

## ACCURAX G5 SERVO SYSTEM

Extreme mechatronics meets  -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®

### Rugged and smart design

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

### 40% reduction in motor cogging

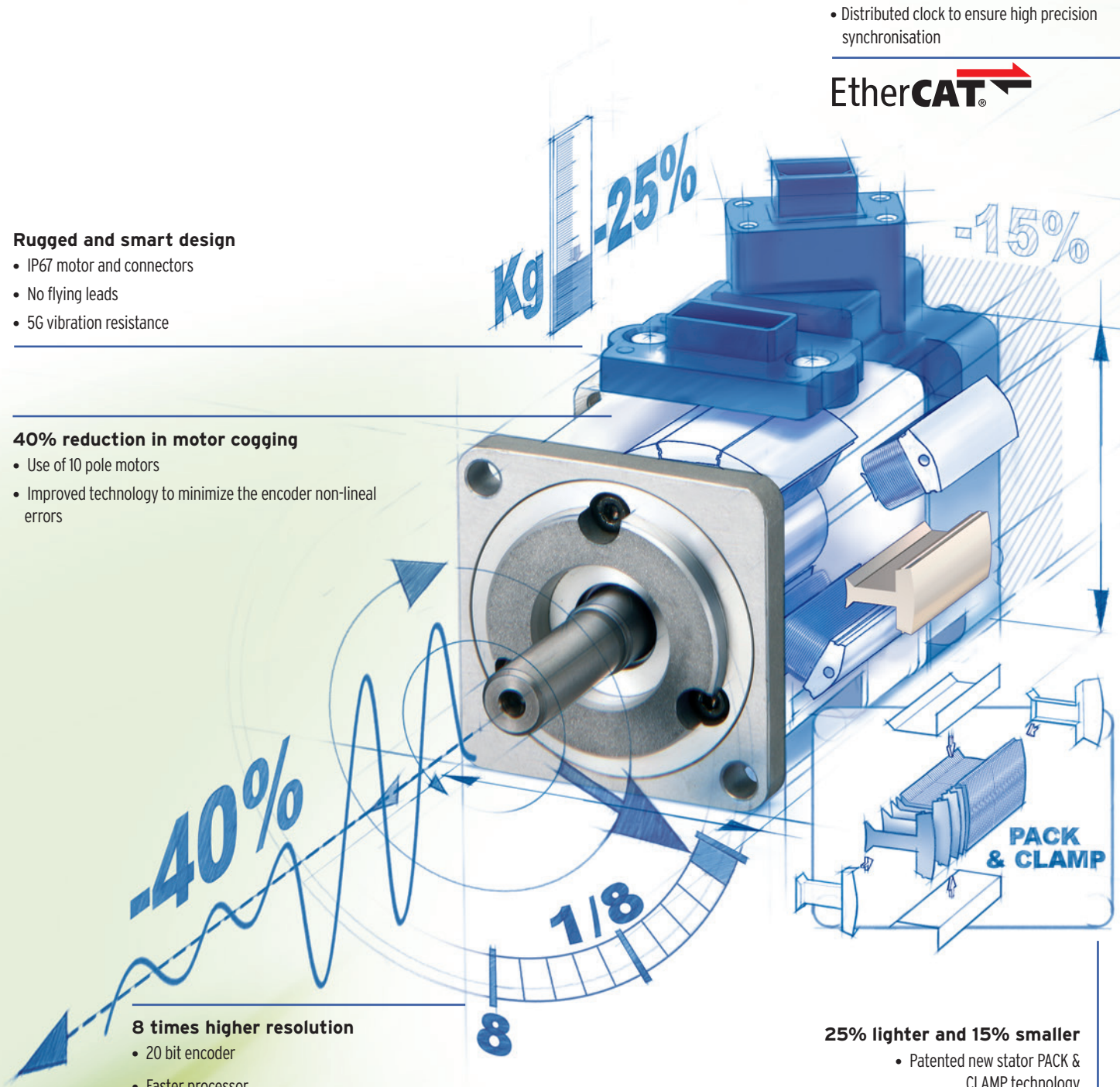
- Use of 10 pole motors
- Improved technology to minimize the encoder non-linear errors

### 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



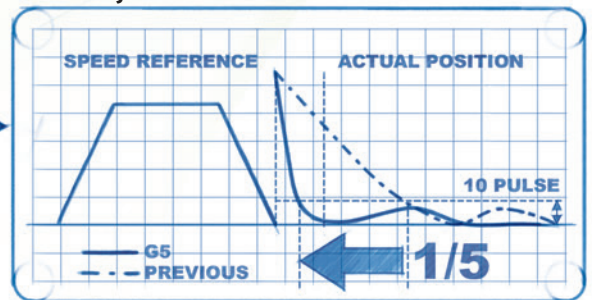
### Fast & accurate

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

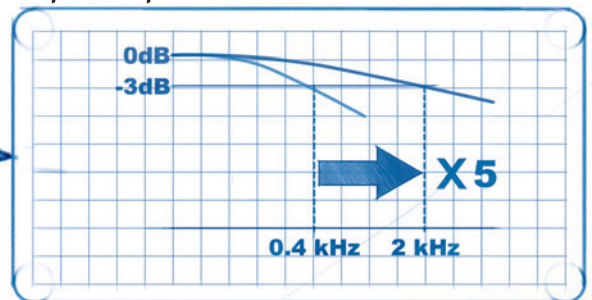
-50%



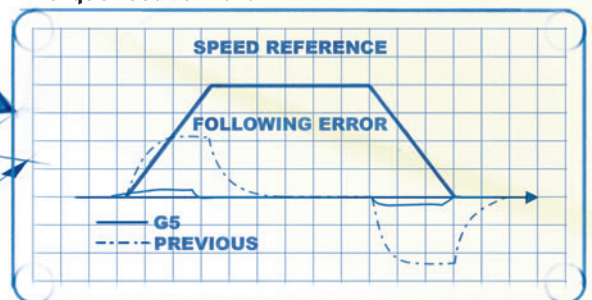
### Settling time



### Speed response



### Torque feed forward

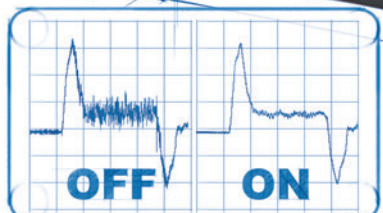


### 100,000 hr operation in rugged industrial conditions

- No fan below 1 kW
- Long life capacitors

### Load vibration suppression

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



Vibration suppression



# ... 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.

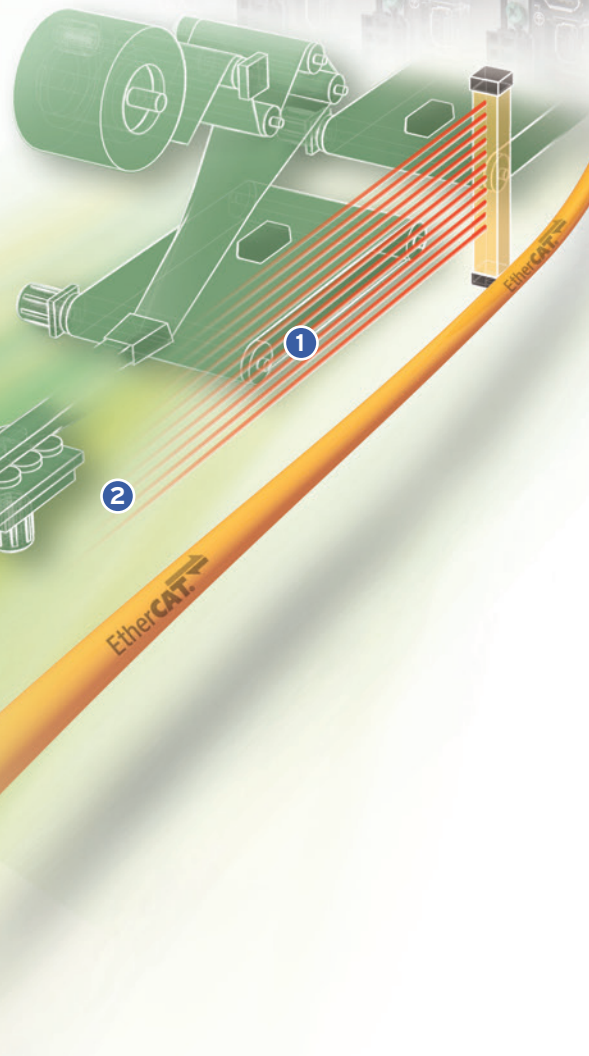
- 1 Built-in safety: multi-drives in a single safety relay circuit**  
The two safety inputs and the external device monitoring (EDM) output can be linked from one servo drive to another without using additional safety relays.

- 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



### 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

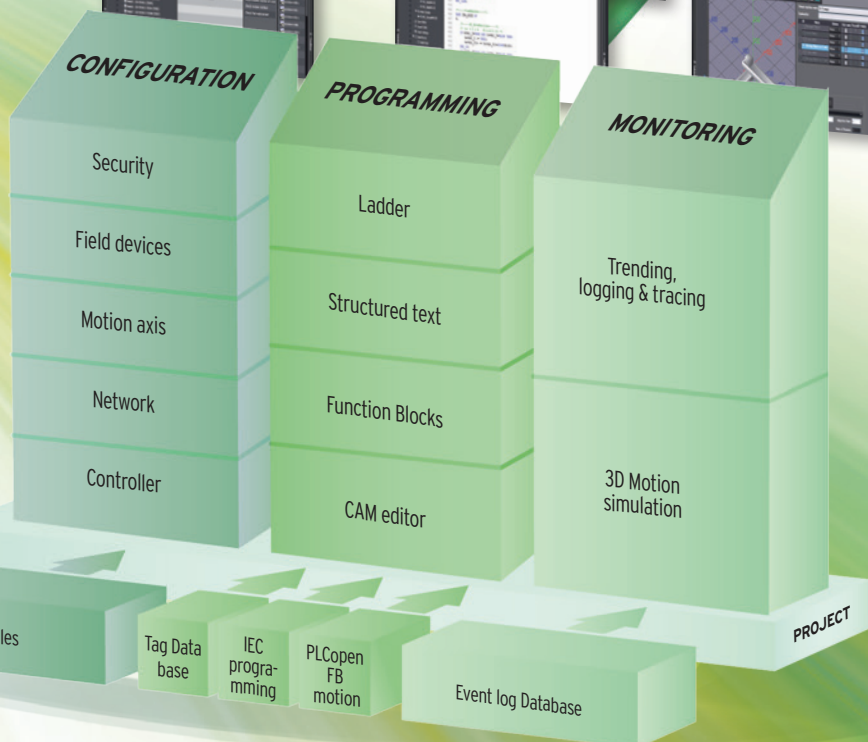
EtherNet/IP

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



Sysmac Studio

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

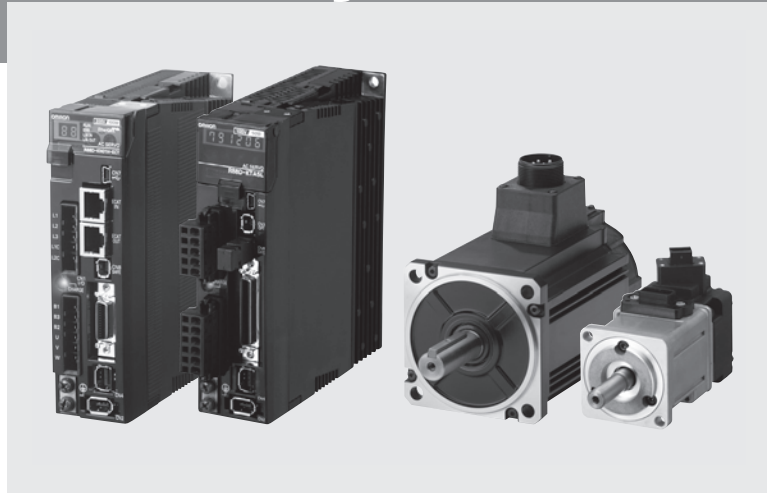
# Accurax G5 servo system

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

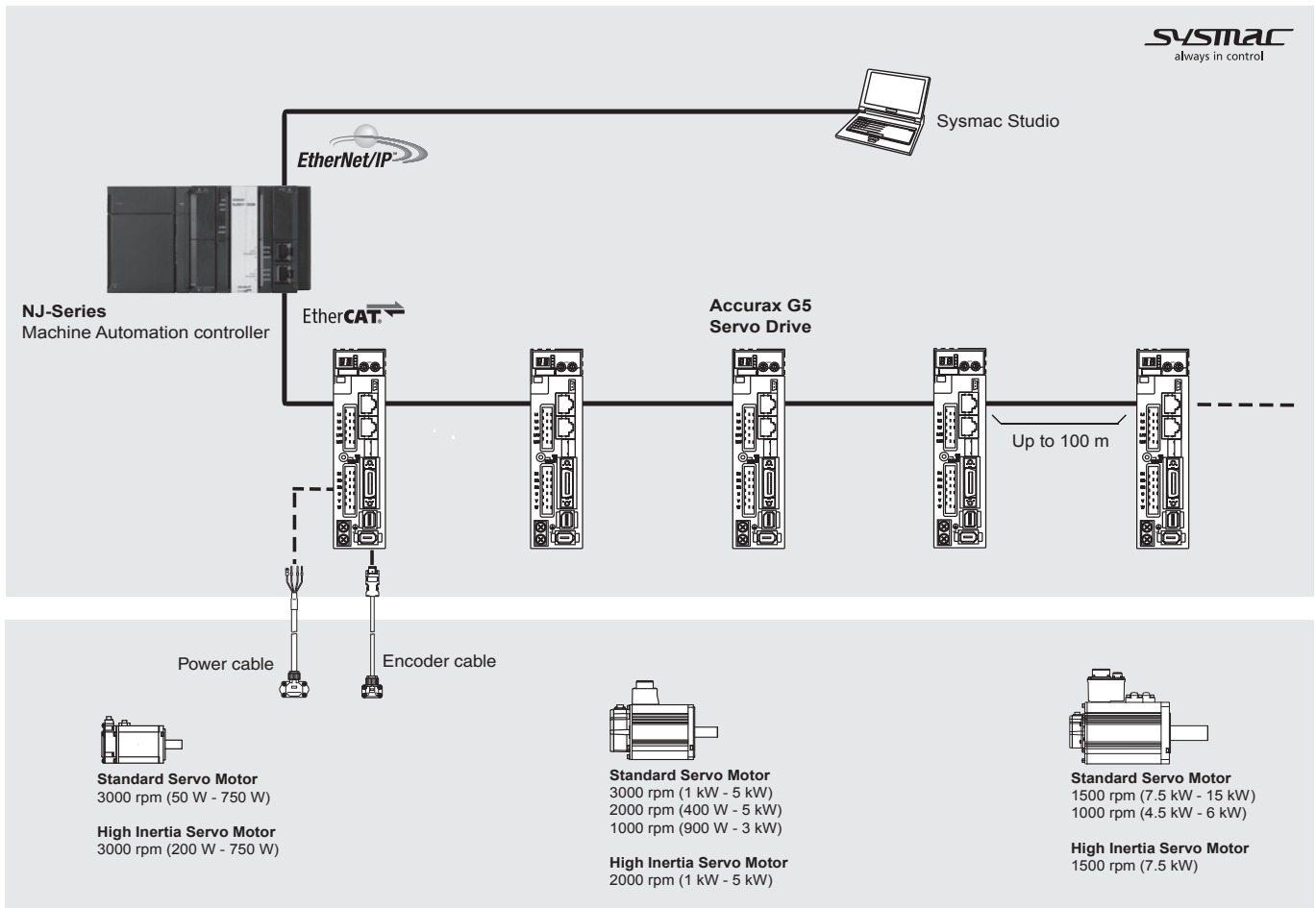
- EtherCAT, ML-II and Analog/pulse servo drive models
- Safety conforming ISO13849-1 PL-d
- High-response frequency of 2 kHz
- High resolution provided by 20 bits encoder
- Drive Programming: embedded indexer functionality in the Analogue/pulse models
- External encoder input for full closed loop
- Real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

**Ratings**

- 230 VAC single-phase 100 W to 1.5 kW (8.59 Nm)
- 400 VAC three-phase 600 W to 15 kW (95.5 Nm)



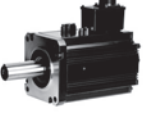



**System configuration**





**Servo motor / servo drive combination**

**Standard servo motors**

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
 230 V (1 kW to 1.5 kW) 400 V (400 W to 5 kW)	400 V	3000 min <sup>-1</sup>	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 to 15 kW	230 V	2000 min <sup>-1</sup>	4.77 Nm	1000 W	R88M-K1K020(H/T)-□
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
400 V	2000 min <sup>-1</sup>	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
		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
400 V	1500 min <sup>-1</sup>	47.8 Nm		7500 W	R88M-K7K515C-□	R88D-KN75F-ECT	R88D-KT75F	-
		70.0 Nm		11000 W	R88M-K11K015C-□	R88D-KN150F-ECT	R88D-KT150F	-
		95.5 Nm		15000 W	R88M-K15K015C-□	R88D-KN150F-ECT	R88D-KT150F	-
	230 V	1000 min <sup>-1</sup>	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	
	57.3 Nm		6000 W	R88M-K6K010C-□	R88D-KN75F-ECT	R88D-KT75F	-	

**High inertia servo motors**

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>	0.64 Nm	200 W	R88M-KH20030(H/T)-□	R88D-KN02H-ECT	R88D-KT02H	R88D-KN02H-ML2
			1.3 Nm	400 W	R88M-KH40030(H/T)-□	R88D-KN04H-ECT	R88D-KT04H	R88D-KN04H-ML2
			2.4 Nm	750 W	R88M-KH75030(H/T)-□	R88D-KN08H-ECT	R88D-KT08H	R88D-KN08H-ML2
 1 kW to 5 kW	400 V	2000 min <sup>-1</sup>	4.77 Nm	1000 W	R88M-KH1K020(F/C)-□	R88D-KN10F-ECT	R88D-KT10F	R88D-KN10F-ML2
			7.16 Nm	1500 W	R88M-KH1K520(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
			9.55 Nm	2000 W	R88M-KH2K020(F/C)-□	R88D-KN20F-ECT	R88D-KT20F	R88D-KN20F-ML2
			14.3 Nm	3000 W	R88M-KH3K020(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
			19.1 Nm	4000 W	R88M-KH4K020(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
			23.9 Nm	5000 W	R88M-KH5K020(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
		7.5 kW	1500 min <sup>-1</sup>	47.8 Nm	7500 W	R88M-KH7K515C-□	R88D-KN75F-ECT	R88D-KT75F

**Note:** 1. For servo motor and cables part numbers refer to ordering information at the end of this chapter  
 2. Refer to the servo drive chapter for drive options selection and detailed specifications

**Servo motor type designation**

**Standard servo motors**

**R88M-K05030H-BOS2**

Accurax G5 servomotor

Capacity

050	50 W
100	100 W
200	200 W
400	400 W
600	600 W
750	750 W
900	900 W
1K0	1 kW
1K5	1.5 kW
2K0	2 kW
3K0	3 kW
4K0	4 kW
4K5	4.5 kW
5K0	5 kW
6K0	6 kW
7K5	7.5 kW
11K0	11 kW
15K0	15 kW

Rated Speed (r/min)

10	1000
15	1500
20	2000
30	3000

Shaft end specifications

Blank	Straight shaft, no key
S2	Straight, key, tapped (standard)

Oil seal specifications

Blank	No oil seal
O	Oil seal

Brake specifications

Blank	No brake
B	Brake

Voltage and encoder specifications

H: 230 V and 20-bit incremental encoder

T: 230 V and 17-bit absolute encoder

F: 400 V and 20-bit incremental encoder

C: 400 V and 17-bit absolute encoder

**High inertia servo motors**

**R88M-KH1K020F-BOS1-D**

Accurax G5 high inertia servomotor

Capacity

200	200 W
400	400 W
750	750 W
1K0	1 kW
1K5	1.5 kW
2K0	2 kW
3K0	3 kW
4K0	4 kW
5K0	5 kW
7K5	7.5 kW

Rated Speed (r/min)

15	1500
20	2000
30	3000

Circular connector (only for 230 V models)

Shaft end specifications

Blank	Straight shaft, no key
S1	400 V motor models - Shaft end with key (standard)
S2	230 V motor models - Straight, key, tapped (standard)

Oil seal specifications

Blank	No oil seal
O	Oil seal

Brake specifications

Blank	No brake
B	Brake

Voltage and encoder specifications

H: 230 V and 20-bit incremental encoder

T: 230 V and 17-bit absolute encoder

F: 400 V and 20-bit incremental encoder

C: 400 V and 17-bit absolute encoder



**Servo motor specifications**

**Standard servo motors 3000 r/min, 230 V**

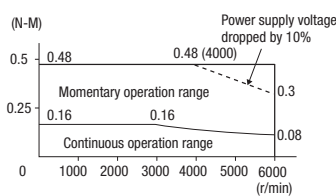
**Ratings and specifications**

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 <sup>1</sup>					20 <sup>1</sup>	15 <sup>1</sup>		
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	24 VDC ±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	19		
	Current consumption (at 20°C)	A	0.3		0.36		0.70±10%		0.81±10%	
	Static friction torque	N·m (minimum)	0.29		1.27		2.5		7.8	
	Rise time for holding torque	ms (max.)	35		50					
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									

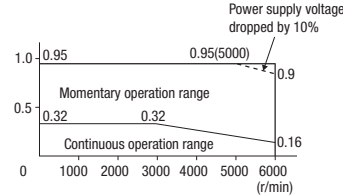
<sup>1</sup> Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

**Torque-speed characteristics**

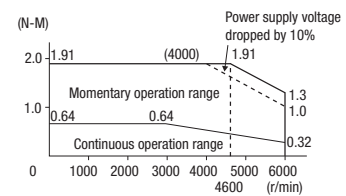
R88M-K05030H/T (50 W)



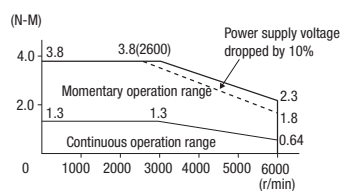
R88M-K10030H/T (100 W)



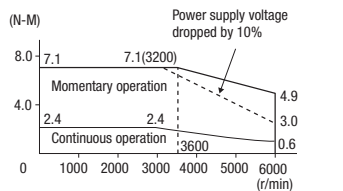
R88M-K20030H/T (200 W)



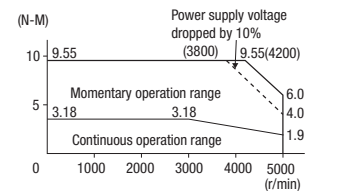
R88M-K40030H/T (400 W)



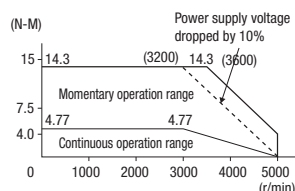
R88M-K75030H/T (750 W)



R88M-K1K030H/T (1 kW)



R88M-K1K530H/T (1.5 kW)



## Standard servo motors 3000 r/min, 400 V

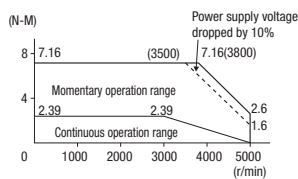
### Ratings and specifications

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 <sup>1</sup>		15 <sup>1</sup>						
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	24 VDC ±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		
	Rise time for holding torque	ms (max.)	50					110		
	Release time	ms (max)	15					50		
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% (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									

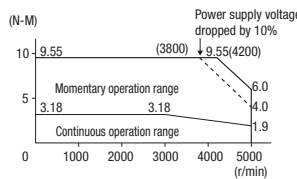
<sup>1</sup> Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

### Torque-speed characteristics

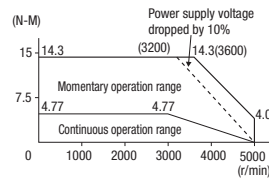
R88M-K75030F/C (750 W)



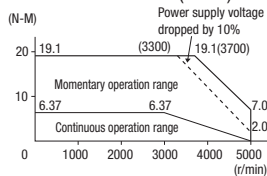
R88M-K1K030F/C (1 kW)



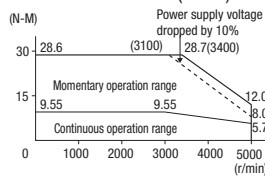
R88M-K1K530F/C (1.5 kW)



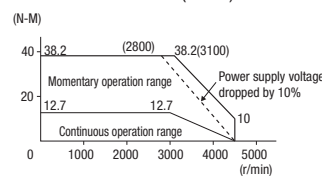
R88M-K2K030F/C (2 kW)



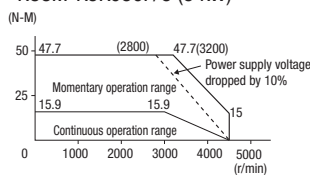
R88M-K3K030F/C (3 kW)



R88M-K4K030F/C (4 kW)



R88M-K5K030F/C (5 kW)



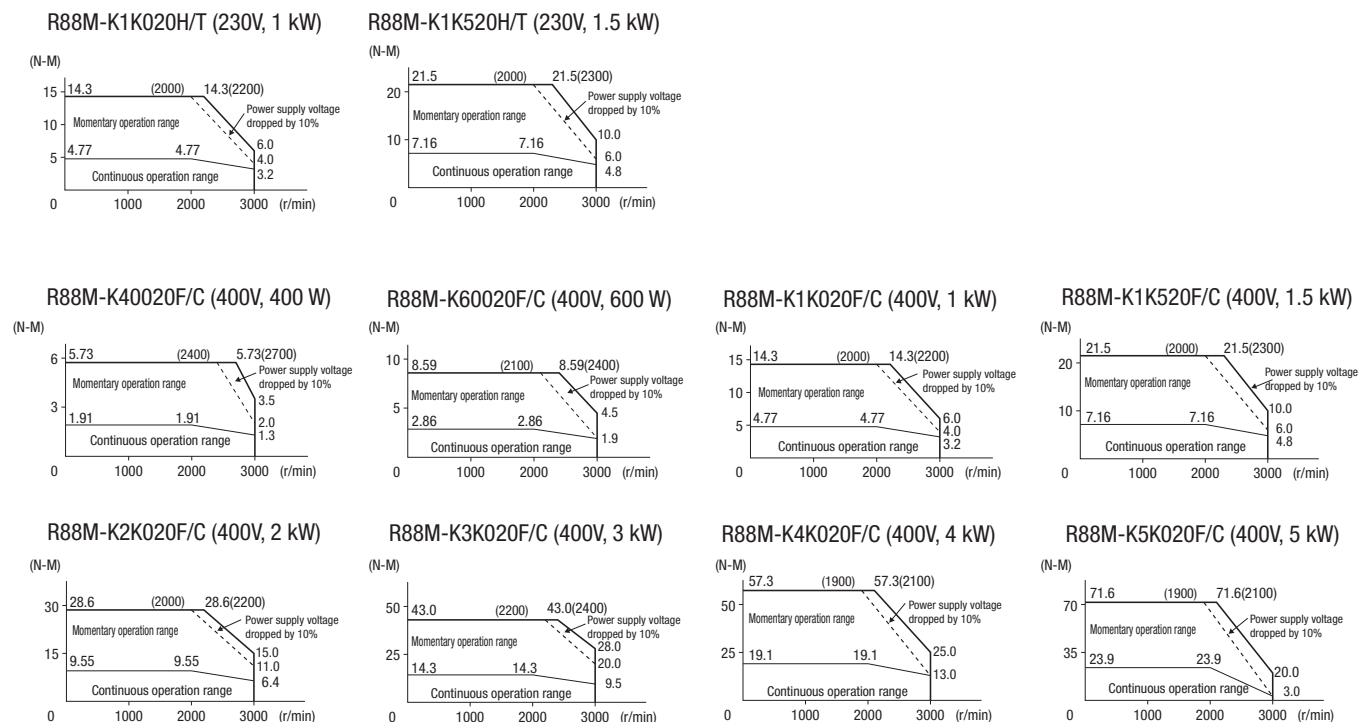
Standard servo motors 2000 r/min, 230 V/400 V

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 <sup>1</sup>									
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
Brake specifications	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	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				
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% (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										

\*1. Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

Torque-speed characteristics



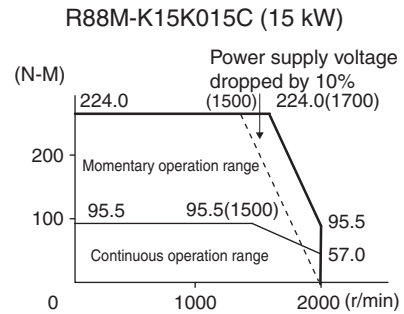
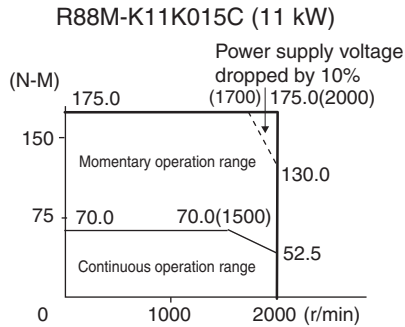
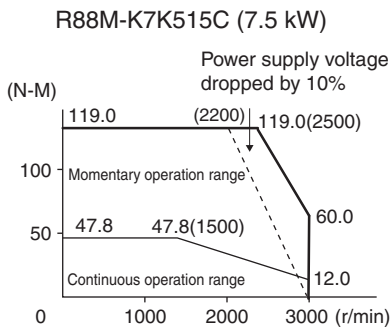
## Standard servo motors 1500 r/min, 400 V

### 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 <sup>-1</sup>			
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				

\*1 Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

### Torque-speed characteristics



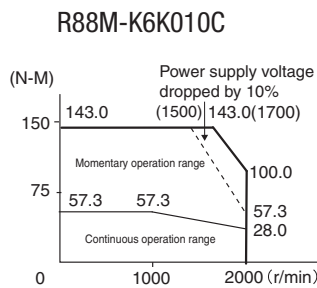
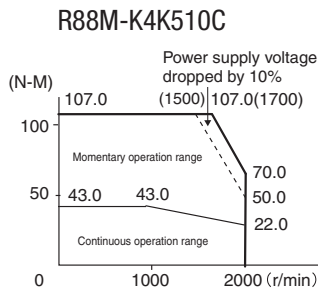
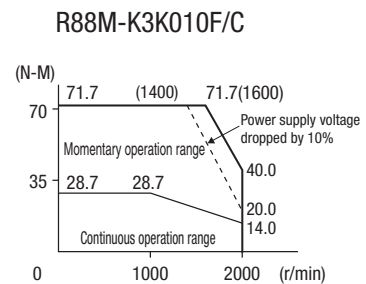
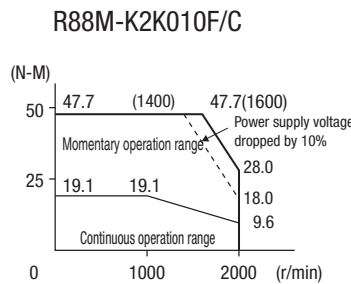
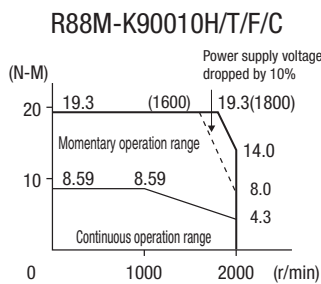
Standard servo motors 1000 r/min, 230 V/400 V

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 <sup>-1</sup>					
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>			4.7		
	Power consumption (at 20°C)	W	19		31	34	
	Current consumption (at 20°C)	A	0.79±10%		1.3±10%	1.4±10%	
	Static friction torque	N·m (minimum)	13.7		24.5	58.8	
	Rise time for holding torque	ms (max.)	100		80	150	
	Release time	ms (max)	50		25	50	
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						

\*1 Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

Torque-speed characteristics



## High inertia servo motors 3000 r/min, 230 V

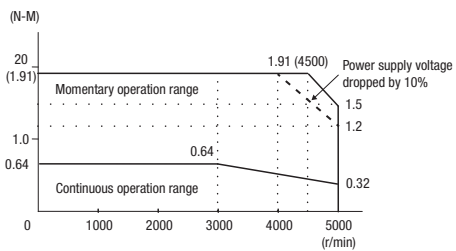
### Ratings and specifications

Voltage		230 V		
Servo motor model R88M-KH□	20-bit incremental encoder	20030H-□	40030H-□	75030H-□
	17-bit absolute encoder	20030T-□	40030T-□	75030T-□
Rated output	W	200	400	750
Rated torque	N·m	0.64	1.3	2.4
Instantaneous peak torque	N·m	1.91	3.8	7.1
Rated current	A (rms)	1.6	2.6	4.0
Instantaneous max. current	A (rms)	6.9	11.0	17.0
Rated speed	min <sup>-1</sup>	3000		
Max. speed	min <sup>-1</sup>	5000		
Torque constant	N·m/A	0.29±10%	0.36±10%	0.45±10%
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	0.42	0.67	1.51
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	0.45	0.70	1.61
Allowable load moment of inertia (JL)	Multiple of (JM)	30 <sup>1</sup>		
Rated power rate	kW/s (without brake)	9.58	24.1	37.7
	kW/s (with brake)	9.06	23.3	35.3
Allowable radial load	N	245		
Allowable thrust load	N	98		
Approx. mass	kg (without brake)	0.96	1.4	2.5
	kg (with brake)	1.4	1.8	3.3
Brake specifications	Rated voltage	24 VDC ±5%		
	Holding brake moment of inertia J	kg·m <sup>2</sup> ×10 <sup>-4</sup>	0.018	0.075
	Power consumption (at 20°C)	W	9	10
	Current consumption (at 20°C)	A	0.36	0.42
	Static friction torque	N·m (minimum)	1.27	2.45
	Rise time for holding torque	ms (max.)	50	70
Release time	ms (max)	15	20	
Basic specifications	Time Rating	Continuous		
	Insulation class	Type B		
	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, IP65 (excluding shaft opening and lead wire ends)		
Vibration resistance	Vibration acceleration 49 m/s <sup>2</sup>			
Mounting	Flange-mounted			

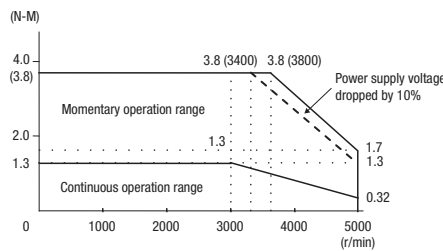
<sup>1</sup> Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

### Torque-speed characteristics

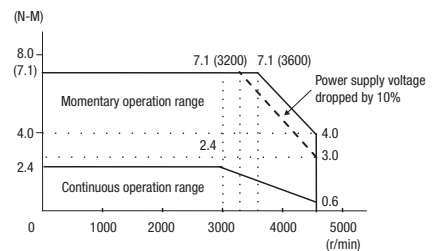
R88M-KH20030H/T (230 V, 200 W)



R88M-KH40030H/T (230 V, 400 W)



R88M-KH75030H/T (230 V, 750 W)



High inertia servo motors 2000 and 1500 r/min, 400 V

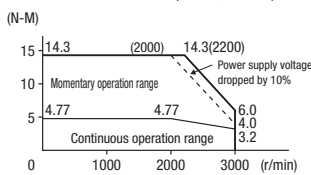
Ratings and specifications

R/min, Voltage		2000 r/min, 400 V						1500 r/min, 400 V
Servo motor model R88M-KH□	20-bit incremental encoder	1K020F-□	1K520F-□	2K020F-□	3K020F-□	4K020F-□	5K020F-□	
	17-bit absolute encoder	1K020C-□	1K520C-□	2K020C-□	3K020C-□	4K020C-□	5K020C-□	7K515C-□
Rated output	W	1000	1500	2000	3000	4000	5000	7500
Rated torque	N·m	4.77	7.16	9.55	14.3	19.1	23.9	47.8
Instantaneous peak torque	N·m	14.3	21.5	28.6	43.0	57.3	71.6	119
Rated current	A (rms)	2.9	4.7	5.5	8.0	10.5	13.0	22.0
Instantaneous max. current	A (rms)	12	20	24	34	45	55	83
Rated speed	min <sup>-1</sup>	2000						1500
Max. speed	min <sup>-1</sup>	3000						3000
Torque constant	N·m/A	1.27	1.16	1.31	1.34	1.38	1.39	1.54
Rotor moment of inertia (JM)	kg·m <sup>2</sup> ×10 <sup>-4</sup> (without brake)	24.7	37.1	57.8	90.2	112	162	273
	kg·m <sup>2</sup> ×10 <sup>-4</sup> (with brake)	26.0	38.4	62.9	95.3	117	167	279
Max. load moment of inertia (JL)	Multiple of (JM)	5 <sup>*1</sup>						
Rated power rate	kW/s (without brake)	9.2	13.8	15.8	22.7	32.5	35.1	86.7
	kW/s (with brake)	8.8	13.4	14.5	21.5	31.1	34.1	85.1
Allowable radial load	N	490			784			1176
Allowable thrust load	N	196			343			490
Approx. mass	kg (without brake)	6.7	8.6	12.2	16.0	18.6	23.0	42.3
	kg (with brake)	8.1	10.1	15.5	19.2	21.8	26.2	46.2
Brake specifications	Rated voltage	24 VDC ±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	31			34
	Current consumption (20°C)	A	0.59±10%	0.79±10%	1.30±10%			1.40±10%
	Static friction torque	N·m (minimum)	4.9	13.7	24.5			58.8
	Rise time for holding torque	ms (max.)	80	100	80			150
	Release time	ms (max)	70	50	25			50
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							

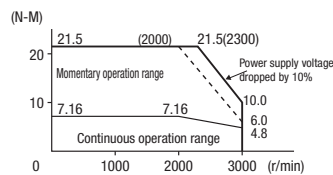
\*1 Applicable load inertia: The operable load inertia ratio (load inertia/rotor inertia) depends on the mechanical configuration and its rigidity. For a machine with high rigidity, operation is possible even with high load inertia. Select an appropriate motor and confirm that operation is possible.

Torque-speed characteristics

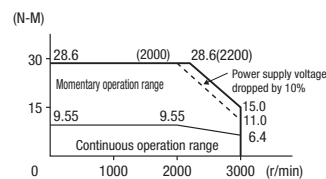
R88M-KH1K020F/C (400 V, 1 kW)



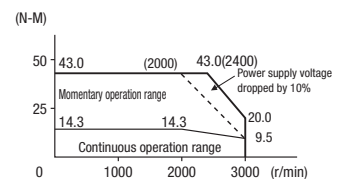
R88M-KH1K520F/C (400 V, 1.5 kW)



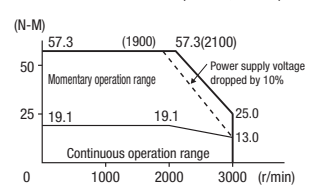
R88M-KH2K020F/C (400 V, 2 kW)



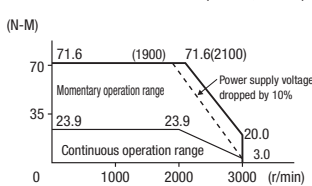
R88M-KH3K020F/C (400 V, 3 kW)



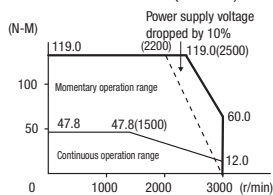
R88M-KH4K020F/C (400 V, 4 kW)



R88M-KH5K020F/C (400 V, 5 kW)



R88M-KH7K515C (7.5 kW)



Type designation

Servo drive

R88D-KN01H-ECT

Accurax G5 Series servo drive

Drive Type

T: Analog/pulse type

N: Network type

Model

Blank: Analog/pulse type

ECT: EtherCAT comms

ML2: MECHATROLINK-II comms

Capacity and Voltage

Voltage	Code	Output
230 V	01H	100 W
	02H	200 W
	04H	400 W
	08H	750 W
	10H	1 kW
	15H	1.5 kW
400 V	06F	600 W
	10F	1.0 kW
	15F	1.5 kW
	20F	2.0 kW
	30F	3.0 kW
	50F	5.0 kW
	75F	7.5 kW
	150F	15.0 kW

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	1500
Continuous output current Arms		1.2	1.6	2.6	4.1	5.9	9.4	9.4
Basic specifications	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)					
	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 to 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	1.6	1.8	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-□	11K015C-□	
		60020(F/C)-□	1K020(F/C)-□	1K530(F/C)-□	2K020(F/C)-□	3K020(F/C)-□	5K030(F/C)-□	7K515C-□	15K015C-□	15K015C-□	
		—	—	1K520(F/C)-□	—	2K010(F/C)-□	4K020(F/C)-□	—	—	—	
		—	—	90010(F/C)-□	—	—	5K020(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	15.0	
Continuous output current Arms		1.5	2.9	4.7	6.7	9.4	16.5	22.0	33.4	33.4	
Basic specifications	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	
	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 to 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	4.7	13.5	13.5	21.0	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).	
	Drive Profile <sup>1</sup>		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 × 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 × servo drive error output 2 × 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 × 2 ECAT IN: EtherCAT input × 1 ECAT OUT: EtherCAT output × 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 × 1 ERR × 1 L/A IN (Link/Activity IN) × 1 L/A OUT (Link/activity OUT) × 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 × digit 7-segment LED display shows the drive status, alarm codes, parameters...		
	Switches	2 × 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		

<sup>1</sup> The CSV, CST and Homing modes are supported in the servo drive with version 2.0 or higher.

General specifications (for MECHATROLINK-II servo drives)

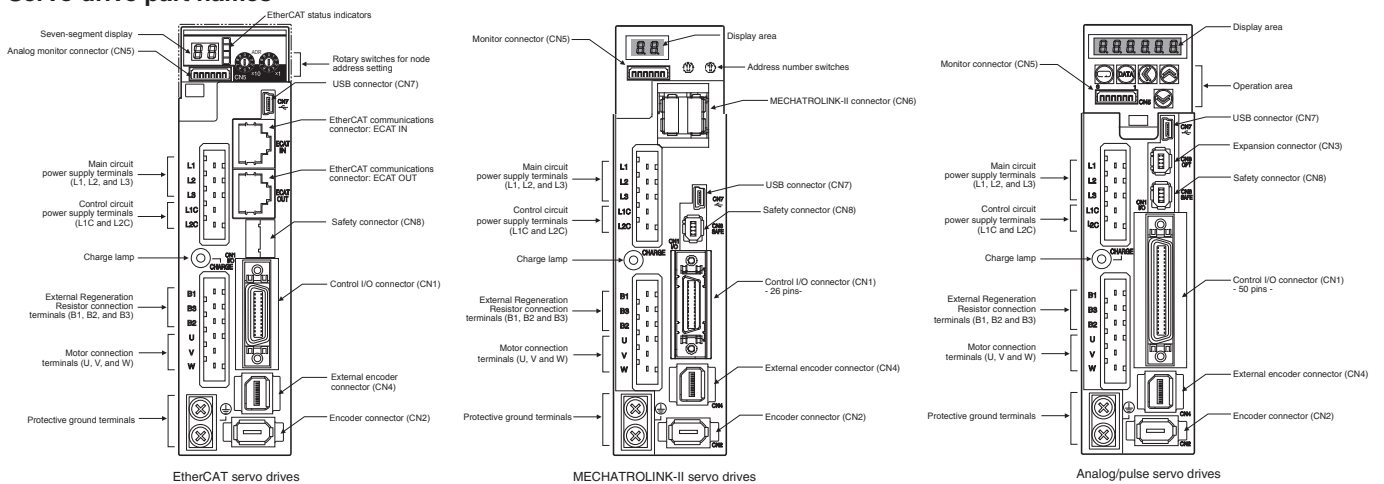
<b>Control mode</b>		Position control, velocity control, torque control, full-closed control.	
<b>Performance</b>	Frequency characteristics	2 kHz	
	Speed zero clamp	Preset velocity command can be clamped to zero by the speed zero clamp input.	
	Soft start time setting	0 to 10 s (acceleration, deceleration 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 × 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>USB communications</b>	Interface	Personal computer/ Connector mini-USB	
	Communications standard	Compliant with USB 2.0 standard	
	Function	Parameter setting, status monitoring and tuning	
	<b>MECHATROLINK-II communications</b>	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		
<b>Integrated functions</b>	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 × 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>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.	
<b>Position control</b>	Input pulse	Input pulse type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
		Input pulse frequency	4 Mpps max. (200 Kpps max. at open collector).
		Command pulse scaling (Electronic Gear)	Applicable scaling ratio: 1/1000 to 1000 Any value of 1 to 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.
<b>Full-closed control</b>	Input pulse	Input pulse type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
		Input pulse frequency	4 Mpps max. (200 Kpps max. at open collector).
		Command pulse scaling (Electronic Gear)	Applicable scaling ratio: 1/1000 to 1000 Any value of 1 to 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 to 160 Any value of 1 to 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 × 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 × 1 (SEN: sensor ON, ABS data request).
		Internal positioning (Drive programming mode)	- Multi-function input × 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 × input command selection.  - Dedicated input × 1 (SEN: sensor ON, ABS data request).
	Sequence output signal	External control	- 3 × 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 × 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



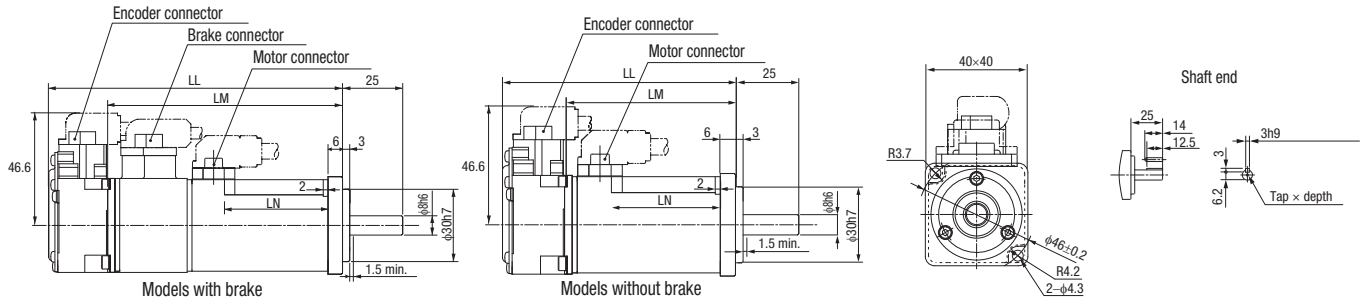
**Note:** The above pictures show 230 V servo drives models only. The 400 V servo drives have 24 VDC power input terminals for control circuit instead of L1C and L2C terminals.

**Dimensions**

**Standard servo motors**

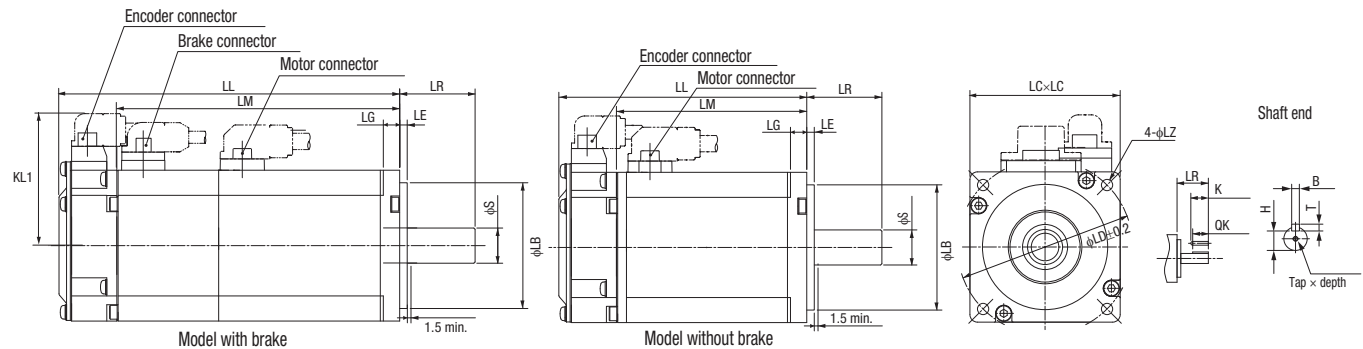
**Type 3000 r/min motors (230 V, 50 to 100 W)**

Dimensions (mm)	Without brake		With brake		LN	Shaft end dimensions	Approx. mass (kg)	
	LL	LM	LL	LM			Without brake	With brake
Model						Tap × Depth		
R88M-K05030(H/T)-□S2	72	48	102	78	23	M3 × 6L	0.32	0.53
R88M-K10030(H/T)-□S2	92	68	122	98	43		0.47	0.68



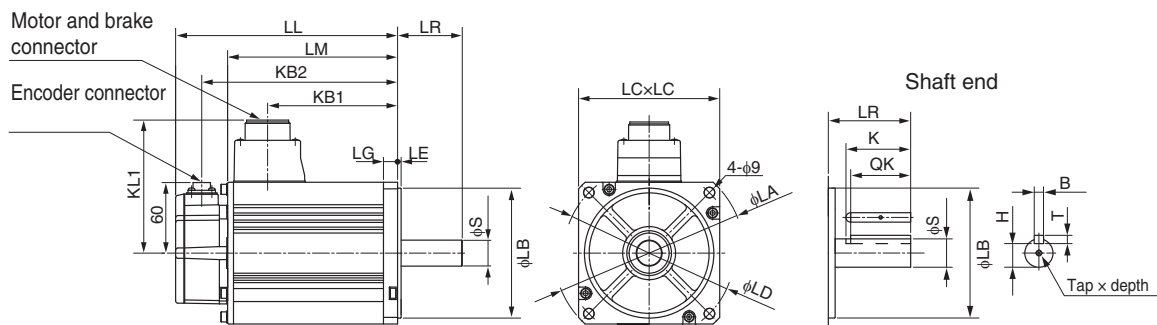
**Type 3000 r/min motors (230 V, 200 to 750 W)**

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 × Depth	Without brake	With brake
Model																						
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	M4 × 8L	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	M5 ×	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				19 <sup>h6</sup>		22	15.5	6 <sup>h9</sup>	6	10L	2.3	3.1



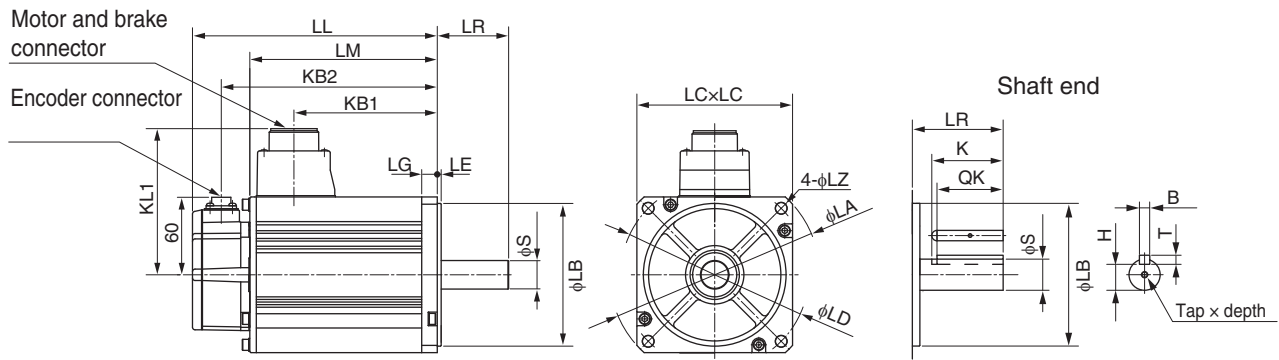
**Type 3000 r/min motors (230 V, 1 to 1.5 kW/400V, 750 W to 5 kW)**

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 × 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>	M5 × 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																	
400	75030(F/C)-□S2	131.5	87.5	56.5	109.5		158.5	114.5	53.5	136.5	103															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	162	110 <sup>h7</sup>	120	145	12	22 <sup>h6</sup>					41	18	8 <sup>h9</sup>	7	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



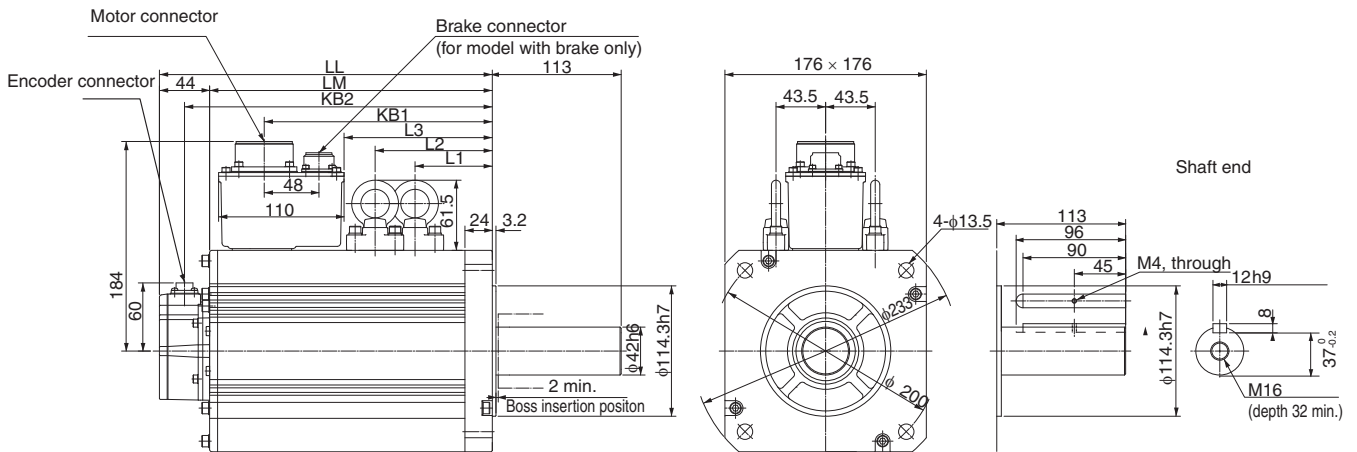
Type 2000 r/min motors (230 V, 1 to 1.5 kW /400 V, 400 W to 5 kW)

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>	M5 x 12L	45	41	18	8 <sup>h9</sup>	7	5.2	6.7
	1K520(H/T)-□S2	155.5	111.5	77.5	133.5	116	180.5	136.5	77.5	158.5	116	55	165	110 <sup>h7</sup>	130	145	6	12	9	22 <sup>h6</sup>	M5 x 12L	45	41	18	8 <sup>h9</sup>	7	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	65	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	101	168	124	63	146	103	65	135	95 <sup>h7</sup>	100	115	3	10		19 <sup>h6</sup>		42	15.5	6 <sup>h9</sup>	6	3.5	4.5	
	1K020(F/C)-□S2	138	94	60	116	116	163	119	57	141	118	65	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	116	180.5	136.5	74.5	158.5	118	65	165	110 <sup>h7</sup>	130	145	6	12		22 <sup>h6</sup>		41	18	8 <sup>h9</sup>	7	6.7	8.2	
	2K020(F/C)-□S2	173	129	95	151	118	198	154	92	176	118	65	165	110 <sup>h7</sup>	130	145	6	12		22 <sup>h6</sup>		41	18	8 <sup>h9</sup>	7	8	9.5	
	3K020(F/C)-□S2	208	164	127	186	118	233	189	127	211	118	65	165	110 <sup>h7</sup>	130	145	6	12		22 <sup>h6</sup>		41	18	8 <sup>h9</sup>	7	11	12.6	
	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>	M12 x 25L	55	51	20		8	15.5	18.7
5K020(F/C)-□S2	196	152	115	174	140	221	177	115	199	140	70	233	114.3 <sup>h7</sup>	176	200	3.2	18	13.5	35 <sup>h6</sup>	M12 x 25L	55	51	20		8	18.6	21.8	



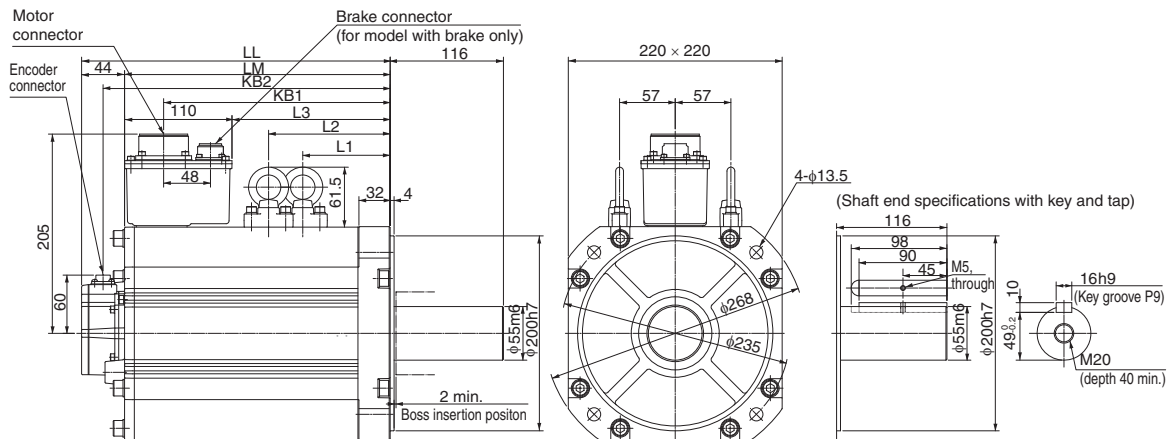
Type 1500 r/min motors (400 V, 7.5kW)

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



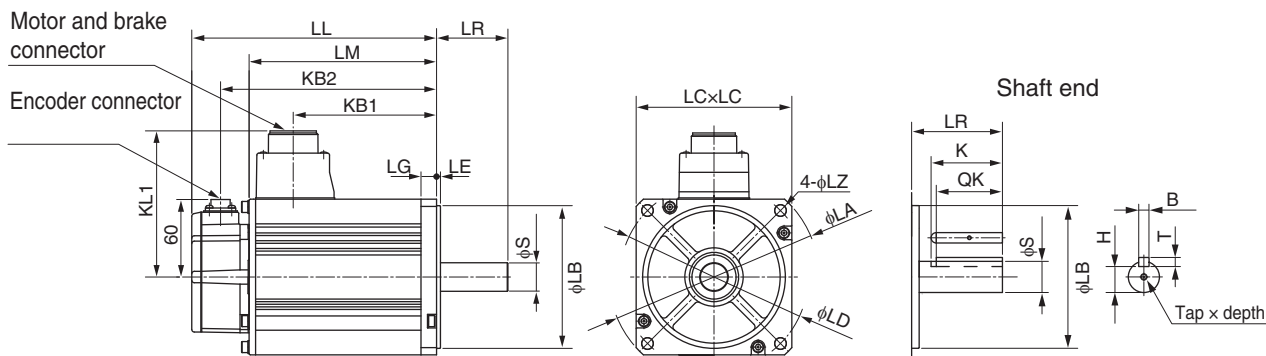
Type 1500 r/min motors (400 V, 11 to 15 kW)

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	Without 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



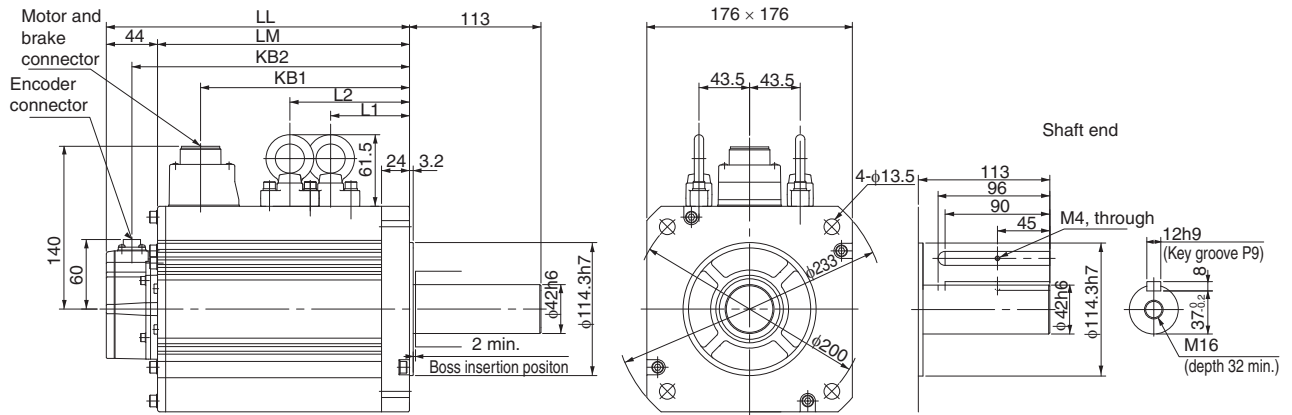
Type 1000 r/min motors (230 V, 900W/400 V, 900 W to 3 kW)

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 × Depth	K	QK	H	B	T	Without brake	With brake
		230	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>h6</sup>	M5 × 12L	45	41		
400	90010(F/C)-□S2																				M5 × 12L							
	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>h6</sup>	M12 × 25L	55	50	30	10 <sup>h9</sup>	8	14	17.5
	3K010(F/C)-□S2	209.5	165.5	128.5	187.5		234.5	190.5	128.5	212.5											M12 × 25L						20	23.5



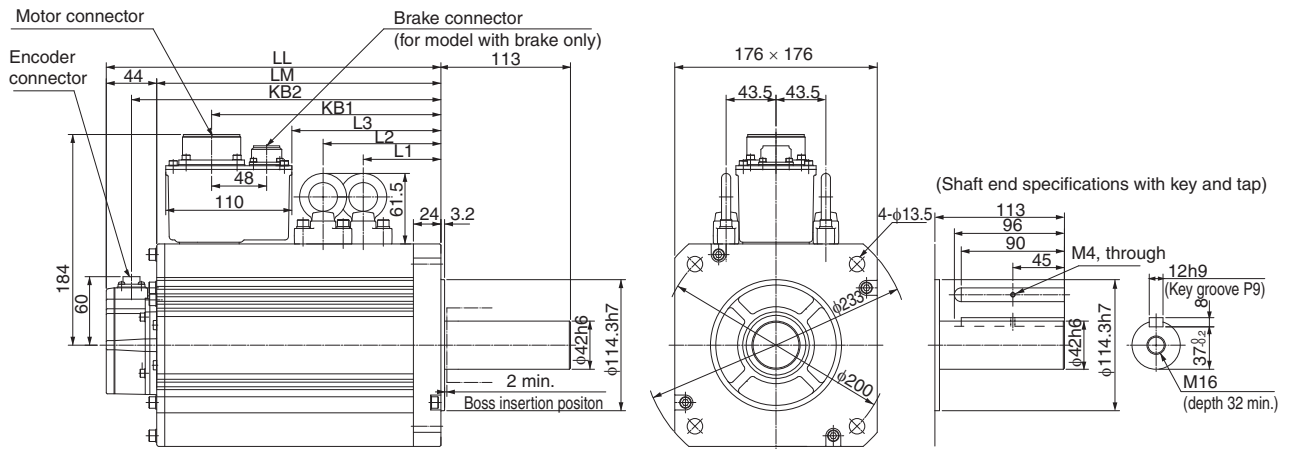
Type 1000 r/min motors (400 V, 4.5 kW)

Dimensions (mm)		Without brake						With brake						Approx. mass (kg)	
Voltage	Model	LL	LM	KB1	KB2	L1	L2	LL	LM	KB1	KB2	L1	L2	Without brake	With brake
400	R88M-K□ 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)

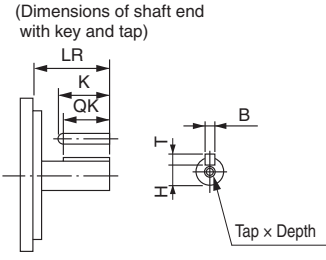
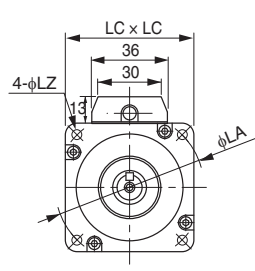
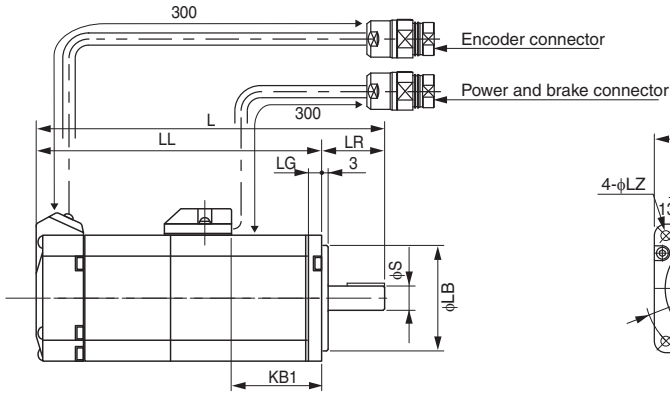
Dimensions (mm)		Without brake							With brake						Approx. mass (kg)		
Voltage	Model	LL	LM	KB1	KB2	L1	L2	L3	LL	LM	KB1	KB2	L1	L2	L3	Without brake	With brake
400	R88M-K□ 6K010C-□S2	312	268	219	290	117.5	117.5	149	337	293	253	315	117.5	152.5	183	36.4	40.4



## High inertia servo motors

### Type 3000 r/min motors (230 V, 200 W to 750 W)

Dimensions (mm)		Without brake		With brake		KB1	LR	Flange surface					Shaft end dimensions						Approx. mass (kg)		
Voltage	Model	L	LL	L	LL			LA	LB	LC	LG	LZ	S	Tap x Depth	K	QK	H	B	T	Without brake	With brake
		230	R88M-KH□																		
20030(H/T)-□S2-D	129		99	165.5	135.5	42	30	70	50 <sup>h7</sup>	60	6.5	4.5	11 <sup>h6</sup>	M4x8L	20	18	8.5	4 <sup>h9</sup>	4	0.96	1.4
40030(H/T)-□S2-D	148.5		118.5	185	155	61.5							14 <sup>h6</sup>	M5x10L	25	22.5	11	5 <sup>h9</sup>	5	1.4	1.8
	75030(H/T)-□S2-D	162.2	127.2	199.2	164.2	67.2	35	90	70 <sup>h7</sup>	80	8	6	19 <sup>h6</sup>	M5x10L	25	22	15.5	6 <sup>h9</sup>	6	2.5	3.3



Encoder connector wiring

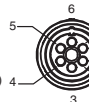


Cable length 300±30  
Connector optional  
Made by Hypertac  
SRUC-17G-MRW040 (MALE)

Pin No.	Signal
1	BAT - (0 V)
2	BAT +
3	S +
4	S -
5 to 7	Free
8	ESV (power supply)
9	EOV (power supply)
10 to 17	Free
Connector case	FG (Ground)

\*Note: Pins 1 and 2 used only for motors with ABS encoder.  
Mating connector:  
Plug type: SPOC-17H-FRON169 (FEMALE)

Power and brake connector wiring



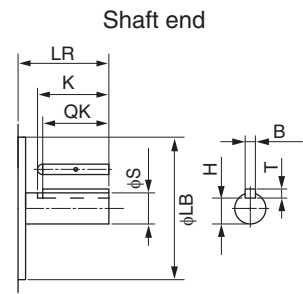
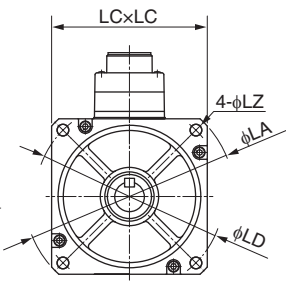
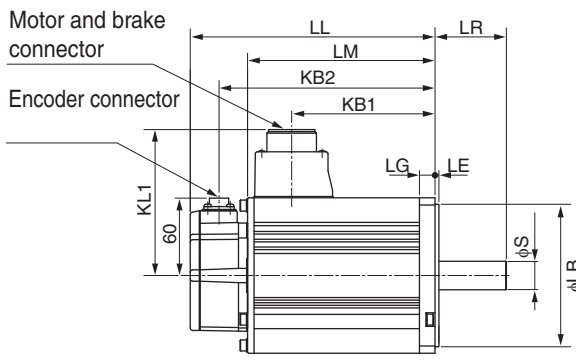
Cable length 300±30  
Connector optional  
Made by Hypertac  
SRUC-06J-MSCN236 (MALE)

Pin No.	Output
1	Phase U
2	Phase V
3	Phase W
4	*Brake terminal
5	*Brake terminal
6	FG (ground)

\*Note: Pins 4 and 5 used only for motors with brake.  
Mating connector:  
Plug type: SPOC-06K-FSDN169 (FEMALE)

### Type 2000 r/min motors (400 V, 1 kW to 5 kW)

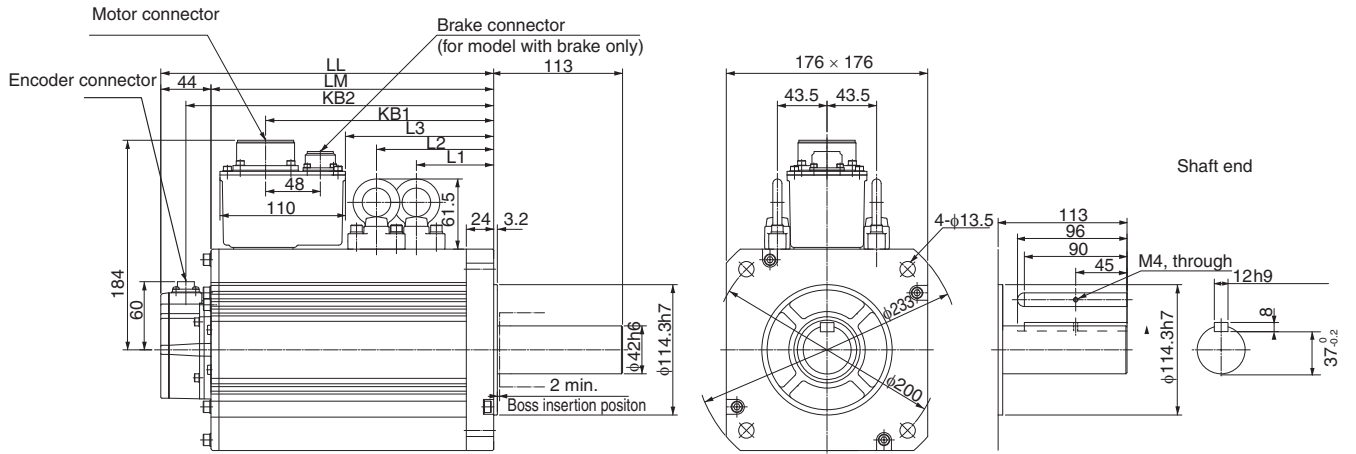
Dimensions (mm)		Without brake					With brake					LR	Flange surface						Shaft end dimensions						Approx. mass (kg)			
Voltage	Model	LL	LM	KB1	KB2	KL1	LL	LM	KB1	KB2	KL1		LA	LB	LC	LD	LE	LG	LZ	S	K	QK	H	B	T	Without brake	With brake	
		400	R88M-KH□																									
1K020(F/C)-□S1	173		129	95	151	116	201	157	92	179	118	70	165	110 <sup>h7</sup>	130	145	6	12	9	22 <sup>h6</sup>	45	41	18	8 <sup>h9</sup>	7	6.7	8.1	
1K520(F/C)-□S1	190.5		146.5	112.5	168.5		218.5	174.5	109.5	196.5																	8.6	10.1
2K020(F/C)-□S1	177		133	96	155	140	206	162	96	184	140	80	233	114.3 <sup>h7</sup>	176	200	3.2	18	13.5	35 <sup>h6</sup>	55	50	30	10 <sup>h9</sup>	8	12.2	15.5	
3K020(F/C)-□S1	196		152	115	174		225	181	115	203																	16.0	19.2
4K020(F/C)-□S1	209.5		165.5	128.5	187.5		238.5	194.5	128.5	216.5																		18.6
	5K020(F/C)-□S1	238.5	194.5	157.5	216.5		267.5	223.5	157.5	245.5																	23.0	26.2





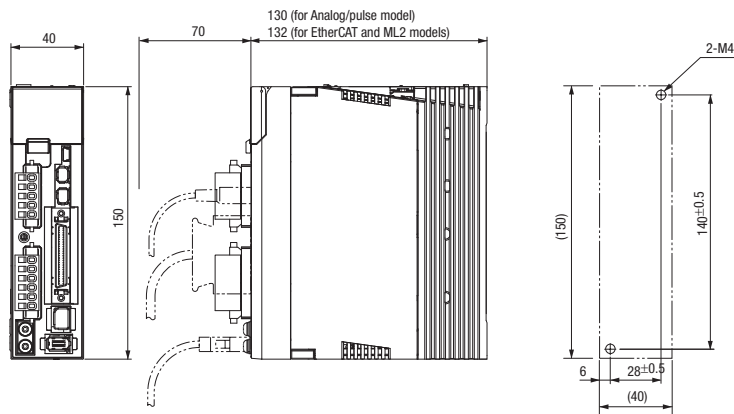
Type 1500 r/min motors (400 V, 7.5 kW)

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	Without brake	With brake
400	R88M-KH□ 7K515C-□S1	357	313	264	335	146.5	146.5	194	382	338	298	360	146.5	181.5	228	42.3	46.2

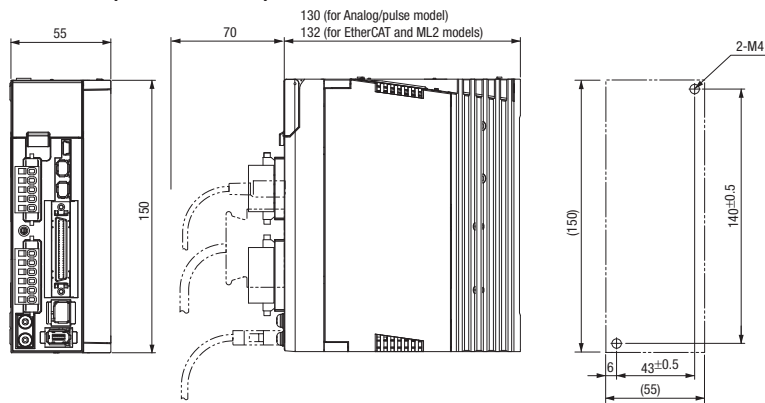


## Servo drives

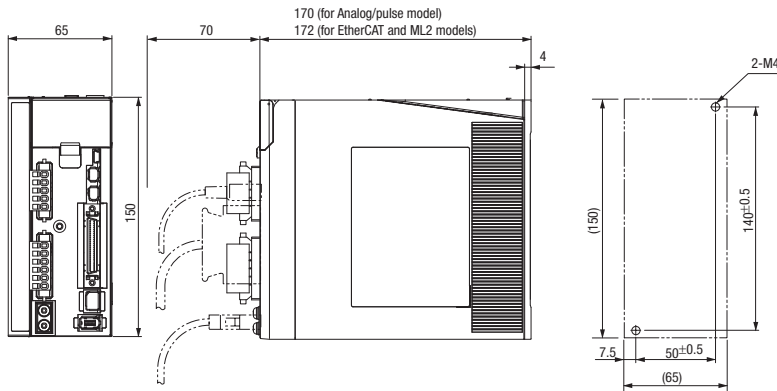
### R88D-KT01/02H, R88D-KN01/02H-□ (230 V, 100 to 200 W)



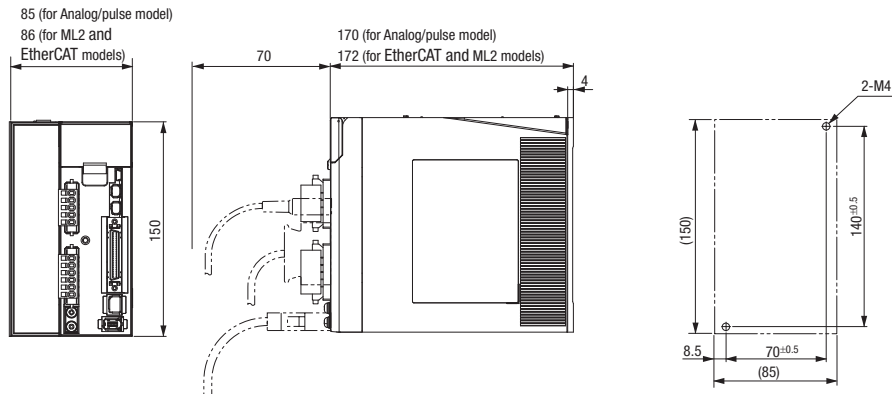
### R88D-KT04H, R88D-KN04H-□ (230 V, 400 W)



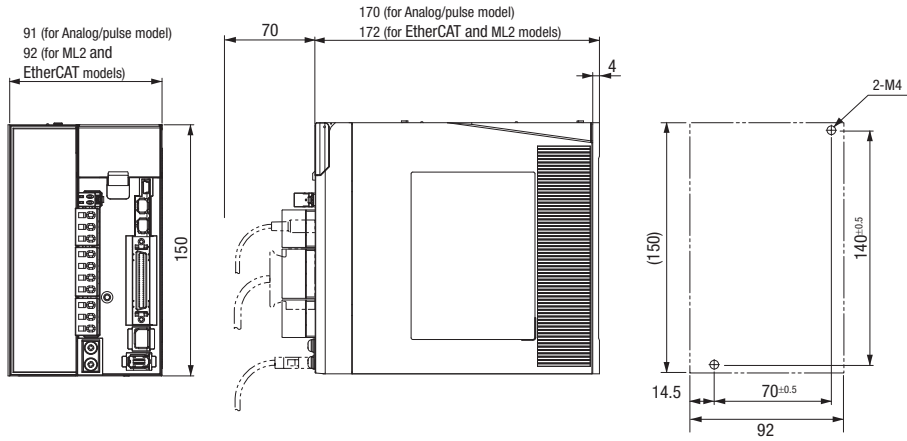
### R88D-KT08H, R88D-KN08H-□ (230 V, 750 W)



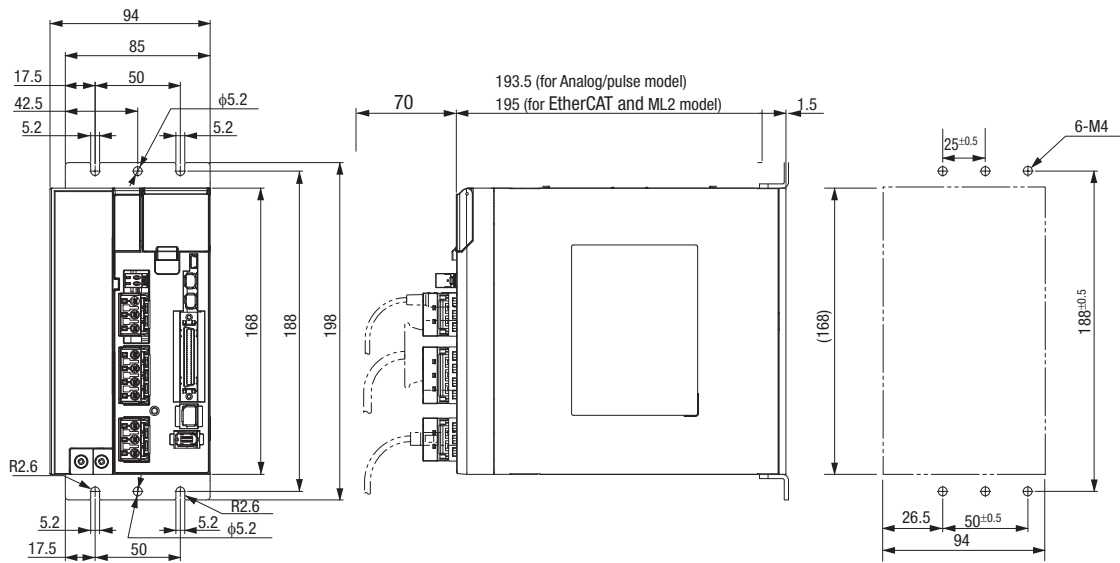
### R88D-KT10/15H, R88D-KN10/15H-□ (230 V, 1 to 1.5 kW)



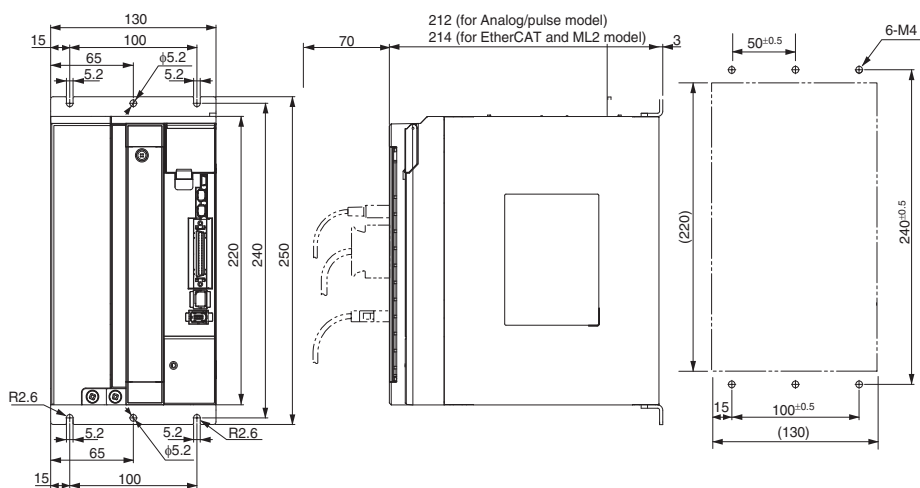
**R88D-KT06/10/15F, R88D-KN06/10/15F-□ (400 V, 600 W to 1.5 kW)**



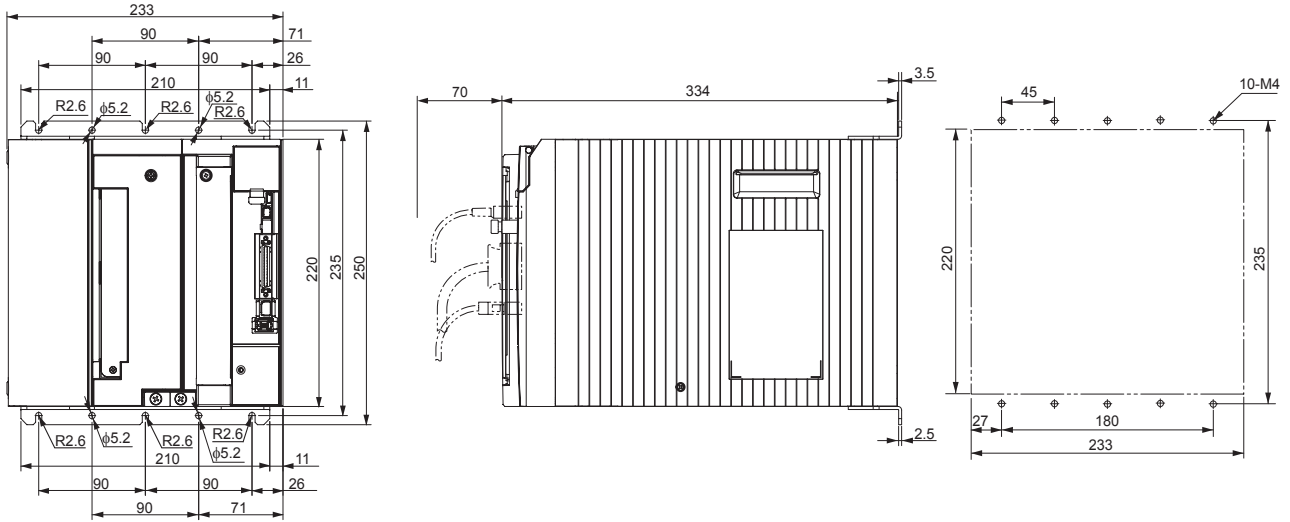
**R88D-KT20F, R88D-KN20F-□ (400 V, 2 kW)**



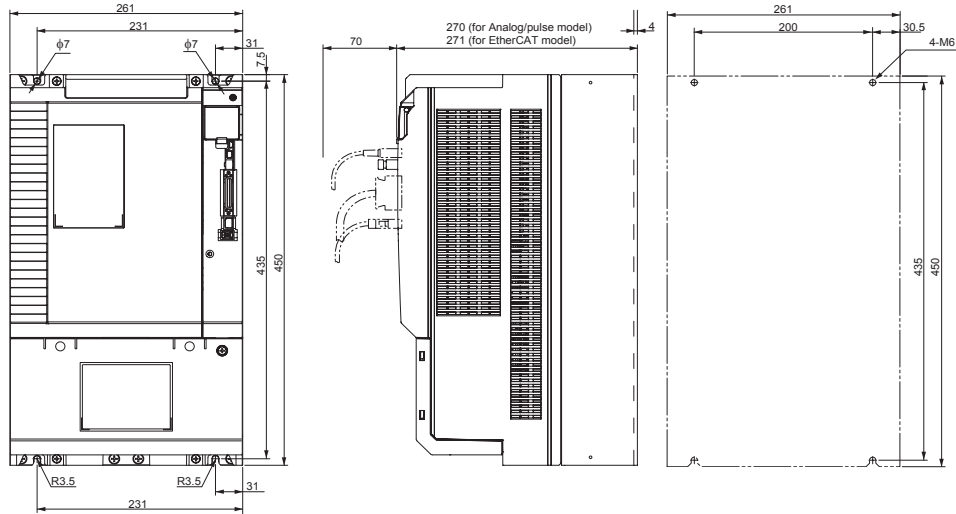
**R88D-KT30/50F, R88D-KN30/50F-□ (400 V, 3 to 5 kW)**



**R88D-KT75F, R88D-KN75H-ECT (400 V, 7.5 kW)**

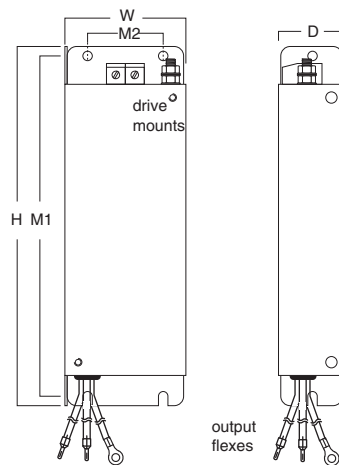


**R88D-KT150F, R88D-KN150H-ECT (400 V, 15 kW)**



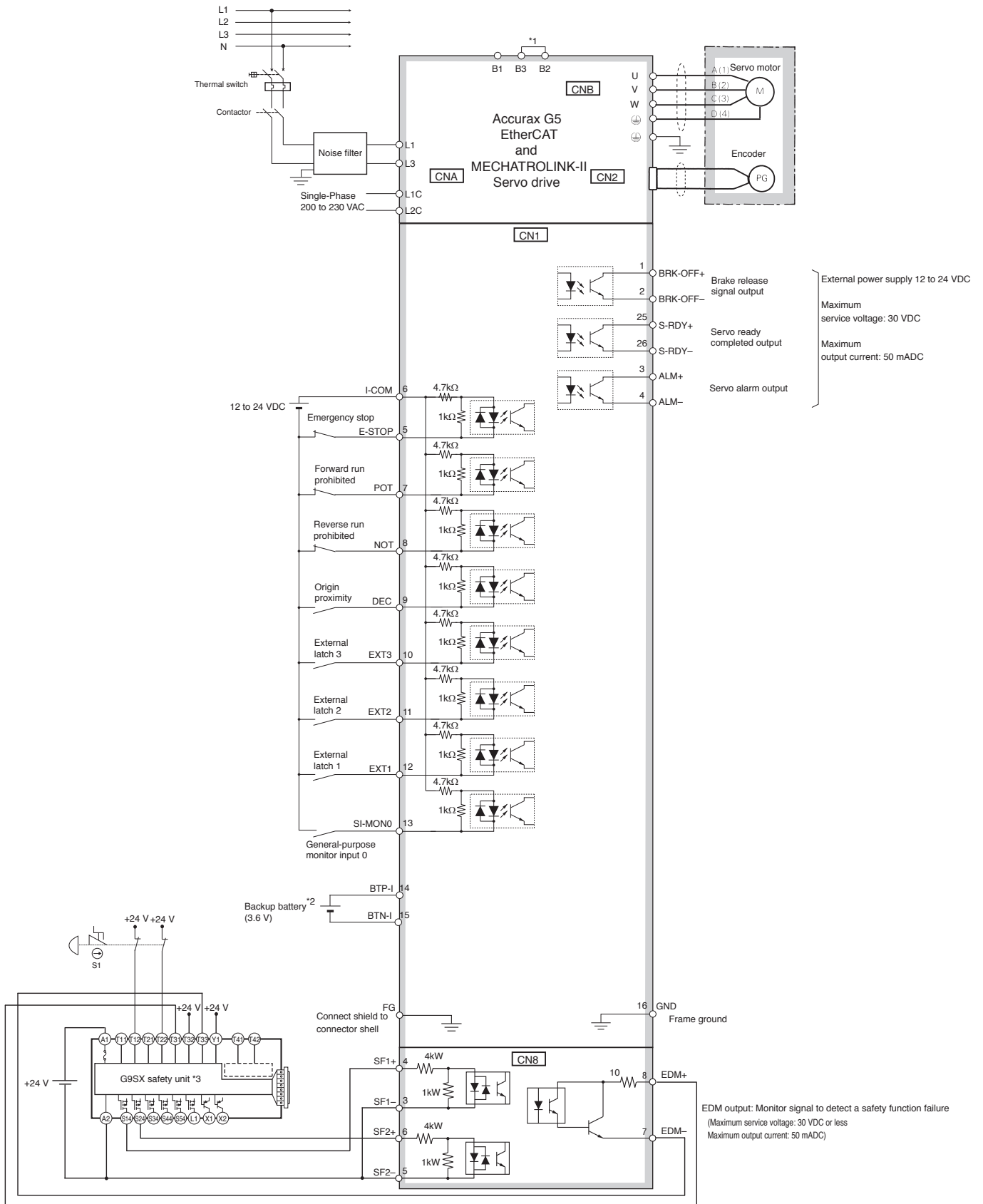
**Filters**

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)**



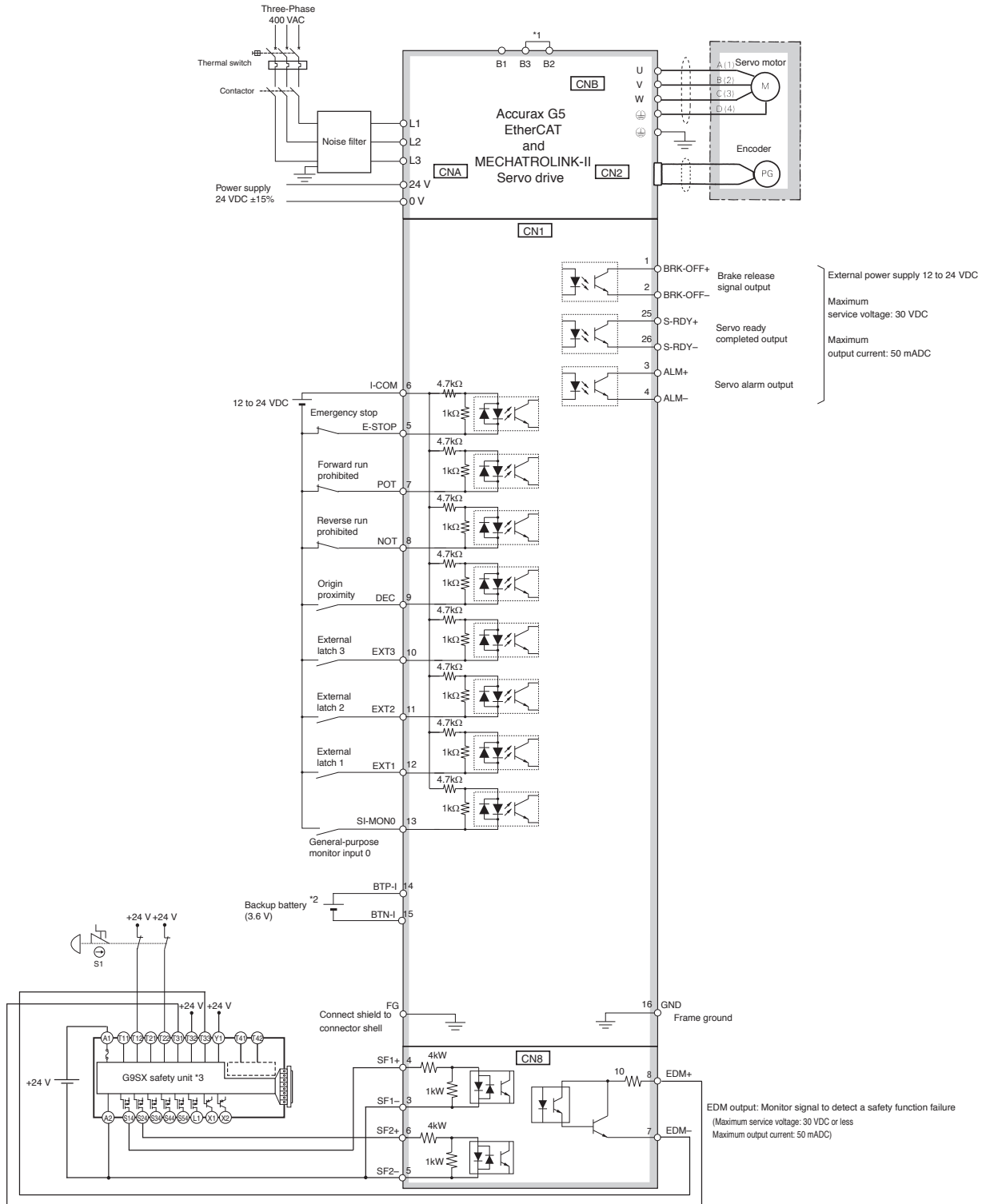
\*1 For servo drives from 750 W, B2 and B3 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.

\*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)



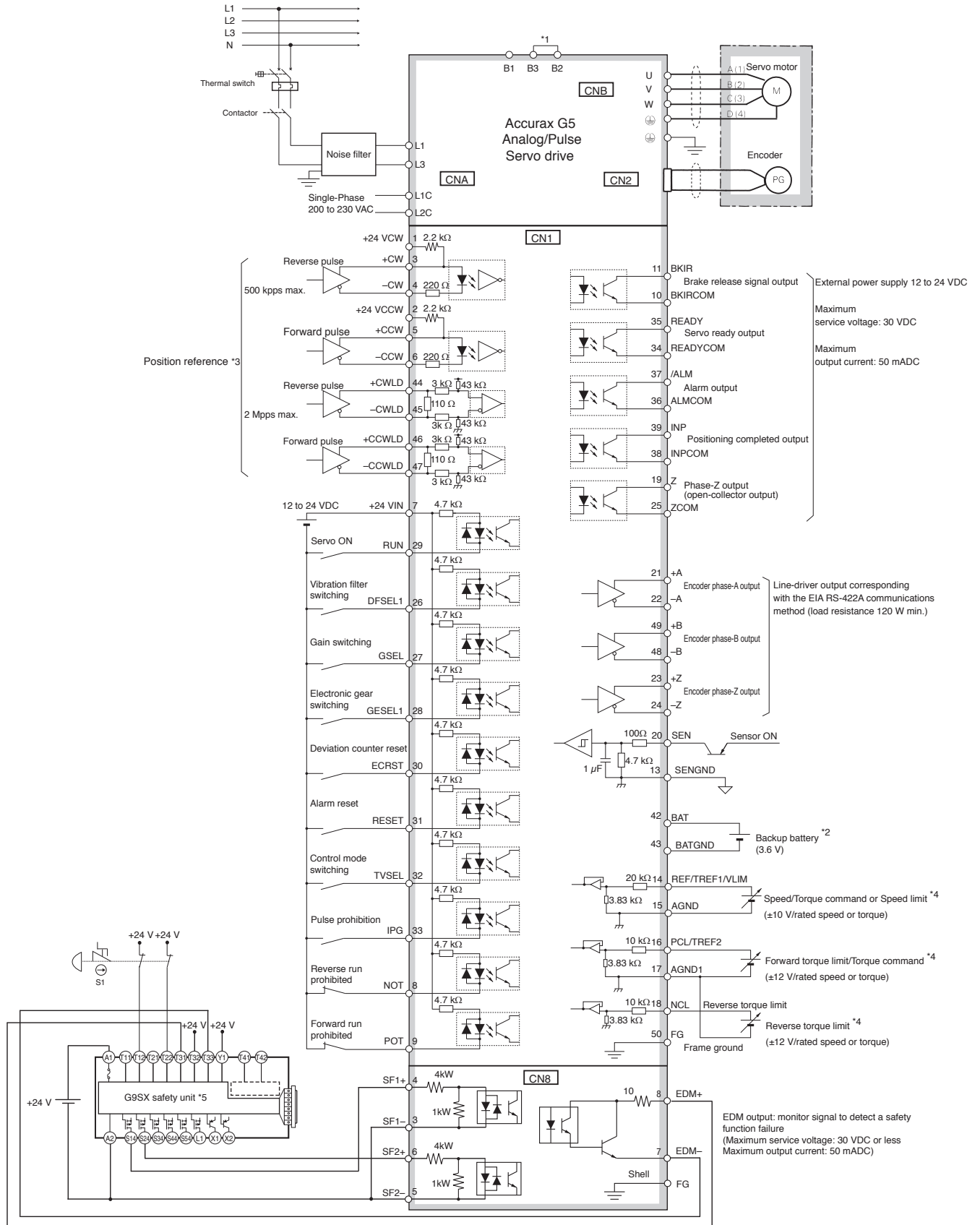
\*1 Normally B2 and B3 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.

\*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.

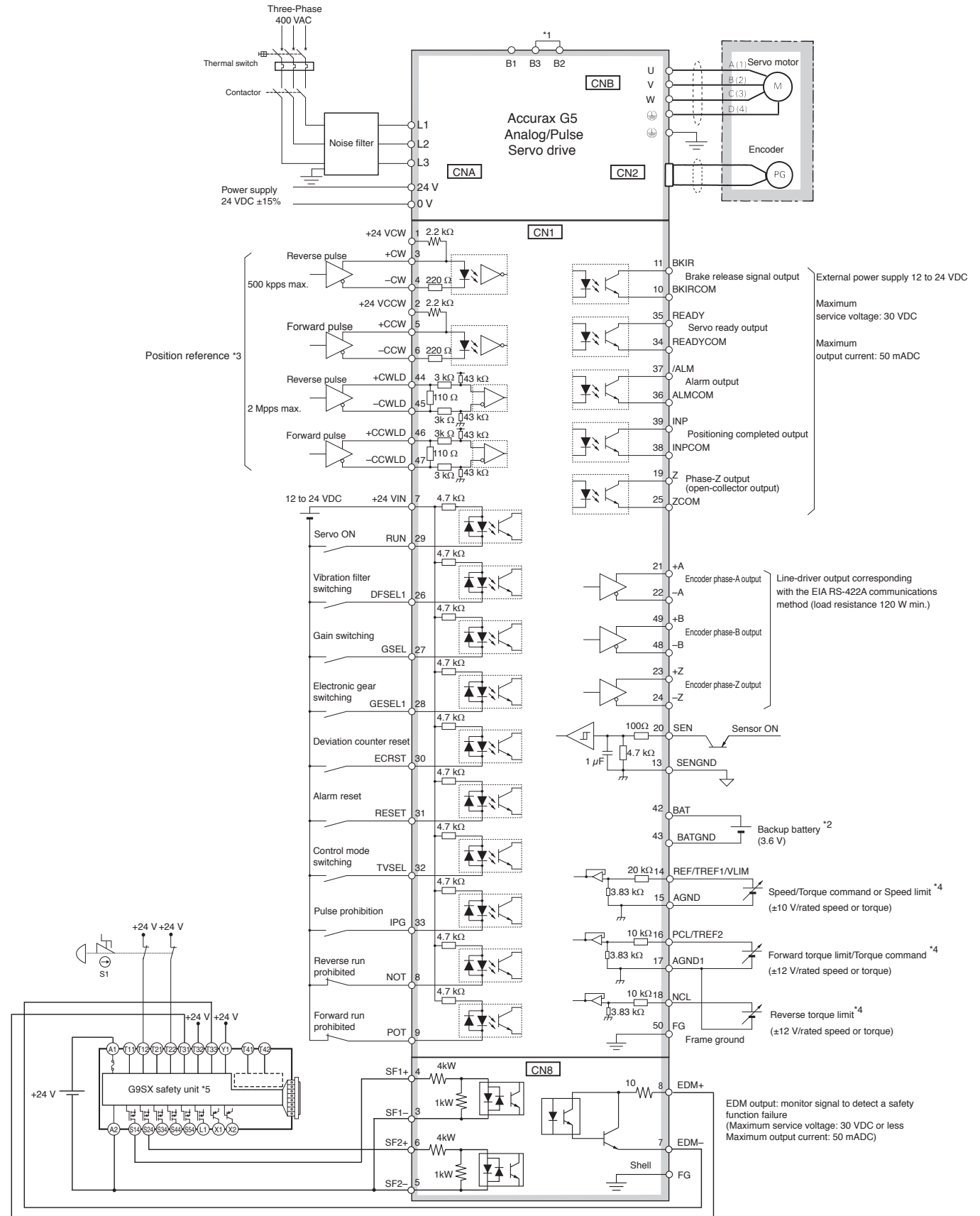
Single-phase, 230 VAC (for Analog/pulse servo drives)



\*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 Normally 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**

(Refer to servo drive chapter)

② Drive options

**Accurax G5 servo drive**  
EtherCAT, ML2 and  
Analogue/pulse models

④ Extension cable for  
absolute encoder  
(with battery holder)

**Standard servo motors**

⑤ Power cable

③ Encoder cable

⑥ Brake cable

①

3000 rpm (50 W to 750 W)

Power cable/  
⑤ Power cable with brake

③ Encoder cable

①

3000 rpm (750 W to 5 kW)  
2000 rpm (400 W to 5 kW)  
1000 rpm (900 W to 3 kW)

⑤ Power cable/  
⑤ Power cable with brake

③ Encoder cable

①

1500 rpm (7.5 kW to 15 kW)  
1000 rpm (4.5 kW to 6 kW)

**High inertia servo motors**

Power cable/  
⑤ Power cable with brake

③ Encoder cable

①

3000 rpm (200 W to 750 W)

Power cable/  
⑤ Power cable with brake

③ Encoder cable

①

2000 rpm (1 kW to 5 kW)

⑤ Power cable/  
⑤ Power cable with brake

③ Encoder cable

①

1500 rpm (7.5 kW)

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

**Servo motor**



① Select motor from R88M-K or R88M-KH families using motor tables in next pages.

**Servo drive**


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

Standard servo motors

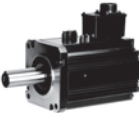
Servo motors 3000 r/min (50 to 5000 W)

Symbol	Specifications				Servo motor model	Compatible servo drives <sup>(2)</sup>			
	Voltage	Encoder and design	Rated torque	Capacity		G5 EtherCAT/ ML2	G5 Analog/pulse		
<p>①</p>  <p>230 V (50 to 750 W)</p>  <p>230 V (1 kW to 1.5 kW) 400 V (750 W to 5 kW)</p>	230 V	Incremental encoder (20 bit)	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		
		Absolute encoder (17 bit)	Without brake	Straight shaft with key and tap	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
			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		
	400 V	Incremental encoder (20 bit)	Without brake	Straight shaft with key and tap	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
			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	
		Absolute encoder (17 bit)	Without brake	Straight shaft with key and tap	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
			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					


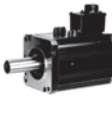
Servo motors 2000 r/min (1 to 5 kW)

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
				4.77 Nm	1000 W	R88M-K1K020H-BS2	R88D-KN10H-□	R88D-KT10H
			With brake	7.16 Nm	1500 W	R88M-K1K520H-BS2	R88D-KN15H-□	R88D-KT15H
				4.77 Nm	1000 W	R88M-K1K020T-S2	R88D-KN10H-□	R88D-KT10H
				7.16 Nm	1500 W	R88M-K1K520T-S2	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
				4.77 Nm	1000 W	R88M-K1K020T-BS2	R88D-KN10H-□	R88D-KT10H
			With brake	7.16 Nm	1500 W	R88M-K1K520T-BS2	R88D-KN15H-□	R88D-KT15H
				4.77 Nm	1000 W	R88M-K1K020F-S2	R88D-KN10F-□	R88D-KT10F
				7.16 Nm	1500 W	R88M-K1K520F-S2	R88D-KN15F-□	R88D-KT15F
	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 to 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 to 6000 W)


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

High inertia servo motors

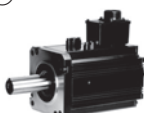
Servo motors 3000 r/min (200 to 750 W)

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	0.64 Nm	200 W	R88M-KH20030H-S2-D	R88D-KN02H-□	R88D-KT02H
				1.3 Nm	400 W	R88M-KH40030H-S2-D	R88D-KN04H-□	R88D-KT04H
			2.4 Nm	750 W	R88M-KH75030H-S2-D	R88D-KN08H-□	R88D-KT08H	
		With brake	0.64 Nm	200 W	R88M-KH20030H-BS2-D	R88D-KN02H-□	R88D-KT02H	
			1.3 Nm	400 W	R88M-KH40030H-BS2-D	R88D-KN04H-□	R88D-KT04H	
			2.4 Nm	750 W	R88M-KH75030H-BS2-D	R88D-KN08H-□	R88D-KT08H	
	230 V	Absolute encoder (17 bit) Straight shaft with key and tap	Without brake	0.64 Nm	200 W	R88M-KH20030T-S2-D	R88D-KN02H-□	R88D-KT02H
				1.3 Nm	400 W	R88M-KH40030T-S2-D	R88D-KN04H-□	R88D-KT04H
			2.4 Nm	750 W	R88M-KH75030T-S2-D	R88D-KN08H-□	R88D-KT08H	
		With brake	0.64 Nm	200 W	R88M-KH20030T-BS2-D	R88D-KN02H-□	R88D-KT02H	
			1.3 Nm	400 W	R88M-KH40030T-BS2-D	R88D-KN04H-□	R88D-KT04H	
			2.4 Nm	750 W	R88M-KH75030T-BS2-D	R88D-KN08H-□	R88D-KT08H	

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


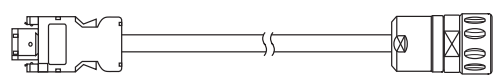

Symbol	Specifications				Servo motor model	Compatible servo drives (2)		
	Voltage	Encoder and design	Rated torque	Capacity		G5 EtherCAT/ML2	G5 Analog/pulse	
	400 V	Incremental encoder (20 bit) Shaft end with key	Without brake	4.77 Nm	1000 W	R88M-KH1K020F-S1	R88D-KN10F-□	R88D-KT10F
				7.16 Nm	1500 W	R88M-KH1K520F-S1	R88D-KN15F-□	R88D-KT15F
				9.55 Nm	2000 W	R88M-KH2K020F-S1	R88D-KN20F-□	R88D-KT20F
				14.3 Nm	3000 W	R88M-KH3K020F-S1	R88D-KN30F-□	R88D-KT30F
				19.1 Nm	4000 W	R88M-KH4K020F-S1	R88D-KN50F-□	R88D-KT50F
				23.9 Nm	5000 W	R88M-KH5K020F-S1	R88D-KN50F-□	R88D-KT50F
			With brake	4.77 Nm	1000 W	R88M-KH1K020F-BS1	R88D-KN10F-□	R88D-KT10F
				7.16 Nm	1500 W	R88M-KH1K520F-BS1	R88D-KN15F-□	R88D-KT15F
				9.55 Nm	2000 W	R88M-KH2K020F-BS1	R88D-KN20F-□	R88D-KT20F
				14.3 Nm	3000 W	R88M-KH3K020F-BS1	R88D-KN30F-□	R88D-KT30F
				19.1 Nm	4000 W	R88M-KH4K020F-BS1	R88D-KN50F-□	R88D-KT50F
				23.9 Nm	5000 W	R88M-KH5K020F-BS1	R88D-KN50F-□	R88D-KT50F
		Absolute encoder (17 bit) Shaft end with key	Without brake	4.77 Nm	1000 W	R88M-KH1K020C-S1	R88D-KN10F-□	R88D-KT10F
				7.16 Nm	1500 W	R88M-KH1K520C-S1	R88D-KN15F-□	R88D-KT15F
				9.55 Nm	2000 W	R88M-KH2K020C-S1	R88D-KN20F-□	R88D-KT20F
				14.3 Nm	3000 W	R88M-KH3K020C-S1	R88D-KN30F-□	R88D-KT30F
				19.1 Nm	4000 W	R88M-KH4K020C-S1	R88D-KN50F-□	R88D-KT50F
				23.9 Nm	5000 W	R88M-KH5K020C-S1	R88D-KN50F-□	R88D-KT50F
			With brake	4.77 Nm	1000 W	R88M-KH1K020C-BS1	R88D-KN10F-□	R88D-KT10F
				7.16 Nm	1500 W	R88M-KH1K520C-BS1	R88D-KN15F-□	R88D-KT15F
				9.55 Nm	2000 W	R88M-KH2K020C-BS1	R88D-KN20F-□	R88D-KT20F
				14.3 Nm	3000 W	R88M-KH3K020C-BS1	R88D-KN30F-□	R88D-KT30F
				19.1 Nm	4000 W	R88M-KH4K020C-BS1	R88D-KN50F-□	R88D-KT50F
				23.9 Nm	5000 W	R88M-KH5K020C-BS1	R88D-KN50F-□	R88D-KT50F

Servo motors 1500 r/min (7.5 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)	Without brake	47.8 Nm	7500 W	R88M-KH7K515C-S1	R88D-KN75F-ECT	R88D-KT75F
			With brake	47.8 Nm	7500 W	R88M-KH7K515C-BS1	R88D-KN75F-ECT	R88D-KT75F

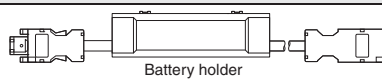
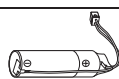
Encoder cables

For absolute and incremental encoders

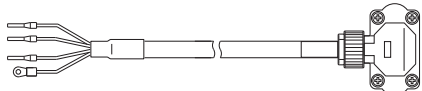
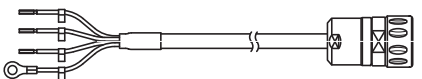
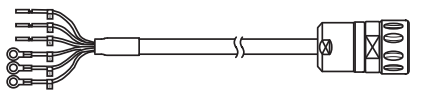
Symbol	Specifications	Model	Appearance
③	Encoder cable for servomotors R88M-K(050/100/200/400/750)30(H/T)□	1.5 m R88A-CRKA001-5CR-E	
		3 m R88A-CRKA003CR-E	
		5 m R88A-CRKA005CR-E	
		10 m R88A-CRKA010CR-E	
		15 m R88A-CRKA015CR-E	
	20 m R88A-CRKA020CR-E		
	Encoder cable for servomotors R88M-KH(200/400/750)30(H/T)□	3 m R88A-CRWA003C-DE	
		5 m R88A-CRWA005C-DE	
		10 m R88A-CRWA010C-DE	
		15 m R88A-CRWA015C-DE	
20 m R88A-CRWA020C-DE			
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□ R88M-KH(1K0/1K5/2K0/3K0/4K0/5K0)20(F/C)□ R88M-KH7K515C□	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)-□□S2 <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-KH(200/400/750)30(H/T)-□□S2	without brake	3 m R88A-CAWA003S-DE	
			5 m R88A-CAWA005S-DE	
			10 m R88A-CAWA010S-DE	
			15 m R88A-CAWA015S-DE	
			20 m R88A-CAWA020S-DE	
		with brake	3 m R88A-CAWA003B-DE	
			5 m R88A-CAWA005B-DE	
			10 m R88A-CAWA010B-DE	
			15 m R88A-CAWA015B-DE	
20 m R88A-CAWA020B-DE				

Symbol	Specifications		Model	Appearance	
⑤	For 200 V servomotors R88M-K(1K0/1K5)30(H/T)-□□S2 R88M-K(1K0/1K5)20(H/T)-□□S2 R88M-K90010(H/T)-□□S2	without brake	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	
		20 m	R88A-CAGB020SR-E		
		with brake	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		
	20 m	R88A-CAGB020BR-E			
	For 400 V servomotors 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 R88M-KH(1K0/1K5)20(F/C)-□S1	without brake	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	
		20 m	R88A-CAGB020SR-E		
		with brake	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				
20 m	R88A-CAKF020BR-E				
For 400 V servomotors R88M-KH2K020(F/C)-□S1	without brake	1.5 m	R88A-CAKC001-5SR-E		
		3 m	R88A-CAKC003SR-E		
		5 m	R88A-CAKC005SR-E		
		10 m	R88A-CAKC010SR-E		
		15 m	R88A-CAKC015SR-E		
	20 m	R88A-CAKC020SR-E			
	with brake	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			
20 m	R88A-CAKF020BR-E				
For 400 V servomotors 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 R88M-KH(3K0/4K0/5K0)20(F/C)-□S1	without brake	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		
	20 m	R88A-CAGD020SR-E			
	with brake	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			
20 m	R88A-CAGD020BR-E				
For 400 V servomotors R88M-K6K010C-□□S2 R88M-K7K515C-□□S2 R88M-KH7K515C-□S1 Note: for servomotors with brake R88M-K(6K010/7K515)C-BS2 and R88M-KH7K515C-BS1 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-□□S2 Note: 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 to 750 W servo motors and 400 V 6 to 15 kW servo motors)**

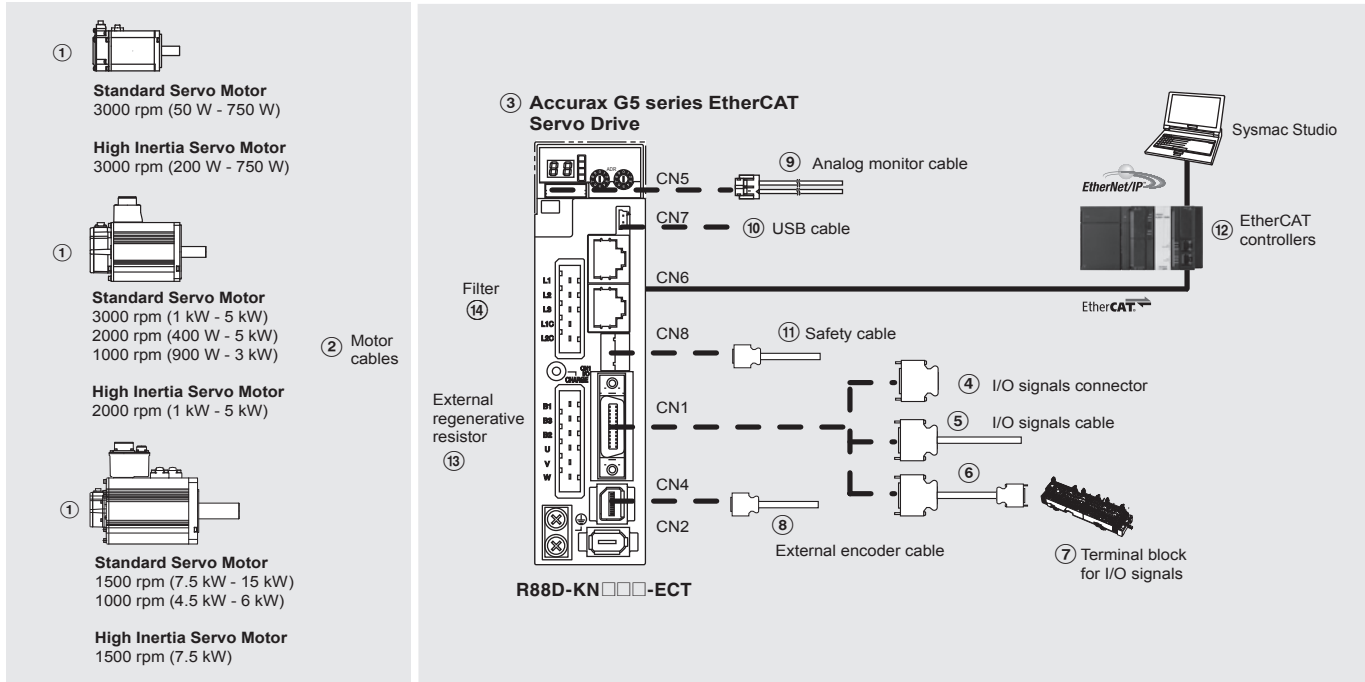
Symbol	Specifications	Model	Appearance	
⑥	Brake cable only. For 200 V servo motors with brake R88M-K(050/100/200/400/750)30(H/T)-BS2	1.5 m	R88A-CAKA001-5BR-E	
		3 m	R88A-CAKA003BR-E	
		5 m	R88A-CAKA005BR-E	
		10 m	R88A-CAKA010BR-E	
		15 m	R88A-CAKA015BR-E	
		20 m	R88A-CAKA020BR-E	
	Brake cable only. For 400 V servo motors with brake R88M-K6K010C-BS2 R88M-K(7K5/11K0/15K0)15C-BS2 R88M-KH7K515C-BS1	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-KH(200/400/750)□	SPOC-17H-FRON169
	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-□ R88M-KH(1K0/1K5/2K0/3K0/4K0/5K0/7K5)□	R88A-CNK04R
	Motor side	R88M-K(050/100/200/400/750)30(H/T)□	R88A-CNK11A
Connectors for making power cables	Motor side	R88M-KH(200/400/750)30(H/T)□	SPOC-06K-FSDN169
	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 R88M-KH(1K0/1K5)20(F/C)-S1	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 R88M-KH(1K0/1K5/2K0/3K0/4K0/5K0)20(F/C)-BS1	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 R88M-KH(2K0/3K0/4K0/5K0)20(F/C)-S1	MS3108E22-22S
	Motor side	R88M-K6K010C-□ R88M-K(7K5/11K0/15K0)15C-□ R88M-KH7K515C-□S1	MS3108E32-17S
	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 R88M-KH7K515C-BS1	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 chapter for servomotor, motor cables or connectors selection

### Servo drives

Symbol	Specifications		Servo drive models	① Compatible G5 series rotary servo motors	
				Standard models	High Inertia models
③	1 phase 230 VAC	100 W	R88D-KN01H-ECT	R88M-K05030(H/T)-□	-
			R88M-K10030(H/T)-□	-	
			R88D-KN02H-ECT	R88M-K20030(H/T)-□	R88M-KH20030(H/T)-□
			R88D-KN04H-ECT	R88M-K40030(H/T)-□	R88M-KH40030(H/T)-□
			R88D-KN08H-ECT	R88M-K75030(H/T)-□	R88M-KH75030(H/T)-□
			R88D-KN10H-ECT	R88M-K1K020(H/T)-□	-
			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)-□	-	
			R88D-KN10F-ECT	R88M-K75030(F/C)-□	-
			R88M-K1K020(F/C)-□	R88M-KH1K020(F/C)-□	
			R88D-KN15F-ECT	R88M-K1K030(F/C)-□	-
			R88M-K1K530(F/C)-□	-	
			R88M-K1K520(F/C)-□	R88M-KH1K520(F/C)-□	
			R88M-K90010(F/C)-□	-	
			R88D-KN20F-ECT	R88M-K2K030(F/C)-□	-
R88M-K2K020(F/C)-□			R88M-KH2K020(F/C)-□		
3.0 kW	3.0 kW	R88D-KN30F-ECT	R88M-K3K030(F/C)-□	-	
		R88M-K3K020(F/C)-□	R88M-KH3K020(F/C)-□		
		R88M-K2K010(F/C)-□	-		
		R88D-KN50F-ECT	R88M-K4K030(F/C)-□	-	
		R88M-K5K030(F/C)-□	-		
		R88M-K4K020(F/C)-□	R88M-KH4K020(F/C)-□		
		R88M-K5K020(F/C)-□	R88M-KH5K020(F/C)-□		
R88M-K4K510C-□	-				
R88M-K3K010(F/C)-□	-				
7.5 kW	7.5 kW	R88D-KN75F-ECT	R88M-K6K010C-□	-	
		R88M-K7K515C-□	R88M-KH7K515C-□		
		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	1 m R88A-CPKB001S-E
			2 m 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	5 m R88A-CRKM005SR-E
		10 m R88A-CRKM010SR-E
		20 m R88A-CRKM020SR-E

Analog monitor (CN5)

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

USB personal computer cable (CN7)

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

Cable for safety (CN8)

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

EtherCAT controllers

Symbol	Name	Model	
⑫	NJ-series	CPU unit	NJ501-1500 (64 axes)
			NJ501-1400 (32 axes)
			NJ501-1300 (16 axes)
			NJ301-1200 (8 axes)
		Power supply unit	NJ-PA3001 (220 VDC)
			NJ-PD3001 (24 VDC)
	Trajexia stand-alone	Motion control unit	TJ2-MC64 (64 axes)
			EtherCAT master unit
		Position controller unit for CJ1 PLC series	TJ2-ECT64 (64 axes)
	TJ2-ECT16 (16 axes)		
			TJ2-ECT04 (4 axes)
			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	Manufacturer	Rated current	Leakage current	Rated voltage
⑭	R88D-KN01H-ECT, R88D-KN02H-ECT	R88A-FIK102-RE	Rasmi Electronics Ltd	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	
	R88D-KN06F-ECT, R88D-KN10F-ECT, R88D-KN15F-ECT	R88A-FIK304-RE		4 A	0.3 mA / 32 mA <sup>*1</sup>	400 VAC three-phase
	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

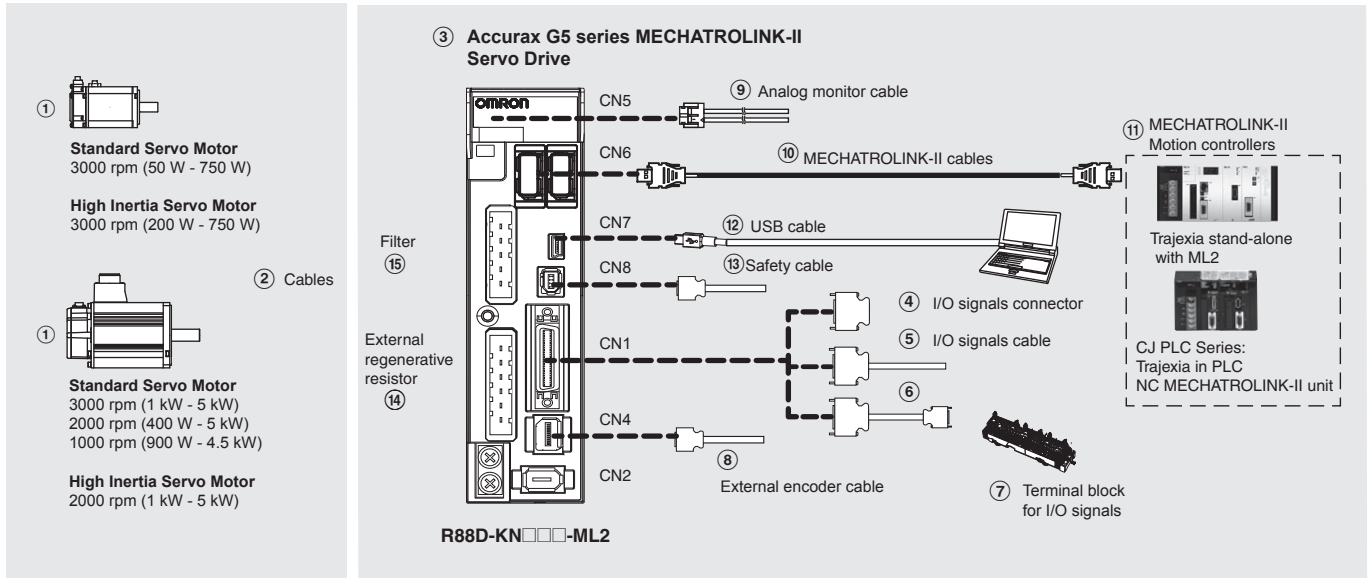
Computer software

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

Note: If CX-One is installed on the same computer as Sysmac Studio, it must be CX-One v4.2 or higher

Ordering information

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 chapter for servomotor, motor cables or connectors selection

Servo drives

Symbol	Specifications		Servo drive models	① Compatible G5 series rotary servo motors		
				Standard models	High inertia models	
③	1 phase 230 VAC	100 W	R88D-KN01H-ML2	R88M-K05030(H/T)-□	-	
			R88D-KN02H-ML2	R88M-K10030(H/T)-□	-	
			R88D-KN04H-ML2	R88M-K20030(H/T)-□	R88M-KH20030(H/T)-□	
		3 phase 400 VAC	600 W	R88D-KN08H-ML2	R88M-K40030(H/T)-□	R88M-KH40030(H/T)-□
				R88D-KN10H-ML2	R88M-K75030(H/T)-□	R88M-KH75030(H/T)-□
				R88D-KN15H-ML2	R88M-K1K020(H/T)-□	-
			1.0 kW	R88D-KN06F-ML2	R88M-K1K030(H/T)-□	-
				R88D-KN10F-ML2	R88M-K1K530(H/T)-□	-
				R88D-KN15F-ML2	R88M-K1K520(H/T)-□	-
	1.5 kW	600 W	R88D-KN20F-ML2	R88M-K90010(H/T)-□	-	
			R88D-KN30F-ML2	R88M-K40020(F/C)-□	-	
			R88D-KN50F-ML2	R88M-K60020(F/C)-□	-	
		1.0 kW	R88D-KN06F-ML2	R88M-K75030(F/C)-□	-	
			R88D-KN10F-ML2	R88M-K1K020(F/C)-□	R88M-KH1K020(F/C)-□	
			R88D-KN15F-ML2	R88M-K1K030(F/C)-□	-	
		1.5 kW	R88D-KN20F-ML2	R88M-K1K530(F/C)-□	-	
			R88D-KN30F-ML2	R88M-K1K520(F/C)-□	R88M-KH1K520(F/C)-□	
			R88D-KN50F-ML2	R88M-K90010(F/C)-□	-	
2.0 kW	600 W	R88D-KN20F-ML2	R88M-K2K030(F/C)-□	-		
		R88D-KN30F-ML2	R88M-K2K020(F/C)-□	R88M-KH2K020(F/C)-□		
		R88D-KN50F-ML2	R88M-K3K030(F/C)-□	-		
	1.0 kW	R88D-KN06F-ML2	R88M-K3K020(F/C)-□	R88M-KH3K020(F/C)-□		
		R88D-KN10F-ML2	R88M-K2K010(F/C)-□	-		
		R88D-KN15F-ML2	R88M-K4K030(F/C)-□	-		
1.5 kW	R88D-KN20F-ML2	R88M-K5K030(F/C)-□	-			
	R88D-KN30F-ML2	R88M-K4K020(F/C)-□	R88M-KH4K020(F/C)-□			
	R88D-KN50F-ML2	R88M-K5K020(F/C)-□	R88M-KH5K020(F/C)-□			
2.0 kW	R88D-KN20F-ML2	R88M-K4K510C-□	-			
	R88D-KN30F-ML2	R88M-K3K010(F/C)-□	-			
	R88D-KN50F-ML2	-	-			

**Control cables (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		1 m R88A-CPKB001S-E 2 m 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	5 m	R88A-CRKM005SR-E
		10 m	R88A-CRKM010SR-E
		20 m	R88A-CRKM020SR-E

**Analog monitor (CN5)**

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

**MECHATROLINK-II cables (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	
		ML2 master unit	
		Trajexia-PLC motion controller	CJ1W-MCH72 (30 axes)
			CJ1W-MC472 (4 axes)
		Position Controller Unit for CJ1 PLC	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 servodrive	Filter model	Manufacturer	Rated current	Leakage current	Rated voltage
⑮	R88D-KN01H-ML2, R88D-KN02H-ML2	R88A-FIK102-RE	Rasmi Electronics Ltd	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	
	R88D-KN06F-ML2, R88D-KN10F-ML2, R88D-KN15F-ML2	R88A-FIK304-RE		4 A	0.3 mA/32 mA <sup>*1</sup>	400 VAC three-phase
	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**

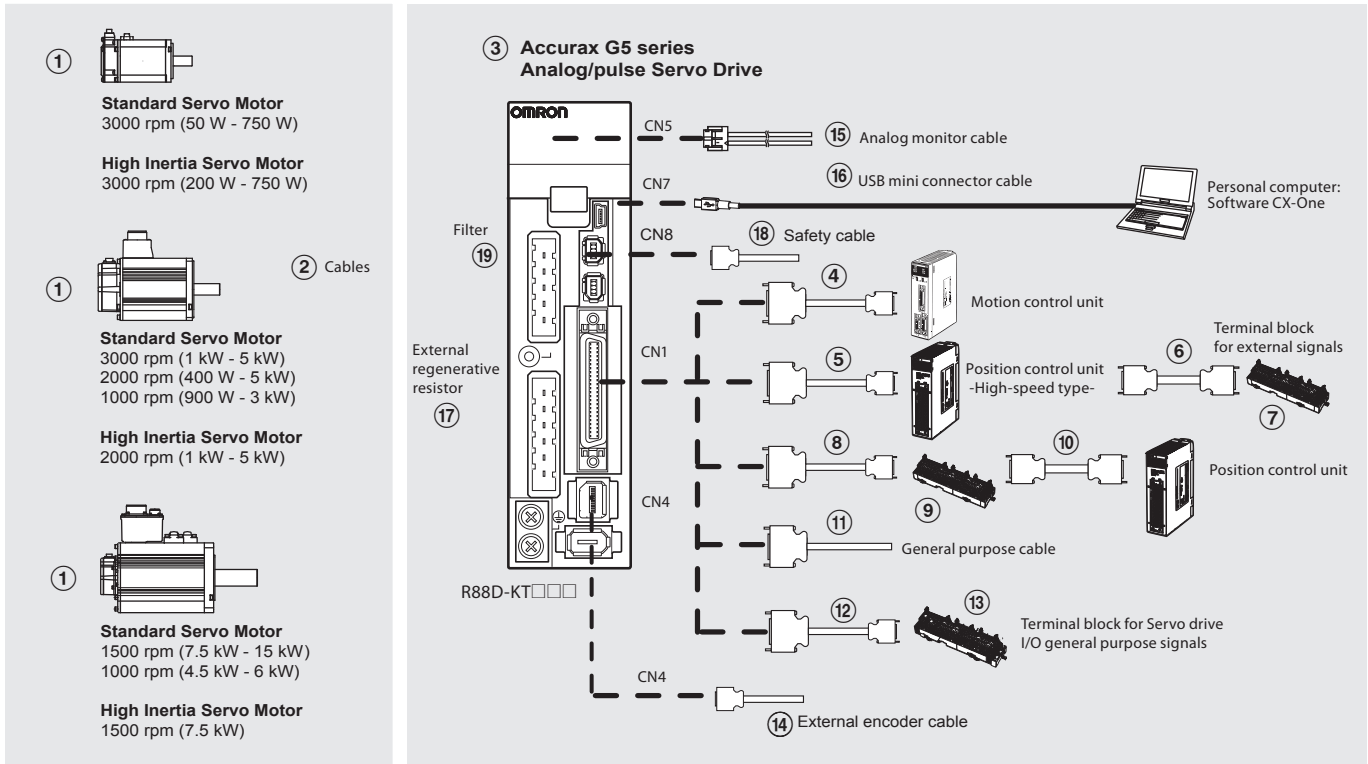
Specifications	Model
External encoder connector (for CN4)	R88A-CNK41L
Safety I/O signal connector (for CN8)	R88A-CNK81S

**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

**Ordering information**

**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 chapter for servomotor, motor cables or connectors selection

**Servo drives**

Symbol	Specifications		Servo drive models <sup>1</sup>	① Compatible Accurax G5 series rotary servo motors		
				Standard models	High inertia models	
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)-□	R88M-KH20030(H/T)-□	
		400 W	R88D-KT04H	R88M-K40030(H/T)-□	R88M-KH40030(H/T)-□	
		750 W	R88D-KT08H	R88M-K75030(H/T)-□	R88M-KH75030(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)-□	-	
		3 phase 400 VAC	600 W	R88D-KT06F	R88M-K40020(F/C)-□ R88M-K60020(F/C)-□	-
			1.0 kW	R88D-KT10F	R88M-K75030(F/C)-□ R88M-K1K020(F/C)-□	R88M-KH1K020(F/C)-□
			1.5 kW	R88D-KT15F	R88M-K1K030(F/C)-□ R88M-K1K530(F/C)-□ R88M-K1K520(F/C)-□ R88M-K90010(F/C)-□	-
			2.0 kW	R88D-KT20F	R88M-K2K030(F/C)-□ R88M-K2K020(F/C)-□	R88M-KH2K020(F/C)-□
	3.0 kW		R88D-KT30F	R88M-K3K030(F/C)-□ R88M-K3K020(F/C)-□	R88M-KH3K020(F/C)-□	
	5.0 kW		R88D-KT50F	R88M-K4K030(F/C)-□ R88M-K5K030(F/C)-□ R88M-K4K020(F/C)-□ R88M-K5K020(F/C)-□	R88M-KH4K020(F/C)-□ R88M-KH5K020(F/C)-□	
	7.5 kW		R88D-KT75F	R88M-K4K510C-□ R88M-K3K010(F/C)-□ R88M-K6K010C-□	-	
	15 kW		R88D-KT150F	R88M-K7K515C-□ R88M-K11K015C-□ R88M-K15K015C-□	R88M-KH7K515C-□	

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

Control cables (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 axes)	Motion control units CS1W-MC221 CS1W-MC421	1 m	R88A-CPG001M2	
			2 m	R88A-CPG002M2	
			3 m	R88A-CPG003M2	
⑤	Control cable (line-driver output for 1 axis)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434	1 m	XW2Z-100J-G9	
			5 m	XW2Z-500J-G9	
			10 m	XW2Z-10MJ-G9	
	Control cable (open-collector output for 1 axis)	Position control units (high-speed type) CJ1W-NC214 CJ1W-NC414	1 m	XW2Z-100J-G13	
			3 m	XW2Z-300J-G13	
	Control cable (line-driver output for 2 axes)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434	1 m	XW2Z-100J-G1	
			5 m	XW2Z-500J-G1	
			10 m	XW2Z-10MJ-G1	
	Control cable (open-collector output for 2 axes)	Position control units (high-speed type) CJ1W-NC214 CJ1W-NC414	1 m	XW2Z-100J-G5	
			3 m	XW2Z-300J-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
	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)		-	XW2B-20G4	
	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	-	XW2B-20J6-1B (1 axis)	
			-	XW2B-40J6-2B (2 axes)	
		Position control units CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3 or C200HW-NC213/413	-	XW2B-20J6-3B (1 axis)	
			-	XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)	
		CQM1H-PLB21 or CQM1-CPU43 CJ1M-CPU21/22/23	-		
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	5 m	R88A-CRKM005SR-E
		10 m	R88A-CRKM010SR-E
		20 m	R88A-CRKM020SR-E

## Analog monitor (CN5)

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

## USB personal computer cable (CN7)

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

## Filters

Symbol	Applicable servodrive	Filter model	Manufacturer	Rated current	Leakage current	Rated voltage
⑰	R88D-KT01H, R88D-KT02H	R88A-FIK102-RE	Rasmi Electronics Ltd	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	400 VAC three-phase
	R88D-KT06F, R88D-KT10F, R88D-KT15F	R88A-FIK304-RE		4 A	0.3 mA / 32 mA <sup>1</sup>	
	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		–	–	

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

## 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 (CN8)

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

## 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 packaging including CX-Drive 2.10 or higher	CX-ONE



**Austria**

Tel: +43 (0) 2236 377 800  
[www.industrial.omron.at](http://www.industrial.omron.at)

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Tel: +32 (0) 2 466 24 80  
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Tel: +47 (0) 22 65 75 00  
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Tel: +46 (0) 8 632 35 00  
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Tel: +41 (0) 41 748 13 13  
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