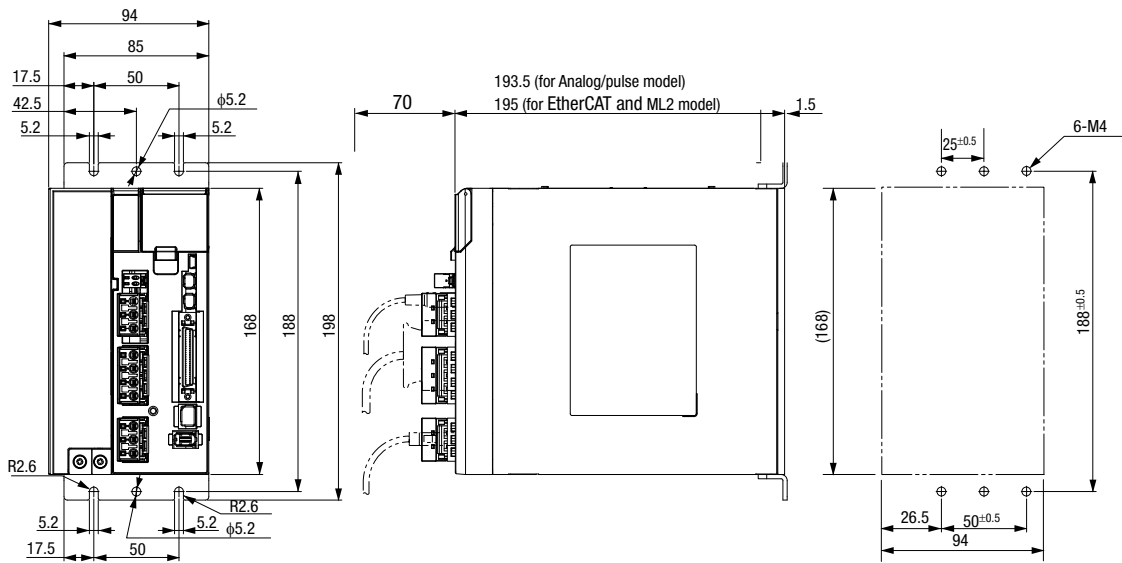
R88D-KT10/15H, R88D-KN10/15H-□ (230 V, 1 - 1.5 kW)



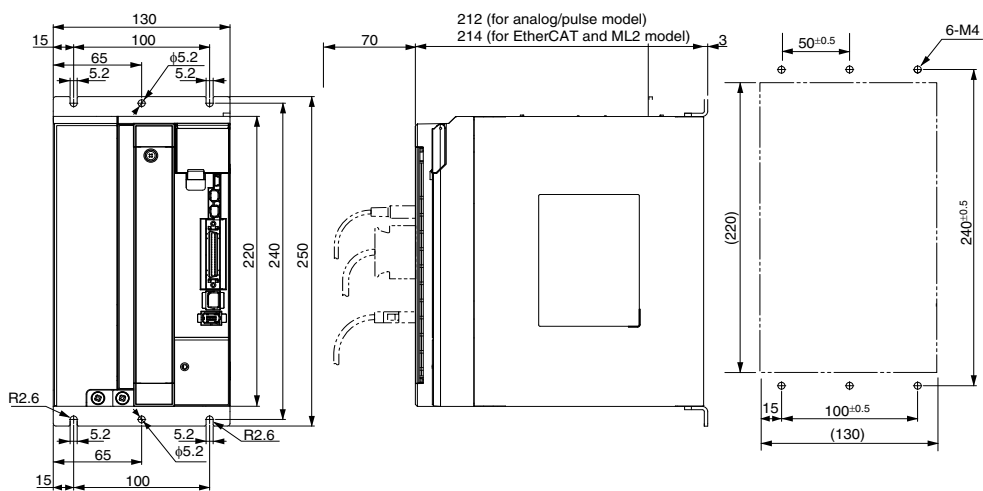
R88D-KT06/10/15F, R88D-KN06/10/15F-□ (400 V, 600 W - 1.5 kW)



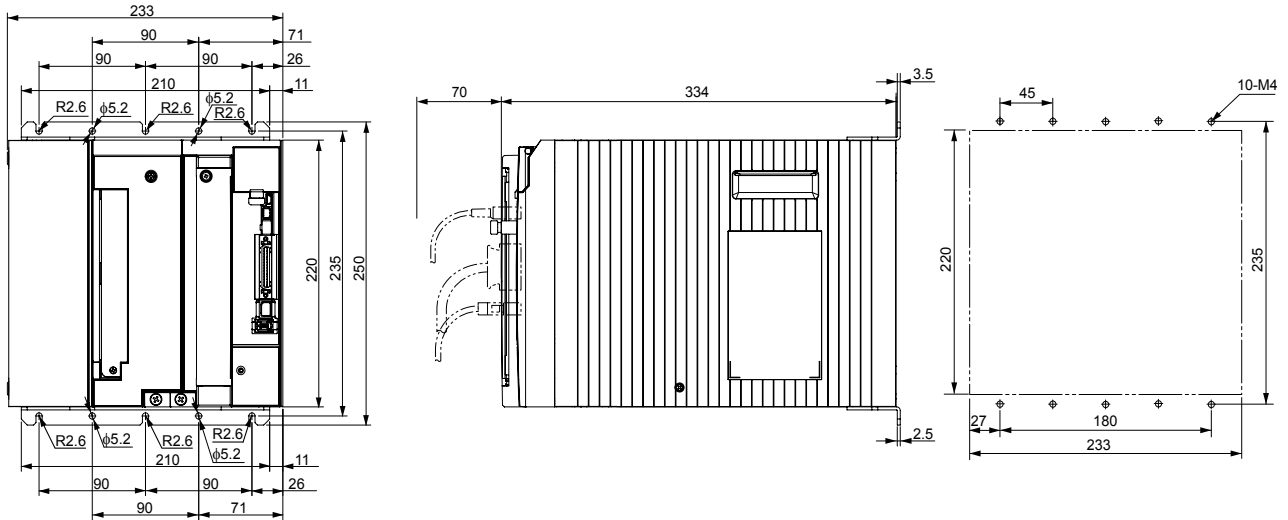
R88D-KT20F, R88D-KN20F-□ (400 V, 2 kW)



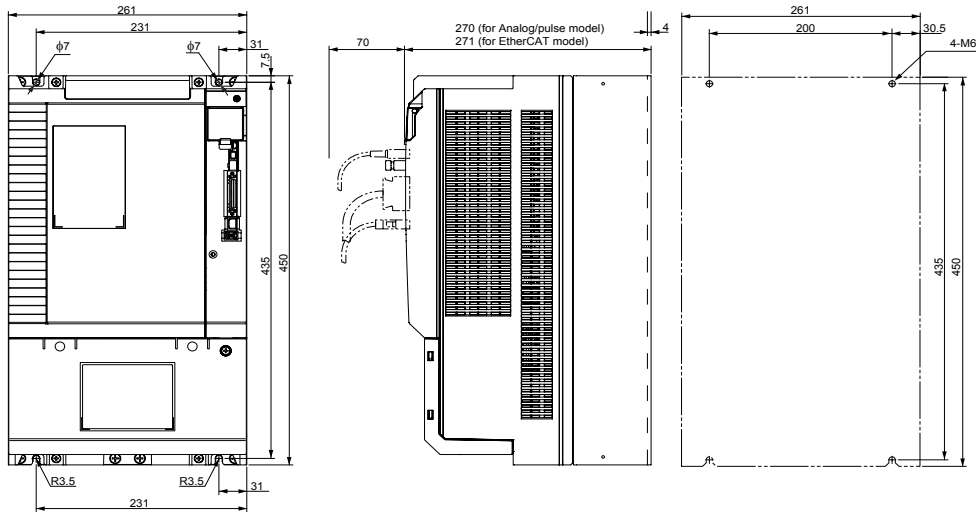
R88D-KT30/50F, R88D-KN30/50F-□ (400 V, 3 - 5 kW)



**R88D-KT75F, R88D-KN75F-ECT (400 V, 7.5 kW)**

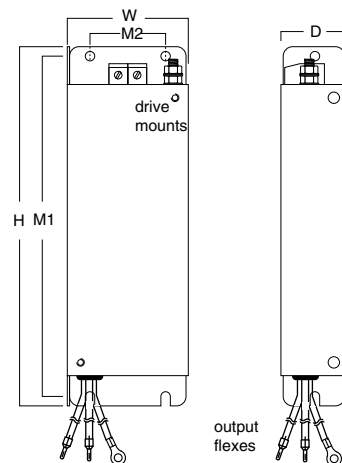


**R88D-KT150F, R88D-KN150F-ECT (400 V, 15 kW)**



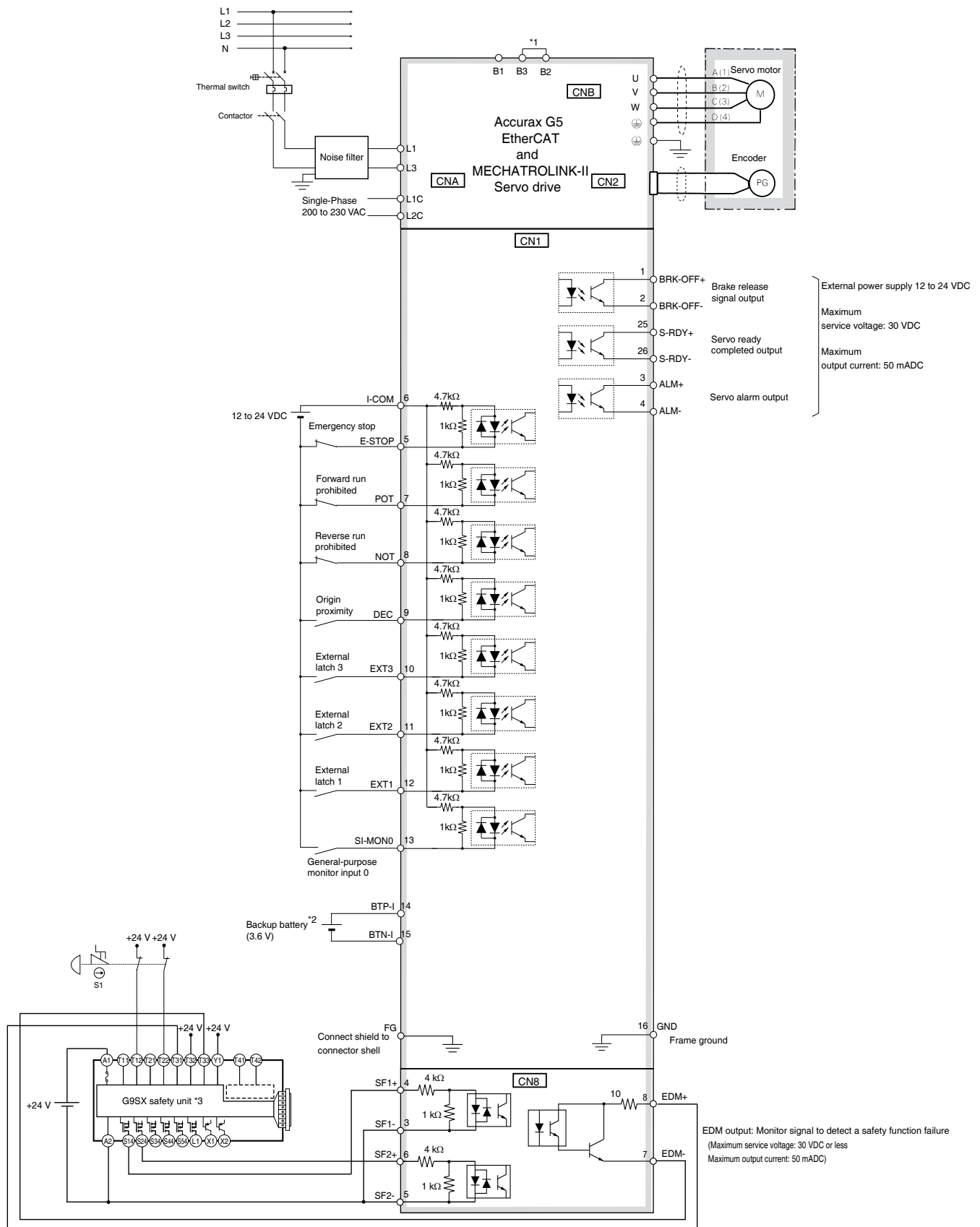
**Filters**

Filter model	External dimensions			Mount dimensions	
	H	W	D	M1	M2
R88A-FIK102-RE	190	42	44	180	20
R88A-FIK104-RE	190	57	30	180	30
R88A-FIK107-RE	190	64	35	180	40
R88A-FIK114-RE	190	86	35	180	60
R88A-FIK304-RE	196	92	40	186	70
R88A-FIK306-RE	238	94	40	228	70
R88A-FIK312-RE	291	130	40	278	100



Installation

Single-phase, 230 VAC (for EtherCAT and MECHATROLINK-II servo drives)



\*1 For servo drives from 750 W, B2 and B3 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.

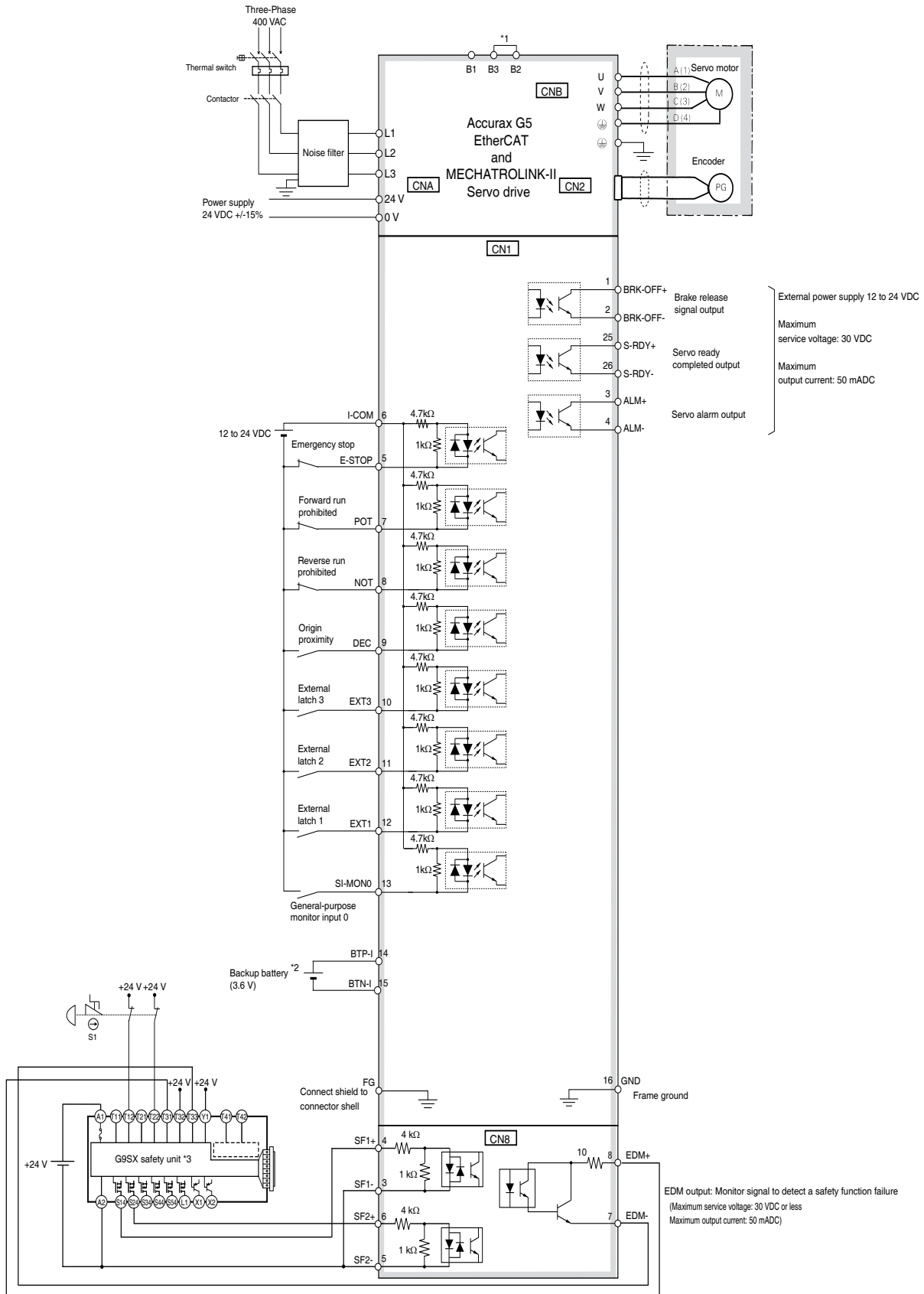
\*2 For use only with an absolute encoder. If a backup battery is connected to CN1 I/O connector, an encoder cable with a battery is not required.

\*3 Wiring diagram example using the G9SX safety unit. If a safety unit is not used, keep the factory safety bypass connector installed in the CN8.

**Note:** The input function of pins 5 and 7 to 13, and output function of pins 1, 2, 25 and 26, can be changed via parameter settings.



Three-phase, 400 VAC (for EtherCAT and MECHATROLINK-II servo drives)



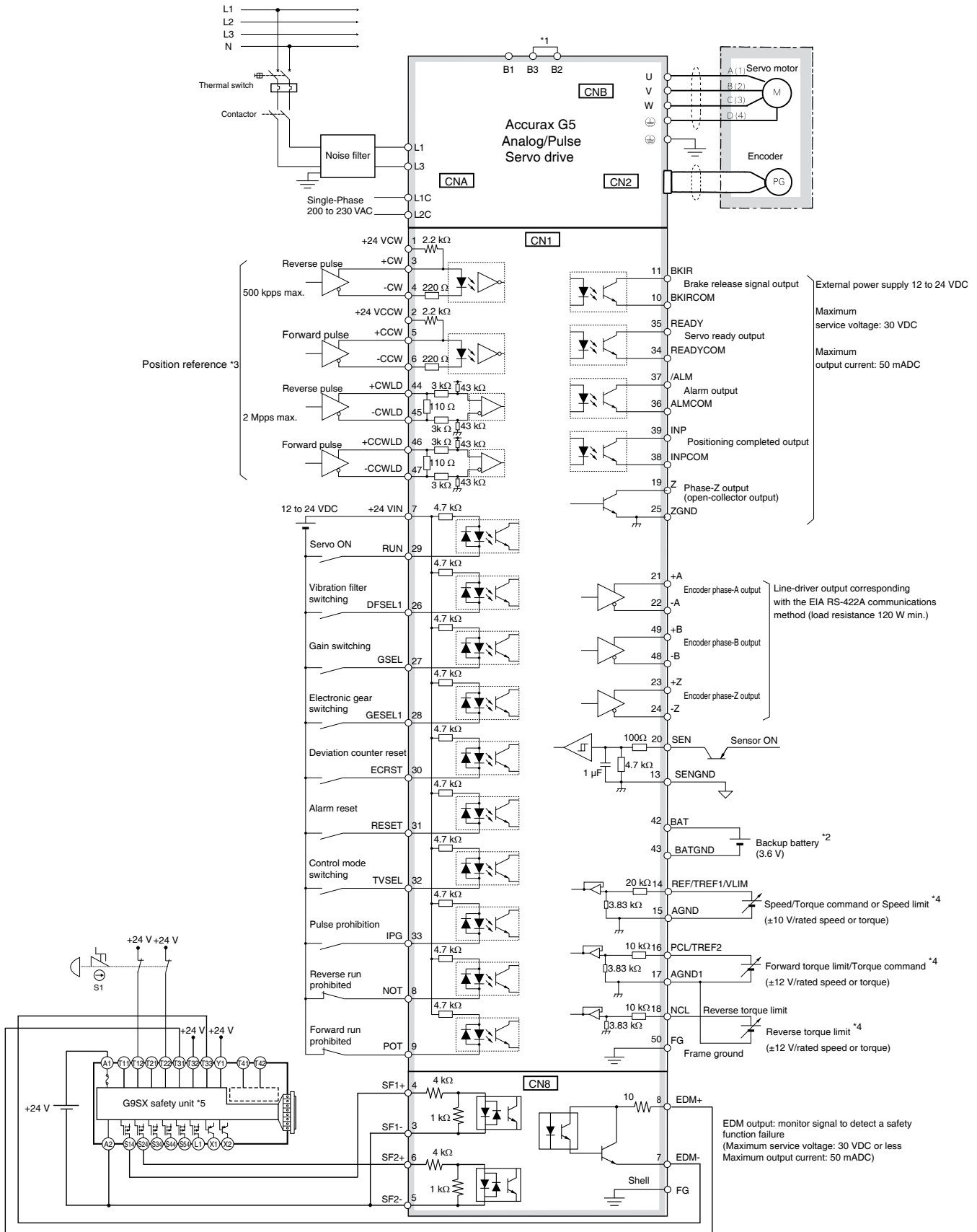
\*1 For servo drives from 600W to 5 kW, B2 and B3 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.

\*2 For use only with an absolute encoder. If a backup battery is connected to CN1 I/O connector, an encoder cable with a battery is not required.

\*3 Wiring diagram example using the G9SX safety unit. If a safety unit is not used, keep the factory safety bypass connector installed in the CN8.

**Note:** The input function of pins 5 and 7 to 13, and output function of pins 1, 2, 25 and 26, can be changed via parameter settings.

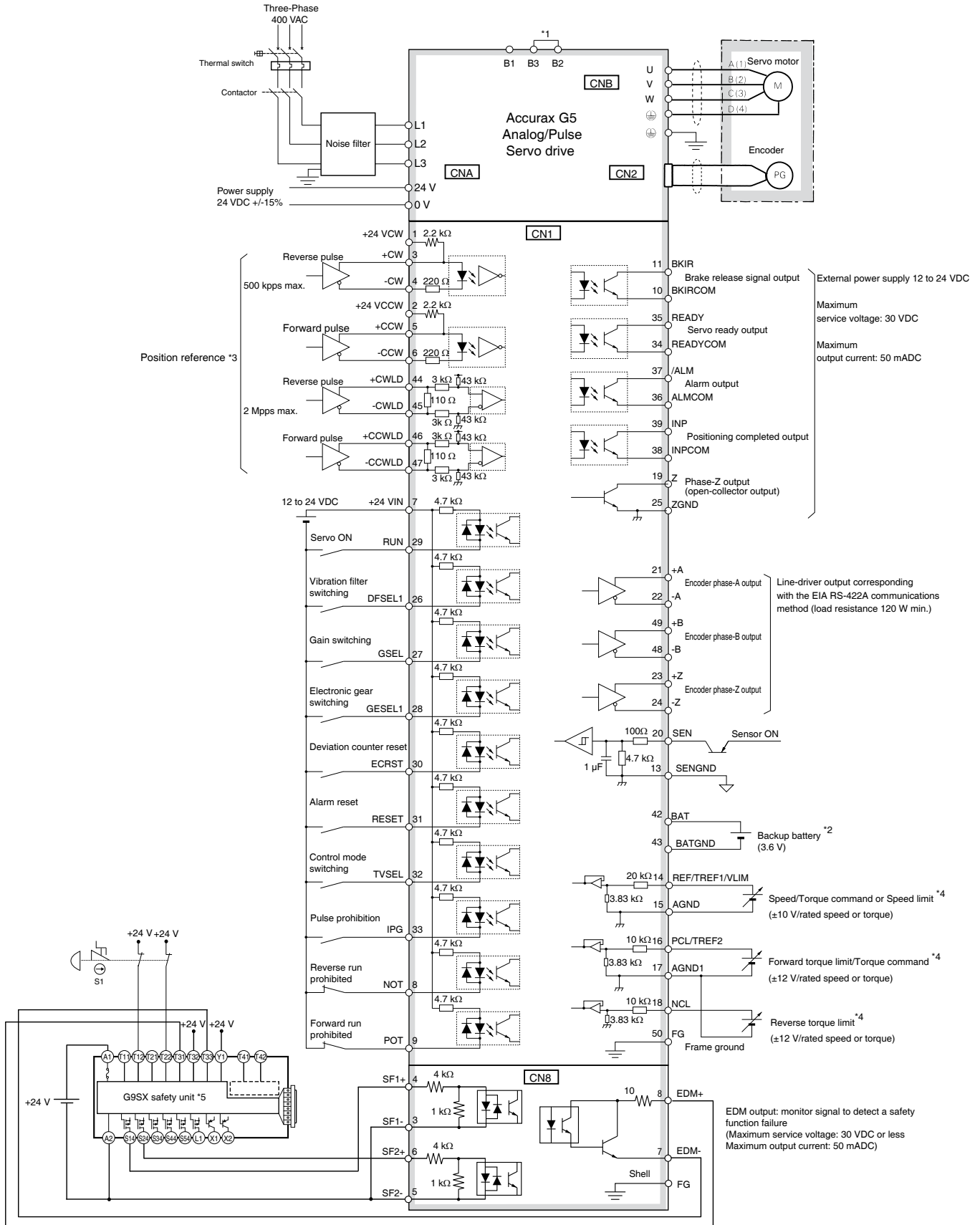
Single-phase, 230 VAC(for analog/pulse servo drives)



\*1 For servo drives from 750 W, B2 and B3 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.  
 \*2 For use only with an absolute encoder. If a backup battery is connected to CN1 I/O connector, an encoder cable with a battery is not required.  
 \*3 Only available in Position control mode.  
 \*4 The input function depends on control mode used (Position, speed or torque control).  
 \*5 Wiring diagram example using the G9SX safety unit. If a safety unit is not used, keep the factory safety bypass connector installed in the CN8.

**Note:** The input function of pins 8,9 and 26 to 33, and output function of pins 10, 11, 34, 35, 38 and 39, can be changed via parameter settings.

Three-phase, 400 VAC (for analog/pulse servo drives)

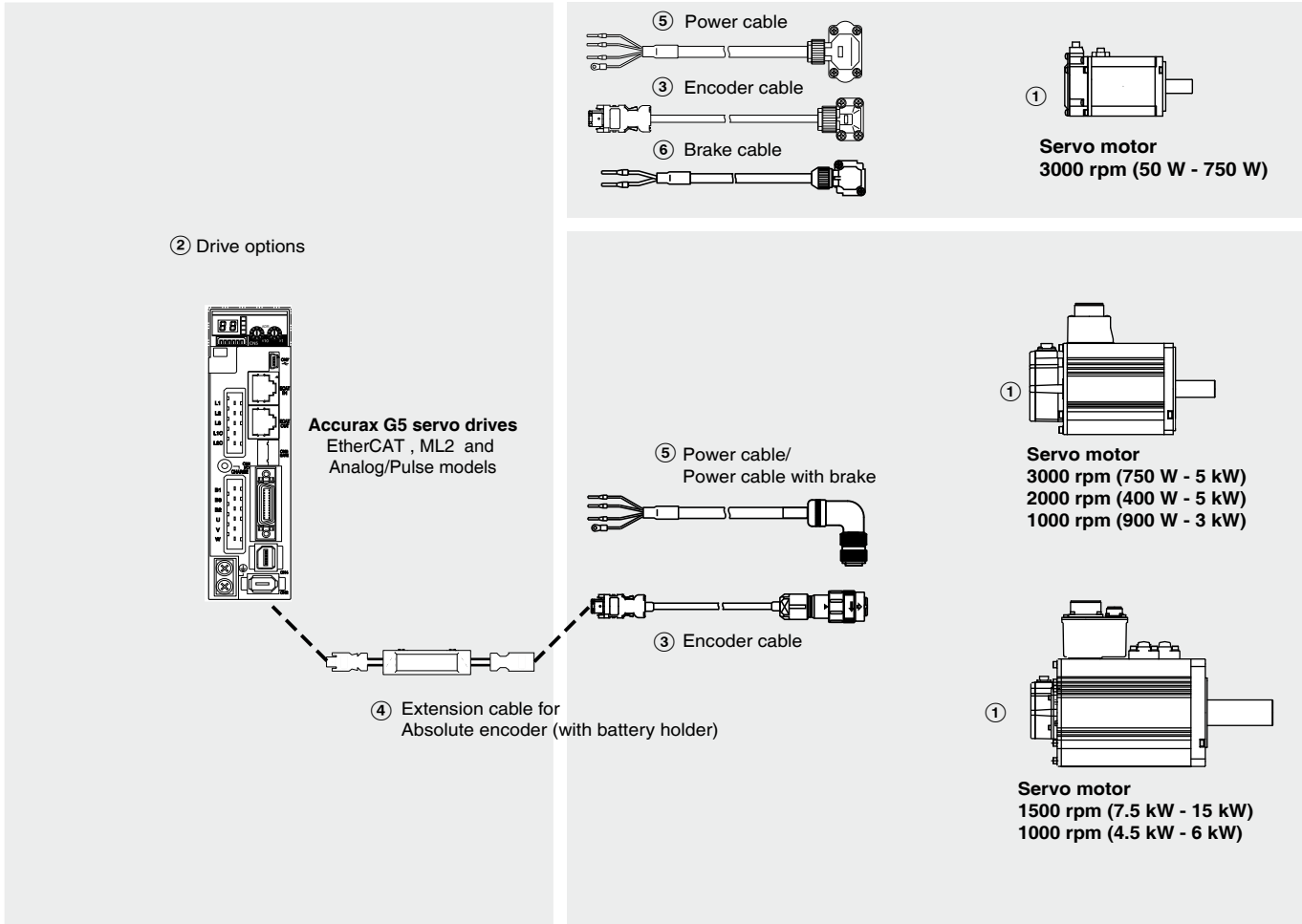


\*1 For servo drives from 600W to 5 kW, B2 and B3 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.  
 \*2 For use only with an absolute encoder. If a backup battery is connected to CN1 I/O connector, an encoder cable with a battery is not required.  
 \*3 Only available in Position control mode.  
 \*4 The input function depends on control mode used (Position, speed or torque control).  
 \*5 Wiring diagram example using the G9SX safety unit. If a safety unit is not used, keep the factory safety bypass connector installed in the CN8.

**Note:** The input function of pins 8,9 and 26 to 33, and output function of pins 10, 11, 34, 35, 38 and 39, can be changed via parameter settings.

**Ordering information**

**Accurax G5 servo motor reference configuration**



**Note:** The symbols ①②③... show the recommended sequence to select the servo motor and cables



**Servo motor**

① Select motor from R88M-K family using motor tables in next pages.


**Servo drive**

② Refer to Accurax G5 servo drive section for detailed drive specifications and selection of drive accessories.


Servo motors 3000 r/min (50 - 5000 W)

Symbol	Specifications				Servo motor model	Compatible servo drives (2)			
	Voltage	Encoder and design	Rated torque	Capacity		G5 EtherCAT/ ML2	G5 Analog/Pulse		
<p>①</p>  <p>230V (50 - 750 W)</p>  <p>230V (1 kW - 1.5 kW) 400V (750 W - 5 kW)</p>	230 V	Incremental encoder (20 bit) Straight shaft with key and tap	Without brake	0.16 Nm	50 W	R88M-K05030H-S2	R88D-KN01H-□	R88D-KT01H	
				0.32 Nm	100 W	R88M-K10030H-S2	R88D-KN01H-□	R88D-KT01H	
				0.64 Nm	200 W	R88M-K20030H-S2	R88D-KN02H-□	R88D-KT02H	
				1.3 Nm	400 W	R88M-K40030H-S2	R88D-KN04H-□	R88D-KT04H	
				2.4 Nm	750 W	R88M-K75030H-S2	R88D-KN08H-□	R88D-KT08H	
				3.18 Nm	1000 W	R88M-K1K030H-S2	R88D-KN15H-□	R88D-KT15H	
			4.77 Nm	1500 W	R88M-K1K530H-S2	R88D-KN15H-□	R88D-KT15H		
			With brake	0.16 Nm	50 W	R88M-K05030H-BS2	R88D-KN01H-□	R88D-KT01H	
				0.32 Nm	100 W	R88M-K10030H-BS2	R88D-KN01H-□	R88D-KT01H	
				0.64 Nm	200 W	R88M-K20030H-BS2	R88D-KN02H-□	R88D-KT02H	
				1.3 Nm	400 W	R88M-K40030H-BS2	R88D-KN04H-□	R88D-KT04H	
				2.4 Nm	750 W	R88M-K75030H-BS2	R88D-KN08H-□	R88D-KT08H	
		3.18 Nm		1000 W	R88M-K1K030H-BS2	R88D-KN15H-□	R88D-KT15H		
		4.77 Nm	1500 W	R88M-K1K530H-BS2	R88D-KN15H-□	R88D-KT15H			
		Absolute encoder (17 bit) Straight shaft with key and tap	Without brake	Without brake	0.16 Nm	50 W	R88M-K05030T-S2	R88D-KN01H-□	R88D-KT01H
					0.32 Nm	100 W	R88M-K10030T-S2	R88D-KN01H-□	R88D-KT01H
					0.64 Nm	200 W	R88M-K20030T-S2	R88D-KN02H-□	R88D-KT02H
					1.3 Nm	400 W	R88M-K40030T-S2	R88D-KN04H-□	R88D-KT04H
					2.4 Nm	750 W	R88M-K75030T-S2	R88D-KN08H-□	R88D-KT08H
					3.18 Nm	1000 W	R88M-K1K030T-S2	R88D-KN15H-□	R88D-KT15H
			4.77 Nm	1500 W	R88M-K1K530T-S2	R88D-KN15H-□	R88D-KT15H		
			With brake	With brake	0.16 Nm	50 W	R88M-K05030T-BS2	R88D-KN01H-□	R88D-KT01H
					0.32 Nm	100 W	R88M-K10030T-BS2	R88D-KN01H-□	R88D-KT01H
					0.64 Nm	200 W	R88M-K20030T-BS2	R88D-KN02H-□	R88D-KT02H
	1.3 Nm				400 W	R88M-K40030T-BS2	R88D-KN04H-□	R88D-KT04H	
	2.4 Nm				750 W	R88M-K75030T-BS2	R88D-KN08H-□	R88D-KT08H	
	3.18 Nm	1000 W			R88M-K1K030T-BS2	R88D-KN15H-□	R88D-KT15H		
	4.77 Nm	1500 W	R88M-K1K530T-BS2	R88D-KN15H-□	R88D-KT15H				
	400 V	Incremental encoder (20 bit) Straight shaft with key and tap	Without brake	Without brake	2.39 Nm	750 W	R88M-K75030F-S2	R88D-KN10F-□	R88D-KT10F
					3.18 Nm	1000 W	R88M-K1K030F-S2	R88D-KN15F-□	R88D-KT15F
					4.77 Nm	1500 W	R88M-K1K530F-S2	R88D-KN15F-□	R88D-KT15F
					6.37 Nm	2000 W	R88M-K2K030F-S2	R88D-KN20F-□	R88D-KT20F
					9.55 Nm	3000 W	R88M-K3K030F-S2	R88D-KN30F-□	R88D-KT30F
					12.7 Nm	4000 W	R88M-K4K030F-S2	R88D-KN50F-□	R88D-KT50F
			15.9 Nm	5000 W	R88M-K5K030F-S2	R88D-KN50F-□	R88D-KT50F		
			With brake	With brake	2.39 Nm	750 W	R88M-K75030F-BS2	R88D-KN10F-□	R88D-KT10F
3.18 Nm					1000 W	R88M-K1K030F-BS2	R88D-KN15F-□	R88D-KT15F	
4.77 Nm					1500 W	R88M-K1K530F-BS2	R88D-KN15F-□	R88D-KT15F	
6.37 Nm					2000 W	R88M-K2K030F-BS2	R88D-KN20F-□	R88D-KT20F	
9.55 Nm					3000 W	R88M-K3K030F-BS2	R88D-KN30F-□	R88D-KT30F	
12.7 Nm		4000 W			R88M-K4K030F-BS2	R88D-KN50F-□	R88D-KT50F		
15.9 Nm		5000 W	R88M-K5K030F-BS2	R88D-KN50F-□	R88D-KT50F				
Absolute encoder (17 bit) Straight shaft with key and tap		Without brake	Without brake	2.39 Nm	750 W	R88M-K75030C-S2	R88D-KN10F-□	R88D-KT10F	
				3.18 Nm	1000 W	R88M-K1K030C-S2	R88D-KN15F-□	R88D-KT15F	
				4.77 Nm	1500 W	R88M-K1K530C-S2	R88D-KN15F-□	R88D-KT15F	
				6.37 Nm	2000 W	R88M-K2K030C-S2	R88D-KN20F-□	R88D-KT20F	
				9.55 Nm	3000 W	R88M-K3K030C-S2	R88D-KN30F-□	R88D-KT30F	
				12.7 Nm	4000 W	R88M-K4K030C-S2	R88D-KN50F-□	R88D-KT50F	
		15.9 Nm	5000 W	R88M-K5K030C-S2	R88D-KN50F-□	R88D-KT50F			
		With brake	With brake	2.39 Nm	750 W	R88M-K75030C-BS2	R88D-KN10F-□	R88D-KT10F	
				3.18 Nm	1000 W	R88M-K1K030C-BS2	R88D-KN15F-□	R88D-KT15F	
				4.77 Nm	1500 W	R88M-K1K530C-BS2	R88D-KN15F-□	R88D-KT15F	
	6.37 Nm			2000 W	R88M-K2K030C-BS2	R88D-KN20F-□	R88D-KT20F		
	9.55 Nm			3000 W	R88M-K3K030C-BS2	R88D-KN30F-□	R88D-KT30F		
12.7 Nm	4000 W			R88M-K4K030C-BS2	R88D-KN50F-□	R88D-KT50F			
15.9 Nm	5000 W	R88M-K5K030C-BS2	R88D-KN50F-□	R88D-KT50F					



Servo motors 2000 r/min (1 - 5 kW)

Symbol	Specifications				Servo motor model	Compatible servo drives (2)			
	Voltage	Encoder and design	Rated torque	Capacity		G5 EtherCAT/ ML2	G5 Analog/Pulse		
	230 V	Incremental encoder (20 bit) Straight shaft with key and tap	Without brake	4.77 Nm	1000 W	R88M-K1K020H-S2	R88D-KN10H-□	R88D-KT10H	
				7.16 Nm	1500 W	R88M-K1K520H-S2	R88D-KN15H-□	R88D-KT15H	
			With brake	4.77 Nm	1000 W	R88M-K1K020H-BS2	R88D-KN10H-□	R88D-KT10H	
				7.16 Nm	1500 W	R88M-K1K520H-BS2	R88D-KN15H-□	R88D-KT15H	
		Absolute encoder (17 bit) Straight shaft with key and tap	Without brake	4.77 Nm	1000 W	R88M-K1K020T-S2	R88D-KN10H-□	R88D-KT10H	
				7.16 Nm	1500 W	R88M-K1K520T-S2	R88D-KN15H-□	R88D-KT15H	
			With brake	4.77 Nm	1000 W	R88M-K1K020T-BS2	R88D-KN10H-□	R88D-KT10H	
				7.16 Nm	1500 W	R88M-K1K520T-BS2	R88D-KN15H-□	R88D-KT15H	
		400 V	Incremental encoder (20 bit) Straight shaft with key and tap	Without brake	1.91 Nm	400 W	R88M-K40020F-S2	R88D-KN06F-□	R88D-KT06F
					2.86 Nm	600 W	R88M-K60020F-S2	R88D-KN06F-□	R88D-KT06F
					4.77 Nm	1000 W	R88M-K1K020F-S2	R88D-KN10F-□	R88D-KT10F
					7.16 Nm	1500 W	R88M-K1K520F-S2	R88D-KN15F-□	R88D-KT15F
	9.55 Nm				2000 W	R88M-K2K020F-S2	R88D-KN20F-□	R88D-KT20F	
	14.3 Nm				3000 W	R88M-K3K020F-S2	R88D-KN30F-□	R88D-KT30F	
	With brake			19.1 Nm	4000 W	R88M-K4K020F-S2	R88D-KN50F-□	R88D-KT50F	
				23.9 Nm	5000 W	R88M-K5K020F-S2	R88D-KN50F-□	R88D-KT50F	
				1.91 Nm	400 W	R88M-K40020F-BS2	R88D-KN06F-□	R88D-KT06F	
				2.86 Nm	600 W	R88M-K60020F-BS2	R88D-KN06F-□	R88D-KT06F	
				4.77 Nm	1000 W	R88M-K1K020F-BS2	R88D-KN10F-□	R88D-KT10F	
				7.16 Nm	1500 W	R88M-K1K520F-BS2	R88D-KN15F-□	R88D-KT15F	
	Absolute encoder (17 bit) Straight shaft with key and tap		Without brake	9.55 Nm	2000 W	R88M-K2K020F-BS2	R88D-KN20F-□	R88D-KT20F	
				14.3 Nm	3000 W	R88M-K3K020F-BS2	R88D-KN30F-□	R88D-KT30F	
				19.1 Nm	4000 W	R88M-K4K020F-BS2	R88D-KN50F-□	R88D-KT50F	
				23.9 Nm	5000 W	R88M-K5K020F-BS2	R88D-KN50F-□	R88D-KT50F	
				1.91 Nm	400 W	R88M-K40020C-S2	R88D-KN06F-□	R88D-KT06F	
				2.86 Nm	600 W	R88M-K60020C-S2	R88D-KN06F-□	R88D-KT06F	
			With brake	4.77 Nm	1000 W	R88M-K1K020C-S2	R88D-KN10F-□	R88D-KT10F	
				7.16 Nm	1500 W	R88M-K1K520C-S2	R88D-KN15F-□	R88D-KT15F	
				9.55 Nm	2000 W	R88M-K2K020C-S2	R88D-KN20F-□	R88D-KT20F	
				14.3 Nm	3000 W	R88M-K3K020C-S2	R88D-KN30F-□	R88D-KT30F	
19.1 Nm				4000 W	R88M-K4K020C-S2	R88D-KN50F-□	R88D-KT50F		
23.9 Nm				5000 W	R88M-K5K020C-S2	R88D-KN50F-□	R88D-KT50F		



Servo motors 1500 r/min (7.5 - 15 KW)

Symbol	Specifications				Servo motor model	Compatible servo drives (2)		
	Voltage	Encoder and design	Rated torque	Capacity		G5 EtherCAT	G5 Analog/Pulse	
	400 V	Absolute encoder (17 bit) Straight shaft with key and tap	Without brake	47.8 Nm	7500 W	R88M-K7K515C-S2	R88D-KN75F-ECT	R88D-KT75F
				70.0 Nm	11000 W	R88M-K11K015C-S2	R88D-KN150F-ECT	R88D-KT150F
				95.5 Nm	15000 W	R88M-K15K015C-S2	R88D-KN150F-ECT	R88D-KT150F
			With brake	47.8 Nm	7500 W	R88M-K7K515C-BS2	R88D-KN75F-ECT	R88D-KT75F
				70.0 Nm	11000 W	R88M-K11K015C-BS2	R88D-KN150F-ECT	R88D-KT150F
				95.5 Nm	15000 W	R88M-K15K015C-BS2	R88D-KN150F-ECT	R88D-KT150F

Servo motors 1000 r/min (900 - 6000 W)

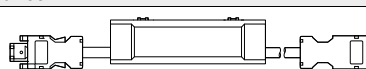
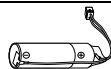
Symbol	Specifications				Servo motor model	Compatible servo drives (2)				
	Voltage	Encoder and design		Rated torque		Capacity	G5 EtherCAT	G5 Analog/Pulse	G5 ML2	
 900 W - 3 kW   4.5 kW - 6 kW	230 V	Incremental encoder (20 bit)		No brake	8.59 Nm	900 W	R88M-K90010H-S2	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
		Straight shaft with key and tap		With brake	8.59 Nm	900 W	R88M-K90010H-BS2	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
		Absolute encoder (17 bit)		No brake	8.59 Nm	900 W	R88M-K90010T-S2	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
		Straight shaft with key and tap		With brake	8.59 Nm	900 W	R88M-K90010T-BS2	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
	400 V	Incremental encoder (20 bit)		No brake	8.59 Nm	900 W	R88M-K90010F-S2	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
					19.1 Nm	2000 W	R88M-K2K010F-S2	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
					28.7 Nm	3000 W	R88M-K3K010F-S2	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
				With brake	8.59 Nm	900 W	R88M-K90010F-BS2	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
					19.1 Nm	2000 W	R88M-K2K010F-BS2	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
					28.7 Nm	3000 W	R88M-K3K010F-BS2	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
		Absolute encoder (17 bit)		No brake	8.59 Nm	900 W	R88M-K90010C-S2	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
					19.1 Nm	2000 W	R88M-K2K010C-S2	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
					28.7 Nm	3000 W	R88M-K3K010C-S2	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
				With brake	43.0 Nm	4500 W	R88M-K4K510C-S2	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
					57.3 Nm	6000 W	R88M-K6K010C-S2	R88D-KN75F-ECT	R88D-KT75F	-
					8.59 Nm	900 W	R88M-K90010C-BS2	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
19.1 Nm	2000 W	R88M-K2K010C-BS2	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2					
28.7 Nm	3000 W	R88M-K3K010C-BS2	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2					
43.0 Nm	4500 W	R88M-K4K510C-BS2	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2					
57.3 Nm	6000 W	R88M-K6K010C-BS2	R88D-KN75F-ECT	R88D-KT75F	-					

Encoder cables for absolute and incremental encoders

Symbol	Specifications	Model	Appearance	
③	Encoder cable for servomotors R88M-K(050/100/200/400/750)30(H/T)□	1.5 m	R88A-CRKA001-5CR-E	
		3 m	R88A-CRKA003CR-E	
		5 m	R88A-CRKA005CR-E	
		10 m	R88A-CRKA010CR-E	
		15 m	R88A-CRKA015CR-E	
	Encoder cable for servomotors R88M-K(1K0/1K5)30(H/T)□ R88M-K(750/1K0/1K5/2K0/3K0/4K0/5K0)30(F/C)□ R88M-K(400/600/1K0/1K5/2K0/3K0/4K0/5K0)20□ R88M-K(7K5/11K0/15K0)15□ R88M-K(900/2K0/3K0/4K5/6K0)10□	20 m	R88A-CRKA020CR-E	
		1.5 m	R88A-CRKC001-5NR-E	
		3 m	R88A-CRKC003NR-E	
		5 m	R88A-CRKC005NR-E	
		10 m	R88A-CRKC010NR-E	
15 m	R88A-CRKC015NR-E			
20 m	R88A-CRKC020NR-E			

Note: For servomotors fitted with an absolute encoder you have to add the extension battery cable R88A-CRGD0R3C□ (see below) or connect a backup battery in the CN1 I/O connector.

Absolute encoder battery cable (encoder extension cable only)

Symbol	Specifications	Model	Appearance		
④	Absolute encoder battery cable	Battery not included	0.3 m	R88A-CRGD0R3C-E	
		Battery included	0.3 m	R88A-CRGD0R3C-BS-E	
	Absolute encoder backup battery	2,000 mA.h 3.6V	-	R88A-BAT01G	

Power cables

Symbol	Specifications		Model	Appearance	
⑤	For 200 V servomotors R88M-K(050/100/200/400/750)30(H/T)□ <b>Note:</b> for servomotors with brake R88M-K(050/100/200/400/750)30(H/T)-BS2, the separate brake cable R88A-CAKA□□□BR-E is needed	Power cable only (without brake)	1.5 m	R88A-CAKA001-5SR-E	
			3 m	R88A-CAKA003SR-E	
			5 m	R88A-CAKA005SR-E	
			10 m	R88A-CAKA010SR-E	
			15 m	R88A-CAKA015SR-E	
			20 m	R88A-CAKA020SR-E	
	For 200 V servomotors R88M-K(1K0/1K5)30(H/T)□ R88M-K(1K0/1K5)20(H/T)□ R88M-K90010(H/T)□	without brake □-S2	1.5 m	R88A-CAGB001-5SR-E	
			3 m	R88A-CAGB003SR-E	
			5 m	R88A-CAGB005SR-E	
			10 m	R88A-CAGB010SR-E	
			15 m	R88A-CAGB015SR-E	
		with brake □-BS2	1.5 m	R88A-CAGB001-5BR-E	
			3 m	R88A-CAGB003BR-E	
			5 m	R88A-CAGB005BR-E	
			10 m	R88A-CAGB010BR-E	
			15 m	R88A-CAGB015BR-E	
	For 400 V servomotors R88M-K(750/1K0/1K5/2K)30(F/C)□ R88M-K(400/600/1K0/1K5/2K0)20(F/C)□ R88M-K90010(F/C)□	without brake □-S2	1.5 m	R88A-CAGB001-5SR-E	
			3 m	R88A-CAGB003SR-E	
			5 m	R88A-CAGB005SR-E	
			10 m	R88A-CAGB010SR-E	
			15 m	R88A-CAGB015SR-E	
		with brake □-BS2	1.5 m	R88A-CAKF001-5BR-E	
			3 m	R88A-CAKF003BR-E	
			5 m	R88A-CAKF005BR-E	
10 m			R88A-CAKF010BR-E		
15 m			R88A-CAKF015BR-E		
For 400 V servomotors R88M-K(3K0/4K0/5K0)30(F/C)□ R88M-K(3K0/4K0/5K0)20(F/C)□ R88M-K(2K0/3K0)10(F/C)□ R88M-K4K510C□	without brake □-S2	1.5 m	R88A-CAGD001-5SR-E		
		3 m	R88A-CAGD003SR-E		
		5 m	R88A-CAGD005SR-E		
		10 m	R88A-CAGD010SR-E		
		15 m	R88A-CAGD015SR-E		
	with brake □-BS2	1.5 m	R88A-CAGD001-5BR-E		
		3 m	R88A-CAGD003BR-E		
		5 m	R88A-CAGD005BR-E		
		10 m	R88A-CAGD010BR-E		
		15 m	R88A-CAGD015BR-E		
For 400 V servomotors R88M-K6K010C□ R88M-K7K515C□ <b>Note:</b> for servomotors with brake R88M-K(6K010/7K515)C-BS2 the separate brake cable R88A-CAGE□□□BR-E is needed	Power cable only (without brake)	1.5 m	R88A-CAKE001-5SR-E		
		3 m	R88A-CAKE003SR-E		
		5 m	R88A-CAKE005SR-E		
		10 m	R88A-CAKE010SR-E		
		15 m	R88A-CAKE015SR-E		
		20 m	R88A-CAKE020SR-E		
For 400 V servomotors R88M-K(11K0/15K0)15C <b>Note:</b> for servomotors with brake R88M-K(11K0/15K0)15C-BS2, the separate brake cable R88A-CAGE□□□BR-E is needed	Power cable only (without brake)	1.5 m	R88A-CAKG001-5SR-E		
		3 m	R88A-CAKG003SR-E		
		5 m	R88A-CAKG005SR-E		
		10 m	R88A-CAKG010SR-E		
		15 m	R88A-CAKG015SR-E		
		20 m	R88A-CAKG020SR-E		

Brake cables (for 200 V 50-750 W servo motors and 400 V 6-15 kW servo motors)

Symbol	Specifications		Model	Appearance
⑥	Brake cable only. For 200 V servo motors with brake R88M-K(050/100/200/400/750)30(H/T)-BS2	1.5 m	R88A-CAKA001-5BR-E	
		3 m	R88A-CAKA003BR-E	
		5 m	R88A-CAKA005BR-E	
		10 m	R88A-CAKA010BR-E	
		15 m	R88A-CAKA015BR-E	
		20 m	R88A-CAKA020BR-E	
	Brake cable only. For 400 V servo motors with brake R88M-K6K010C-BS2 R88M-K(7K5/11K0/15K0)15C-BS2	1.5 m	R88A-CAGE001-5BR-E	
		3 m	R88A-CAGE003BR-E	
		5 m	R88A-CAGE005BR-E	
		10 m	R88A-CAGE010BR-E	
		15 m	R88A-CAGE015BR-E	
		20 m	R88A-CAGE020BR-E	

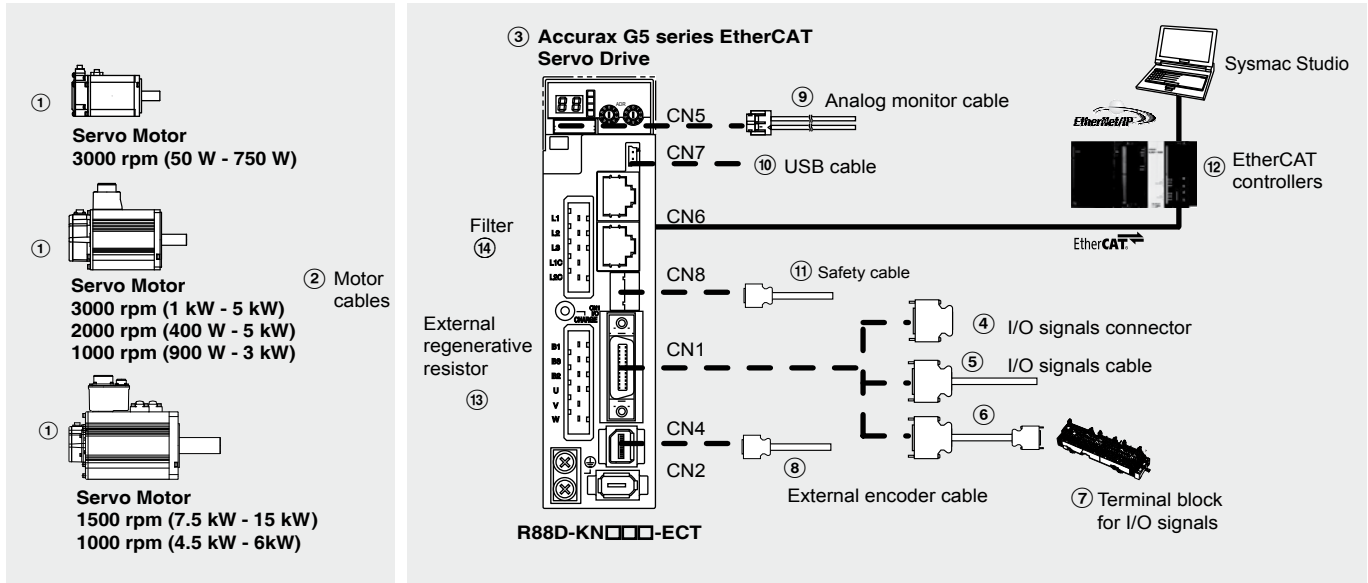


**Connectors for encoder, power and brake cables**

Specifications		Applicable Servomotor	Model
Connectors for making encoder cables	Drive side (CN2)	All models	R88A-CNW01R
	Motor side	R88M-K(050/100/200/400/750)30(H/T)□	R88A-CNK02R
	Motor side	R88M-K(1K0/1K5)30(H/T)□ R88M-K(750/1K0/1K5/2K0/3K0/4K0/5K0)30(F/C)□ R88M-K(400/600/1K0/1K5/2K0/3K0/4K0/5K0)20□ R88M-K(900/2K0/3K0)10□ R88M-K(4K5/6K0)10C-□ R88M-K(7K5/11K0/15K0)15C-□	R88A-CNK04R
Connectors for making power cables	Motor side	R88M-K(050/100/200/400/750)30(H/T)□	R88A-CNK11A
	Motor side	R88M-K(1K0/1K5)30(H/T)-S2 R88M-K(1K0/1K5)20(H/T)-S2 R88M-K90010(H/T)-S2 R88M-K(750/1K0/1K5/2K0)30(F/C)-S2, R88M-K(400/600/1K0/1K5/2K0)20(F/C)-S2 R88M-K90010(F/C)-S2	MS3108E20-4S
	Motor side	R88M-K(1K0/1K5)30(H/T)-BS2 R88M-K(1K0/1K5)20(H/T)-BS2 R88M-K90010(H/T)-BS2	MS3108E20-18S
	Motor side	R88M-K(750/1K0/1K5/2K0/3K0/4K0/5K0)30(F/C)-BS2 R88M-K(400/600/1K0/1K5/2K0/3K0/4K0/5K0)20(F/C)-BS2 R88M-K(900/2K0/3K0)10(F/C)-BS2 R88M-K4K510C-BS2	MS3108E24-11S
	Motor side	R88M-K(3K0/4K0/5K0)30(F/C)-S2 R88M-K(3K0/4K0/5K0)20(F/C)-S2 R88M-K(2K0/3K0)10(F/C)-S2 R88M-K4K510C-S2	MS3108E22-22S
	Motor side	R88M-K6K010C-□ R88M-K(7K5/11K0/15K0)15C-□	MS3108E32-17S
Connector for brake cable	Motor side	R88M-K(050/100/200/400/750)30(H/T)-BS2	R88A-CNK11B
	Motor side	R88M-K6K010C-BS2 R88M-K(7K5/11K0/15K0)15C-BS2	MS3108E14S-2S

- Note:** 1. All cables listed are flexible and shielded (except the R88A-CAKA□□□-BR-E which is only a flexible cable).  
 2. All connectors and cables listed have IP67 class (except R88A-CNW01R connector and R88A-CRGD0R3C cable).

Accurax G5 series EtherCAT reference configuration



Note: The symbols ①②③④⑤... show the recommended sequence to select the components in Accurax G5 servo system

Servo motors, power & encoder cables

Note: ①② Refer to the Accurax G5 servo motor section for servomotor, motor cables or connectors selection

Servo drives

Symbol	Specifications		Servo drive model	① Compatible G5 series rotary servo motors	
③	1 phase 230 VAC	100 W	R88D-KN01H-ECT	R88M-K05030(H/T)-□ R88M-K10030(H/T)-□	
		200 W	R88D-KN02H-ECT	R88M-K20030(H/T)-□	
		400 W	R88D-KN04H-ECT	R88M-K40030(H/T)-□	
		750 W	R88D-KN08H-ECT	R88M-K75030(H/T)-□	
		1.0 kW	R88D-KN10H-ECT	R88M-K1K020(H/T)-□	
		1.5 kW	R88D-KN15H-ECT	R88M-K1K030(H/T)-□ R88M-K1K530(H/T)-□ R88M-K1K520(H/T)-□ R88M-K90010(H/T)-□	
		3 phase 400 VAC	600 W	R88D-KN06F-ECT	R88M-K40020(F/C)-□ R88M-K60020(F/C)-□
			1.0 kW	R88D-KN10F-ECT	R88M-K75030(F/C)-□ R88M-K1K020(F/C)-□
			1.5 kW	R88D-KN15F-ECT	R88M-K1K030(F/C)-□ R88M-K1K530(F/C)-□ R88M-K1K520(F/C)-□ R88M-K90010(F/C)-□
	2.0 kW		R88D-KN20F-ECT	R88M-K2K030(F/C)-□ R88M-K2K020(F/C)-□	
	3.0 kW		R88D-KN30F-ECT	R88M-K3K030(F/C)-□ R88M-K3K020(F/C)-□ R88M-K2K010(F/C)-□	
	5.0 kW		R88D-KN50F-ECT	R88M-K4K030(F/C)-□ R88M-K5K030(F/C)-□ R88M-K4K020(F/C)-□ R88M-K5K020(F/C)-□ R88M-K4K510C-□ R88M-K3K010(F/C)-□	
	7.5 kW		R88D-KN75F-ECT	R88M-K6K010C-□ R88M-K7K515C-□	
	15 kW		R88D-KN150F-ECT	R88M-K11K015C-□ R88M-K15K015C-□	

**Signals cables for I/O general purpose (CN1)**

Symbol	Description	Connect to	Model
④	I/O connector kit (26 pins)	For I/O general purpose	- R88A-CNW01C
⑤	I/O signals cable	For I/O general purpose	1m R88A-CPKB001S-E
			2m R88A-CPKB002S-E
⑥	Terminal block cable	For I/O general purpose	1 m XW2Z-100J-B34
			2 m XW2Z-200J-B34
⑦	Terminal block (M3 screw and for pin terminals)	-	XW2B-20G4
	Terminal block (M3.5 screw and for fork/round terminals)	-	XW2B-20G5
	Terminal block (M3 screw and for fork/round terminals)	-	XW2D-20G6

**External encoder cable (CN4)**

Symbol	Name	Model
⑧	External encoder cable	5m R88A-CRKM005SR-E
		10m R88A-CRKM010SR-E
		20m R88A-CRKM020SR-E

**Analog monitor (CN5)**

Symbol	Name	Model
⑨	Analog monitor cable	1m R88A-CMK001S

**USB personal computer cable (CN7)**

Symbol	Name	Model
⑩	USB mini-connector cable	2m AX-CUSBM002-E

**Cable for safety (CN8)**

Symbol	Name	Model
⑪	Safety cable	3m R88A-CSK003S-E

**EtherCAT controllers**

Symbol	Name	Model	
⑫	NJ-Series	CPU units	NJ501-1300 (16 axes)
			NJ501-1400 (32 axes)
			NJ501-1500 (64 axes)
		Power supply units	NJ-PA3001 (220 VAC)
		NJ-PD3001 (24 VDC)	
	Trajexia stand-alone	Motion control unit	TJ2-MC64 (64 axes)
		EtherCAT master unit	TJ2-ECT64 (64 axes)
			TJ2-ECT16 (16 axes)
		TJ2-ECT04 (4 axes)	
	Position Controller Unit for CJ1 PLC series		CJ1W-NCF8□ (16 axes)
		CJ1W-NC88□ (8 axes)	
		CJ1W-NC48□ (4 axes)	
		CJ1W-NC281 (2 axes)	

**External regenerative resistor**

Symbol	Regenerative resistor unit model	Specifications
⑬	R88A-RR08050S	50 Ω, 80 W
	R88A-RR080100S	100 Ω, 80 W
	R88A-RR22047S	47 Ω, 220 W
	R88A-RR50020S	20 Ω, 500 W

**Filters**

Symbol	Applicable servodrive	Filter model	Rated current	Leakage current	Rated voltage
⑭	R88D-KN01H-ECT, R88D-KN02H-ECT	R88A-FIK102-RE	2.4 A	3.5 mA	250 VAC single-phase
	R88D-KN04H-ECT	R88A-FIK104-RE	4.1 A	3.5 mA	
	R88D-KN08H-ECT	R88A-FIK107-RE	6.6 A	3.5 mA	
	R88D-KN10H-ECT, R88D-KN15H-ECT	R88A-FIK114-RE	14.2 A	3.5 mA	400 VAC three-phase
	R88D-KN06F-ECT, R88D-KN10F-ECT, R88D-KN15F-ECT	R88A-FIK304-RE	4 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KN20F-ECT	R88A-FIK306-RE	6 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KN30F-ECT, R88D-KN50F-ECT	R88A-FIK312-RE	12.1 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KN75F-ECT	R88A-FIK330-RE	-	-	
	R88D-KN150F-ECT	R88A-FIK350-RE	-	-	

1. Momentary peak leakage current for the filter at switch-on/off.

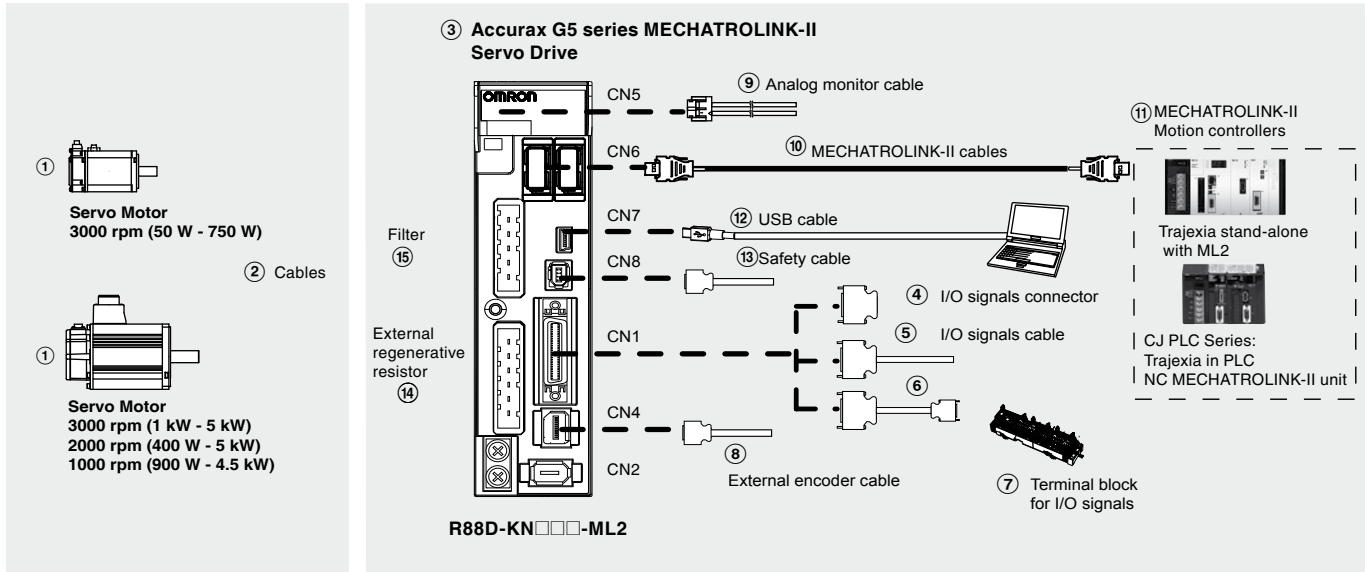
**Connectors**

Specifications	Model
External encoder connector (for CN4)	R88A-CNK41L
Safety I/O signal connector (for CN8)	R88A-CNK81S

**Computer software**

Specifications	Model
Sysmac Studio version 1.0 or higher	SYSMAC-SE2□□□
CX-Drive version 2.10 or higher	CX-DRIVE 2.10
CX-One software package including CX-Drive 2.10 or higher	CX-ONE

Accurax G5 series MECHATROLINK-II reference configuration



Note: The symbols ①②③④⑤... show the recommended sequence to select the components in Accurax G5 servo system

Servo motors, power & encoder cables

Note: ①② Refer to the Accurax G5 servo motor section for servomotor, motor cables or connectors selection

Servo drives

Symbol	Specifications	Servo drive model	① Compatible G5 series rotary servo motors	
③	1 phase 230 VAC	100 W	R88D-KN01H-ML2	R88M-K05030(H/T)-□ R88M-K10030(H/T)-□
		200 W	R88D-KN02H-ML2	R88M-K20030(H/T)-□
		400 W	R88D-KN04H-ML2	R88M-K40030(H/T)-□
		750 W	R88D-KN08H-ML2	R88M-K75030(H/T)-□
		1.0 kW	R88D-KN10H-ML2	R88M-K1K020(H/T)-□
		1.5 kW	R88D-KN15H-ML2	R88M-K1K030(H/T)-□ R88M-K1K530(H/T)-□ R88M-K1K520(H/T)-□
				R88M-K90010(H/T)-□
	R88M-K40020(F/C)-□ R88M-K60020(F/C)-□			
	3 phase 400 VAC	600 W	R88D-KN06F-ML2	R88M-K75030(F/C)-□ R88M-K1K020(F/C)-□
		1.0 kW	R88D-KN10F-ML2	R88M-K1K030(F/C)-□ R88M-K1K530(F/C)-□ R88M-K1K520(F/C)-□ R88M-K90010(F/C)-□
		1.5 kW	R88D-KN15F-ML2	R88M-K2K030(F/C)-□ R88M-K2K020(F/C)-□
		2.0 kW	R88D-KN20F-ML2	R88M-K3K030(F/C)-□ R88M-K3K020(F/C)-□ R88M-K2K010(F/C)-□
		3.0 kW	R88D-KN30F-ML2	R88M-K4K030(F/C)-□ R88M-K5K030(F/C)-□ R88M-K4K020(F/C)-□ R88M-K5K020(F/C)-□
		5.0 kW	R88D-KN50F-ML2	R88M-K4K510C-□ R88M-K3K010(F/C)-□

**Control cables (for CN1)**

Symbol	Description	Connect to	Model	
④	I/O connector kit (26 pins)	For I/O general purpose	-	
⑤	I/O signals cable		1m	R88A-CPKB001S-E
			2m	R88A-CPKB002S-E
⑥	Terminal block cable	For I/O general purpose	1 m	XW2Z-100J-B34
			2 m	XW2Z-200J-B34
⑦	Terminal block (M3 screw and for pin terminals)		-	XW2B-20G4
	Terminal block (M3.5 screw and for fork/round terminals)	-	XW2B-20G5	
	Terminal block (M3 screw and for fork/round terminals)	-	XW2D-20G6	

**External encoder cable (CN4)**

Symbol	Name	Length	Model
⑧	External encoder cable	5m	R88A-CRKM005SR-E
		10m	R88A-CRKM010SR-E
		20m	R88A-CRKM020SR-E

**Analog monitor (for CN5)**

Symbol	Name	Length	Model
⑨	Analog monitor cable	1m	R88A-CMK001S

**MECHATROLINK-II cables (for CN6)**

Symbol	Specifications	Length	Model
⑩	MECHATROLINK-II Terminator resistor	-	JEPMC-W6022-E
	MECHATROLINK-II cables	0.5 m	JEPMC-W6003-A5-E
		1 m	JEPMC-W6003-01-E
		3 m	JEPMC-W6003-03-E
		5 m	JEPMC-W6003-05-E
		10 m	JEPMC-W6003-10-E
		20 m	JEPMC-W6003-20-E
		30 m	JEPMC-W6003-30-E

**MECHATROLINK-II Motion controllers**

Symbol	Name	Model	
⑪	Trajexia stand-alone	Motion control unit	TJ2-MC64 (64 axes)
			TJ1-MC16 (16 axes)
			TJ1-MC04 (4 axes)
		ML2 master unit	TJ1-ML16 (16 axes)
			TJ1-ML04 (4 axes)
			Trajexia-PLC motion controller
	Position Controller Unit for CJ1 PLC	CJ1W-MC472 (4 axes)	
		CJ1W-NCF71 (16 axes)	
		CJ1W-NC471 (4 axes)	
	Position Controller Unit for CS1 PLC	CJ1W-NC271 (2 axes)	
		CS1W-NCF71 (16 axes)	
		CS1W-NC471 (4 axes)	
			CS1W-NC271 (2 axes)

**Filters**

Symbol	Applicable servodrives	Filter model	Rated current	Leakage current	Rated voltage
⑫	R88D-KN01H-ML2, R88D-KN02H-ML2	R88A-FIK102-RE	2.4 A	3.5 mA	250 VAC single-phase
	R88D-KN04H-ML2	R88A-FIK104-RE	4.1 A	3.5 mA	
	R88D-KN08H-ML2	R88A-FIK107-RE	6.6 A	3.5 mA	
	R88D-KN10H-ML2, R88D-KN15H-ML2	R88A-FIK114-RE	14.2 A	3.5 mA	400 VAC three-phase
	R88D-KN06F-ML2, R88D-KN10F-ML2, R88D-KN15F-ML2	R88A-FIK304-RE	4 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KN20F-ML2	R88A-FIK306-RE	6 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KN30F-ML2, R88D-KN50F-ML2	R88A-FIK312-RE	12.1 A	0.3 mA / 32 mA <sup>1</sup>	

1. Momentary peak leakage current for the filter at switch-on/off.

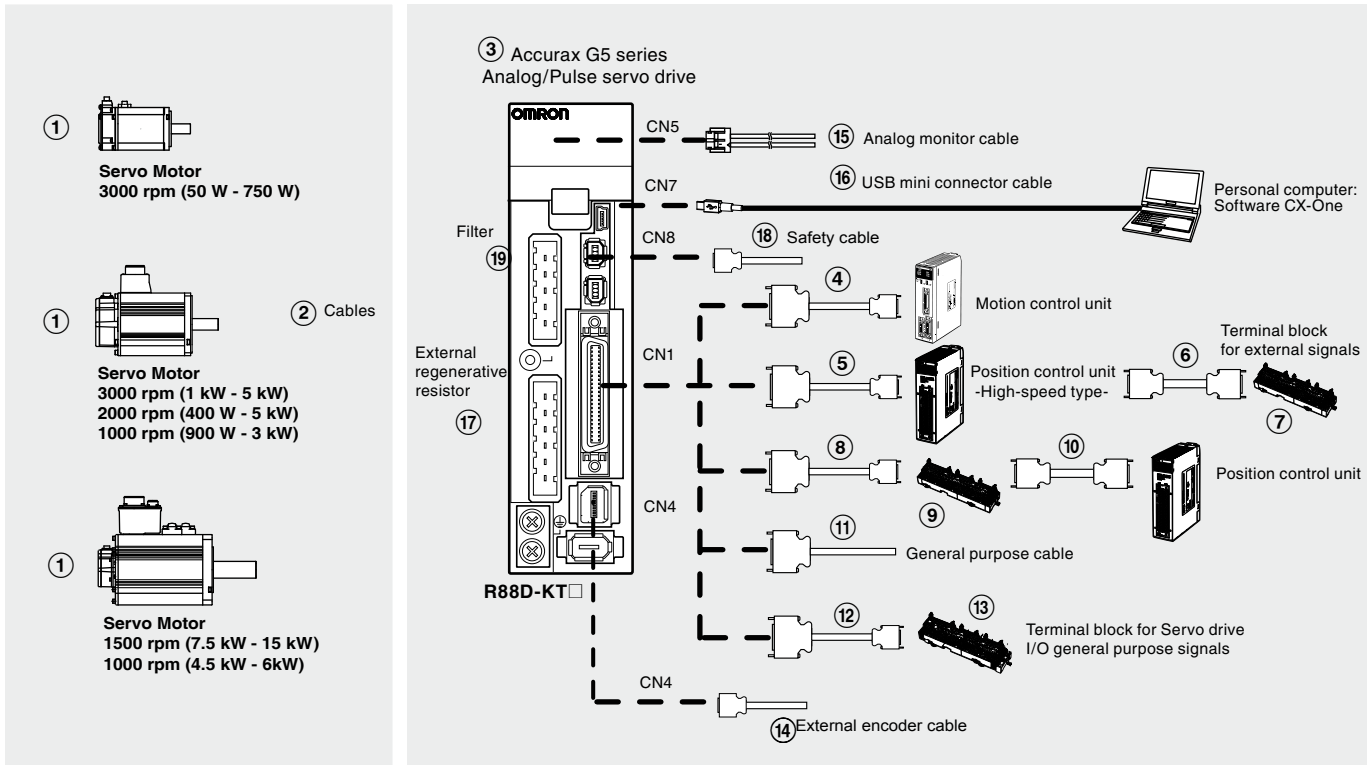
**Connectors**

Specifications	Model
External encoder connector (for CN4)	R88A-CNK41L
Safety I/O signal connector (for CN8)	R88A-CNK81S

**Computer software**

Specifications	Model
CX-Drive version 1.91 or higher	CX-DRIVE 1.91
CX-One software package including CX-Drive 1.91 or higher	CX-ONE

## Accurax G5 series Analog/pulse reference configuration



**Note:** The symbols ①②③④⑤... show the recommended sequence to select the components in Accurax G5 servo system

### Servo motors, power & encoder cables

**Note:** ①② Refer to the Accurax G5 servo motor section for servomotor, motor cables or connectors selection

### Servo drives

Symbol	Specifications		Servo drive model <sup>1</sup>	① Compatible Accurax G5 series rotary servo motors
③	1 phase 230 VAC	100 W	R88D-KT01H	R88M-K05030(H/T)-□ R88M-K10030(H/T)-□
		200 W	R88D-KT02H	R88M-K20030(H/T)-□
		400 W	R88D-KT04H	R88M-K40030(H/T)-□
		750 W	R88D-KT08H	R88M-K75030(H/T)-□
		1.0 kW	R88D-KT10H	R88M-K1K020(H/T)-□
		1.5 kW	R88D-KT15H	R88M-K1K030(H/T)-□
				R88M-K1K530(H/T)-□
	R88M-K1K520(H/T)-□			
	R88M-K90010(H/T)-□			
	R88M-K40020(F/C)-□			
	R88M-K60020(F/C)-□			
	3 phase 400 VAC	600 W	R88D-KT06F	R88M-K75030(F/C)-□ R88M-K1K020(F/C)-□
		1.0 kW	R88D-KT10F	R88M-K1K030(F/C)-□ R88M-K1K530(F/C)-□ R88M-K1K520(F/C)-□ R88M-K90010(F/C)-□
		1.5 kW	R88D-KT15F	R88M-K2K030(F/C)-□
				R88M-K2K020(F/C)-□
				R88M-K3K030(F/C)-□ R88M-K3K020(F/C)-□ R88M-K2K010(F/C)-□
		2.0 kW	R88D-KT20F	R88M-K4K030(F/C)-□
				R88M-K5K030(F/C)-□
				R88M-K4K020(F/C)-□
				R88M-K5K020(F/C)-□ R88M-K4K510C-□ R88M-K3K010(F/C)-□
7.5 kW		R88D-KT75F	R88M-K6K010C-□ R88M-K7K515C-□	
15 kW		R88D-KT150F	R88M-K11K015C-□	
			R88M-K15K015C-□	

1. Drive Programming – embedded indexer functionality – is available in the Accurax G5 Analogue/Pulse models with firmware 1.10 or higher.

Control cables (for CN1)

Symbol	Description	Connect to		Model
④	Control cable (1 axis)	Motion control units CS1W-MC221 CS1W-MC421	1 m	R88A-CPG001M1
			2 m	R88A-CPG002M1
			3 m	R88A-CPG003M1
	Control cable (2 axis)	Motion control units CS1W-MC221 CS1W-MC421	5 m	R88A-CPG005M1
			1 m	R88A-CPG001M2
			2 m	R88A-CPG002M2
⑤	Control cable (line-driver output for 1 axis)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434	3 m	R88A-CPG003M2
			5 m	R88A-CPG005M2
			1 m	XW2Z-100J-G9
	Control cable (open-collector output for 1 axis)	Position control units (high-speed type) CJ1W-NC214 CJ1W-NC414	5 m	XW2Z-500J-G9
			10 m	XW2Z-10MJ-G9
	Control cable (line-driver output for 2 axis)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434	1 m	XW2Z-100J-G13
			3 m	XW2Z-300J-G13
			1 m	XW2Z-100J-G1
	Control cable (open-collector output for 2 axis)	Position control units (high-speed type) CJ1W-NC214 CJ1W-NC414	5 m	XW2Z-500J-G1
			10 m	XW2Z-10MJ-G1
			1 m	XW2Z-100J-G5
	⑥	Terminal block cable for external signals (for input common, forward/reverse run prohibited inputs, emergency stop input, origin proximity input and interrupt in- put)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434 CJ1W-NC214 CJ1W-NC414	3 m
5 m				XW2Z-500X
10 m				XW2Z-010X
0.5 m				XW2Z-C50X
1 m				XW2Z-100X
2 m				XW2Z-200X
3 m				XW2Z-300X
5 m				XW2Z-500X
10 m				XW2Z-010X
⑦				Terminal block for external signals (M3 screw, pin terminals)
	Terminal block for ext. signals (M3.5 screw, fork/round terminals)	-	XW2B-20G5	
	Terminal block for ext. signals (M3 screw, fork/round terminals)	-	XW2D-20G6	
⑧	Cable from servo relay unit to servo drive	CS1W-NC1□3, CJ1W-NC1□3, C200HW-NC113, CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3, C200HW-NC213/413, CQM1H-PLB21 or CQM1-CPU43 CJ1M-CPU21/22/23	1 m	XW2Z-100J-B25
			2 m	XW2Z-200J-B25
			1 m	XW2Z-100J-B31
			2 m	XW2Z-200J-B31
⑨	Servo relay unit	Position control units CS1W-NC1□3, CJ1W-NC1□3 or C200HW-NC113  Position control units CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3 or C200HW-NC213/413  CQM1H-PLB21 or CQM1-CPU43 CJ1M-CPU21/22/23	-	XW2B-20J6-1B (1 axis)
			-	XW2B-40J6-2B (2 axes)
			-	XW2B-20J6-3B (1 axis)
			-	XW2B-20J6-8A (1 axis)
			-	XW2B-40J6-9A (2 axes)
⑩	Position control unit connecting cable	CQM1H-PLB21  CS1W-NC113 or C200HW-NC113  CS1W-NC213/413 or C200HW-NC213/413  CS1W-NC133  CS1W-NC233/433  CJ1W-NC113  CJ1W-NC213/413  CJ1W-NC133  CJ1W-NC233/433  CJ1M-CPU21/22/23	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
			0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
			0.5 m	XW2Z-050J-A7
			1 m	XW2Z-100J-A7
			0.5 m	XW2Z-050J-A10
			1 m	XW2Z-100J-A10
			0.5 m	XW2Z-050J-A11
			1 m	XW2Z-100J-A11
			0.5 m	XW2Z-050J-A14
			1 m	XW2Z-100J-A14
			0.5 m	XW2Z-050J-A15
			1 m	XW2Z-100J-A15
			0.5 m	XW2Z-050J-A18
			1 m	XW2Z-100J-A18
0.5 m	XW2Z-050J-A19			
1 m	XW2Z-100J-A19			
0.5 m	XW2Z-050J-A33			
1 m	XW2Z-100J-A33			
⑪	General purpose cable	For general purpose controllers	1 m	R88A-CPG001S
			2 m	R88A-CPG002S
⑫	Terminal block cable	For general purpose controllers	1 m	XW2Z-100J-B24
			2 m	XW2Z-200J-B24
⑬	Terminal block (M3 screw and for pin terminals)	-	XW2B-50G4	
	Terminal block (M3.5 screw and for fork/round terminals)	-	XW2B-50G5	
	Terminal block (M3 screw and for fork/round terminals)	-	XW2D-50G6	

## External encoder cable (CN4)

Symbol	Name		Model
⑭	External encoder cable	5m	R88A-CRKM005SR-E
		10m	R88A-CRKM010SR-E
		20m	R88A-CRKM020SR-E

## Analog monitor (for CN5)

Symbol	Name		Model
⑮	Analog monitor cable	1m	R88A-CMK001S

## USB personal computer cable (for CN7)

Symbol	Name		Model
⑯	USB mini-connector cable	2m	AX-CUSBM002-E

## Filters

Symbol	Applicable servodrive	Filter model	Rated current	Leakage current	Rated voltage
⑰	R88D-KT01H, R88D-KT02H	R88A-FIK102-RE	2.4 A	3.5 mA	250 VAC single-phase
	R88D-KT04H	R88A-FIK104-RE	4.1 A	3.5 mA	
	R88D-KT08H	R88A-FIK107-RE	6.6 A	3.5 mA	
	R88D-KT10H, R88D-KT15H	R88A-FIK114-RE	14.2 A	3.5 mA	
	R88D-KT06F, R88D-KT10F, R88D-KT15F	R88A-FIK304-RE	4 A	0.3 mA / 32 mA <sup>1</sup>	400 VAC three-phase
	R88D-KT20F	R88A-FIK306-RE	6 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KT30F, R88D-KT50F	R88A-FIK312-RE	12.1 A	0.3 mA / 32 mA <sup>1</sup>	
	R88D-KT75F	R88A-FIK330-RE	–	–	
	R88D-KT150F	R88A-FIK350-RE	–	–	

1. Momentary peak leakage current for the filter at switch-on/off.

## Connectors

Specifications	Model
I/O connector kit -50 pins-(for CN1)	R88A-CNU11C
External encoder connector (for CN4)	R88A-CNK41L
Safety I/O signal connector (for CN8)	R88A-CNK81S

## Computer software

Specifications	Model
CX-Drive version 2.10 or higher	CX-DRIVE 2.10
CX-One software package including CX-Drive 2.10 or higher	CX-ONE

## External regenerative resistor

Symbol	Regenerative resistor unit model	Specifications
⑱	R88A-RR08050S	50 Ω, 80 W
	R88A-RR080100S	100 Ω, 80 W
	R88A-RR22047S	47 Ω, 220 W
	R88A-RR50020S	20 Ω, 500 W

## Cable for Safety Functions (for CN8)

Symbol	Description	Model
⑲	Safety connector with 3 m cable (with loose wires at one end)	R88A-CSK003S-E









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