OMRON
AUTOMATION & SAFETY

G5 Series Servo System

Extreme mechatronics meets X-Stream Automation

» Sub micron precision and ms settling time

» Motion network 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. The G5 Series 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.

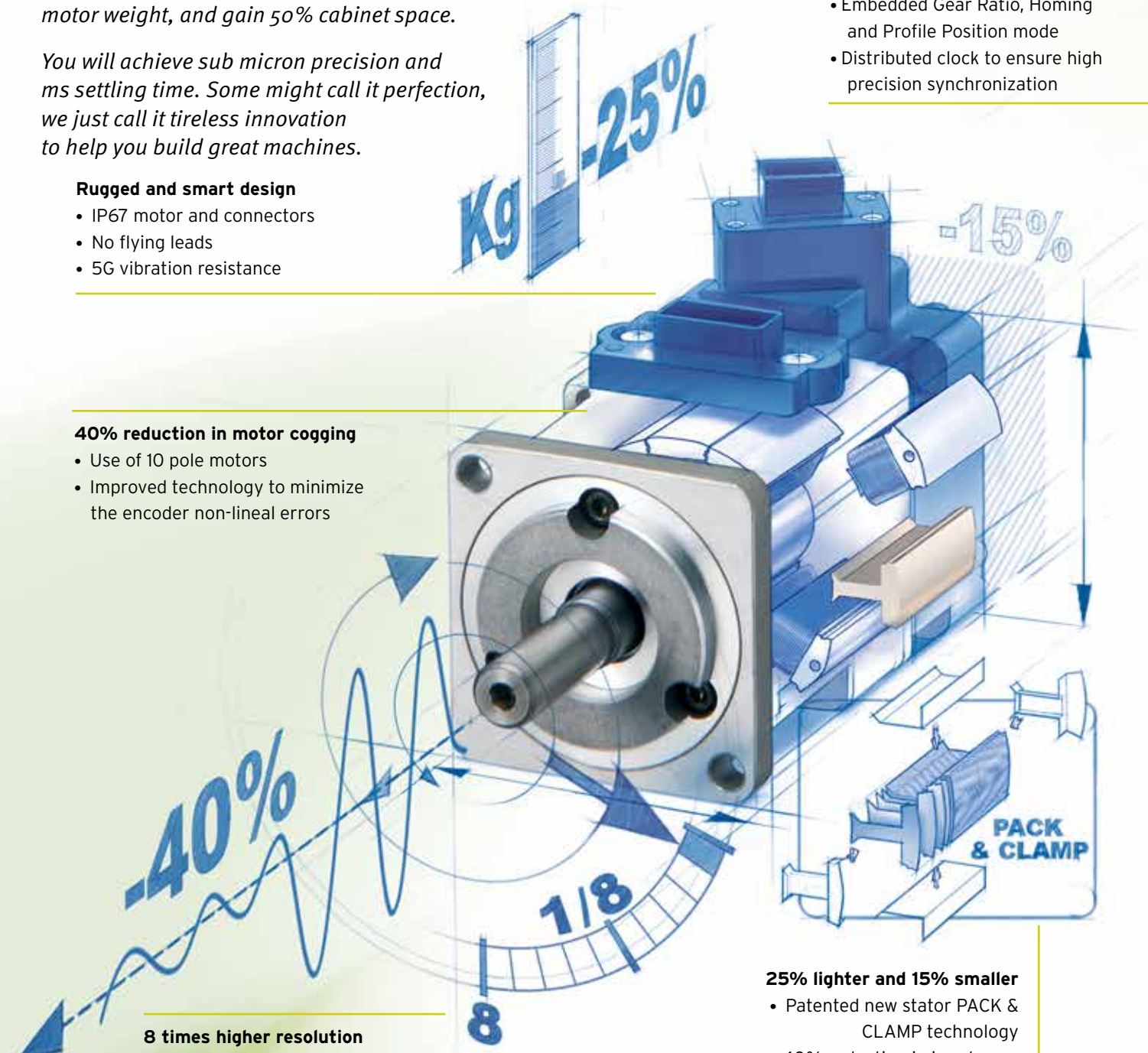
You will achieve sub micron precision and ms settling time. Some might call it perfection, we just call it tireless innovation to help you build great machines.

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 synchronization

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-lineal errors

8 times higher resolution

- 20 bit encoder
- Faster processor

25% lighter and 15% smaller

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

Up to 50% cabinet size reduction

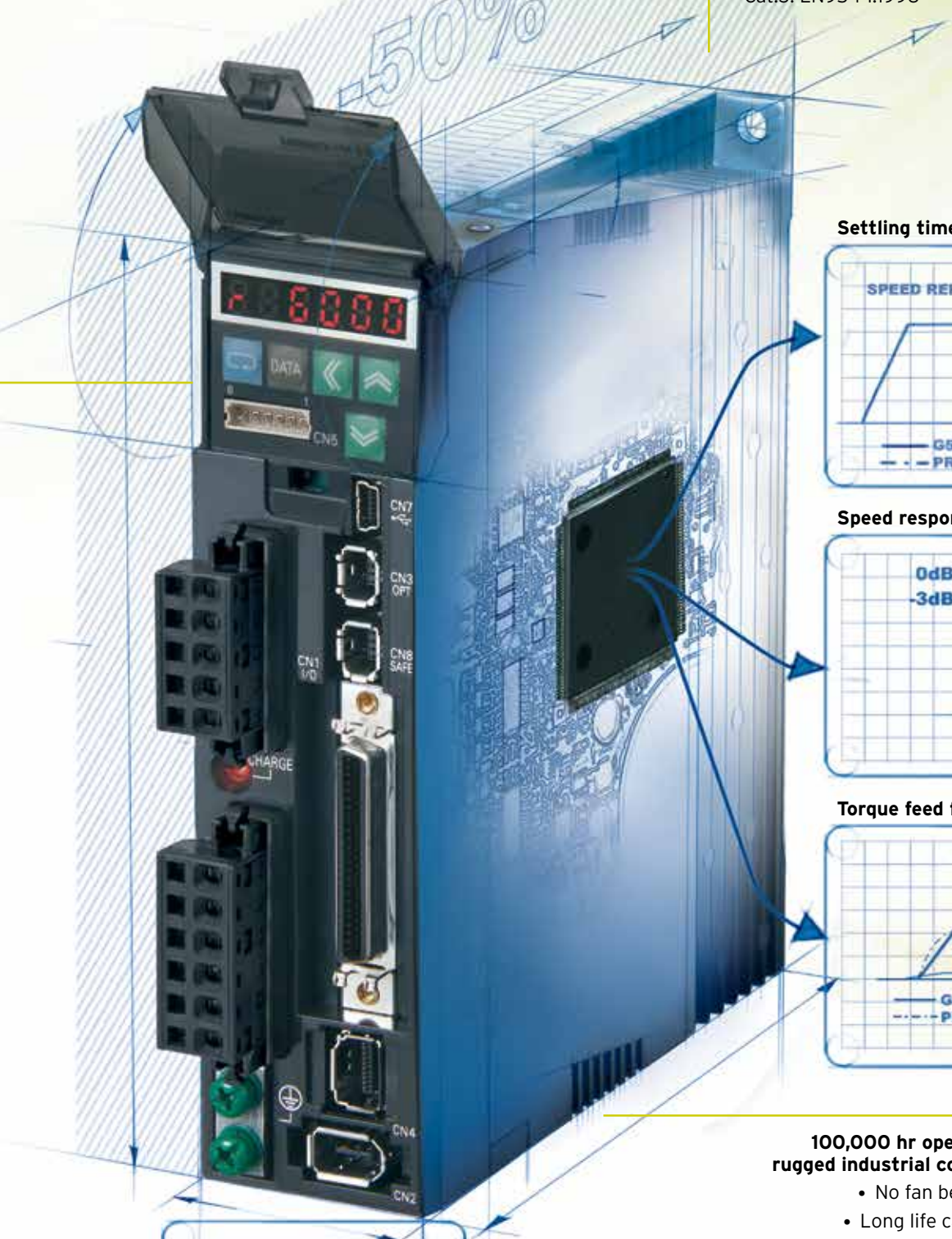
- Up to 40% smaller drive
- Extra 10% saving thanks to side by side mounting

Safety conformance

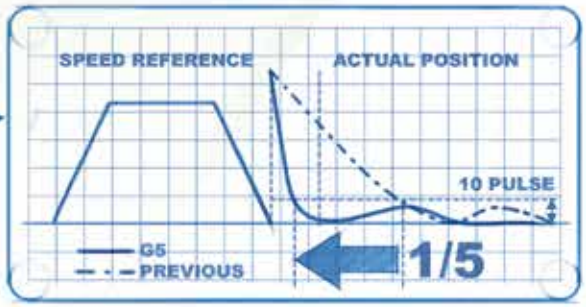
- PL-d according ISO13849-1:2008
- STO: IEC61800-5-2:2007
- SIL2 according to EN61508:2001
- Cat.3: EN954-1:1996

Fast & accurate

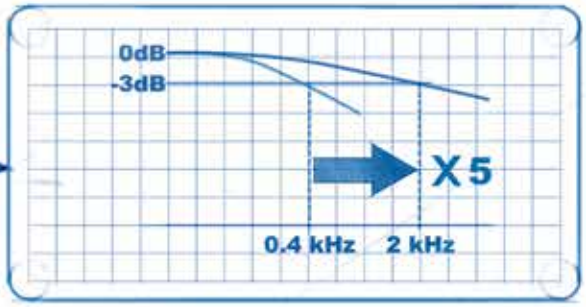
- 5 times faster settling time -0~2 ms
- 2 kHz speed response
- Torque feed forward reduces following error



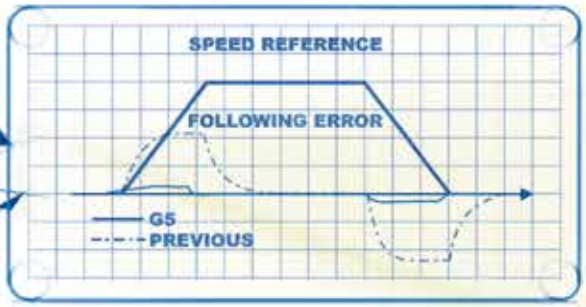
Settling time



Speed response



Torque feed forward

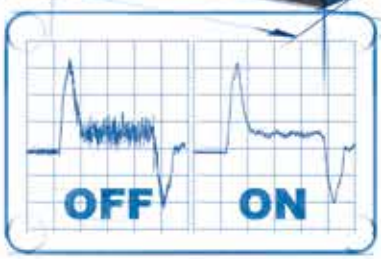


100,000 hr operation in rugged industrial conditions

- No fan below 1 kW
- Long life capacitors

Load vibration suppression

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



Vibration suppression

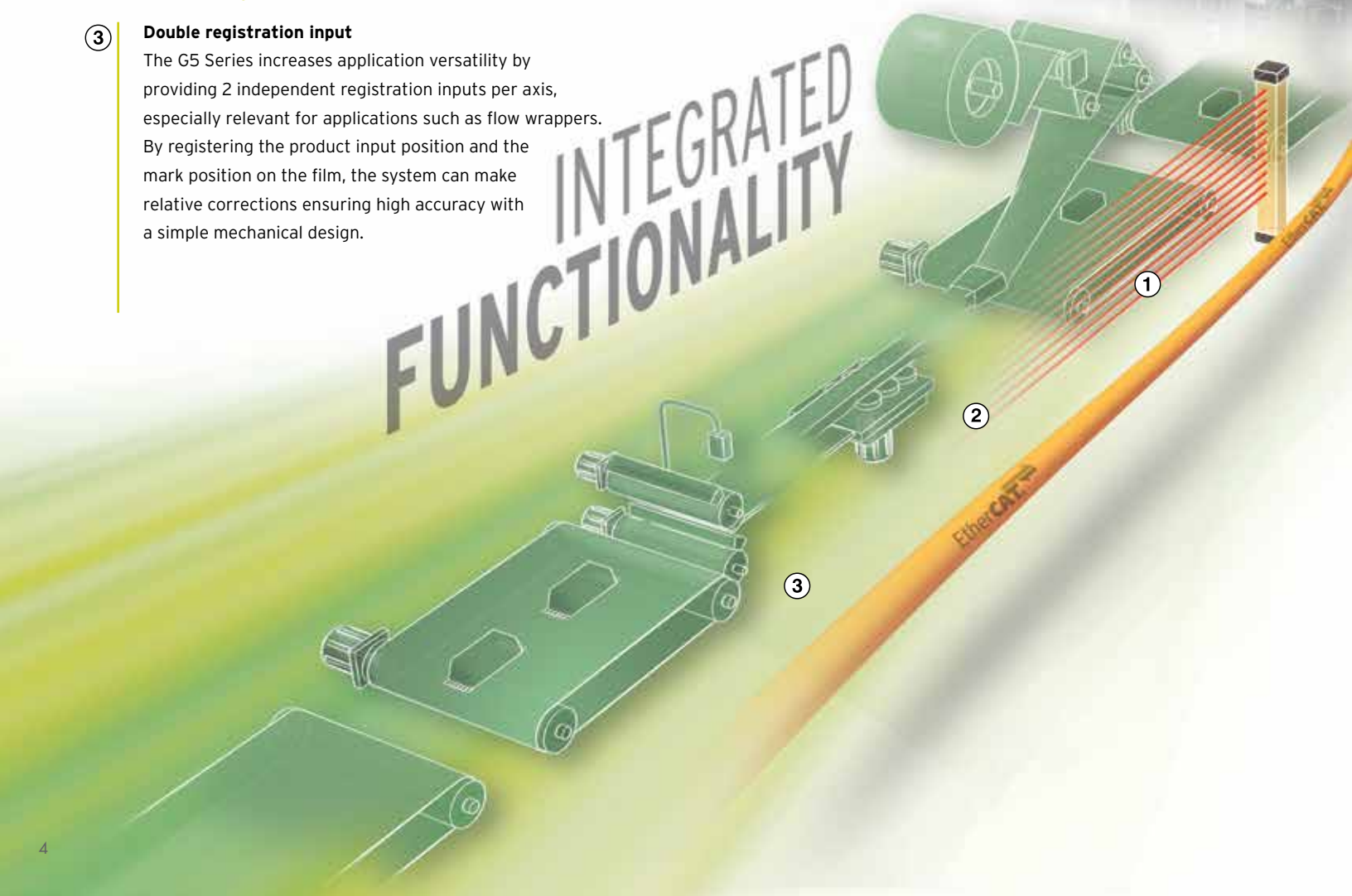
...meets X-Stream Automation

The G5 Series 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 synchronization between all servos with less than 1µ jitter. The G5 Series 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. Up to 8 servo drives can be connected to a single safety relay, saving hardware and wiring costs.

2 **Full closed loop**
The G5 Series 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**
The G5 Series 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.



NJ Series and NX Series Controller
NS HMI
Ethernet
EtherCAT
Open connectivity
• EtherCAT (built-in)
• DeviceNet
• EtherNet/IP (built-in)
• PROFIBUS
• PROFINET
ETHERNET CONNECTIVITY
One software - One connection
• Full access to all devices from one connection
• One software for machine control programming and system setup
Ethernet
INTUITIVE SOFTWARE
CONFIGURATION
Security
Field devices
Motion axis
Network
Controller
PROGRAMMING
Ladder
Structured text
Function Blocks
CAM editor
MONITORING
Trending, logging & tracing
3D Motion simulation
ESI files
Tag Data base
IEC progra-mming
PLCopen FB motion
Event log Database
PROJECT
Sysmac Studio

OMRON

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

G5 Series Servo System

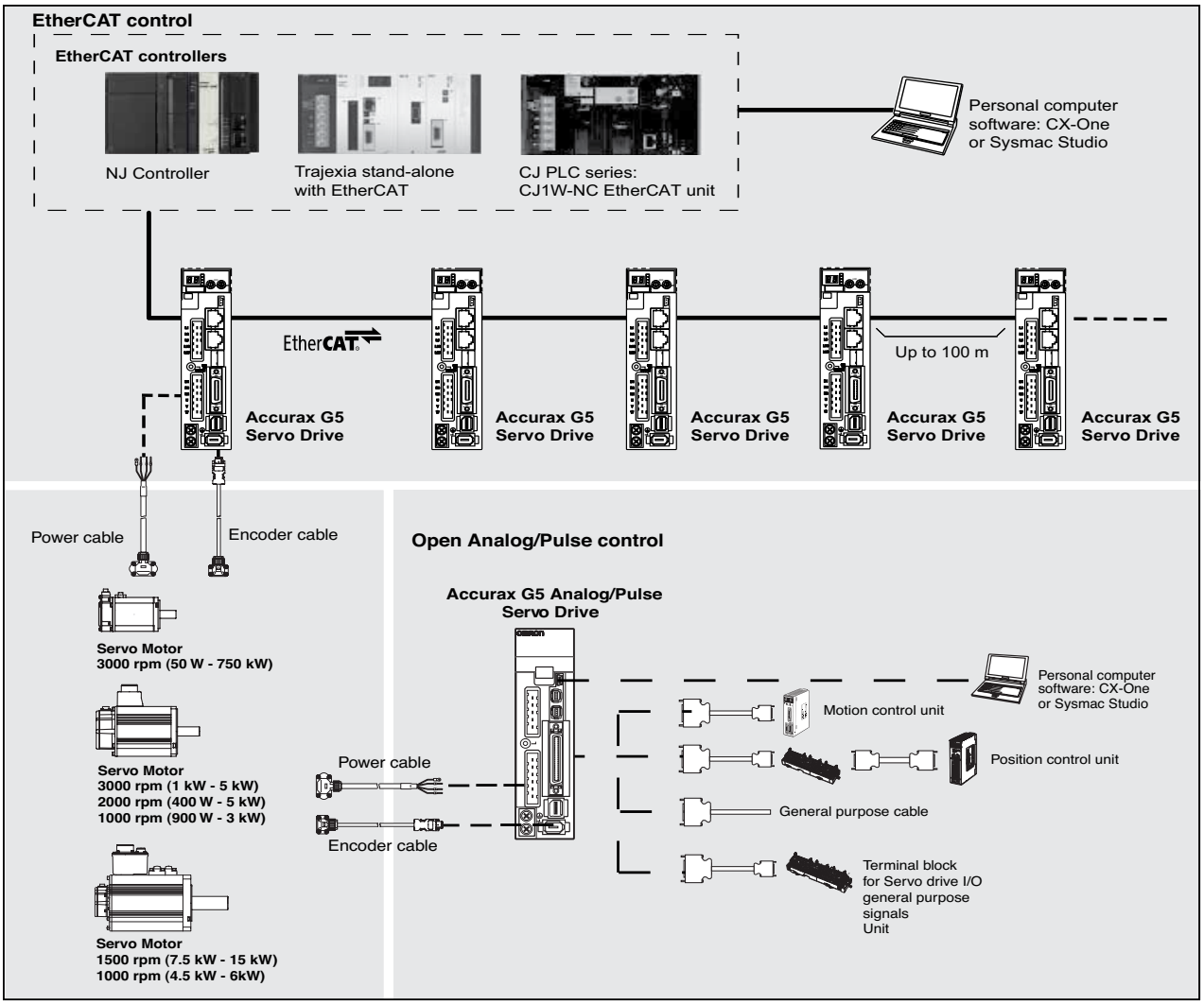
Accurate motion control in a compact size servo drive family. EtherCAT and safety built-in.

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

Ratings

- 120 VAC Single-phase 50 W to 400 W
- 230 VAC Single-phase 50 W to 1.5 kW
- 230 VAC Three-phase 2 kW to 5 kW
- 460 VAC Three-phase 600 W to 15 kW

System Configuration



Servo Motor Type Designation

R88M-K05030H-BOS2

G5 Series servo motor

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
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

Voltage and encoder specifications

L: 120 V and 20-bit incremental encoder

S: 120 V and 17-bit absolute encoder

H: 230 V and 20-bit incremental encoder

T: 230 V and 17-bit absolute encoder

F: 460 V and 20-bit incremental encoder

C: 460 V and 17-bit absolute encoder

Brake specifications

Blank	No brake
B	Brake

Oil seal specifications

Blank	No oil seal
O	Oil seal

Shaft end specifications

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

Servo Drive Type Designation

R88D-KN01H-ECT

G5 Series servo drive

Drive Type

T: Analog/Pulse type

N: Network type

Capacity and Voltage

Voltage	Code	Output
120 V	A5L	50 W
	01L	100 W
	02L	200 W
	04L	400 W
230 V	01H	100 W
	02H	200 W
	04H	400 W
	08H	750 W
	10H	1 kW
	15H	1.5 kW
	20H	2.0 kW
	30H	3.0 kW
	50H	5.0 kW
	75H	7.5 kW
460 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

Model

Blank: Analog/Pulse type

ECT: EtherCAT comms

ML2: MECHATROLINK-II comms

Servo Motor/Servo Drive Combination

Servo System Compatibility

G5 rotary servo motor						G5 servo drive models		
Appearance	Voltage	Speed	Rated torque	Capacity	Model	EtherCAT	Analog/Pulse	MECHATROLINK-II
	120 V	3000 min^{-1}	0.16 N•m	50 W	R88M-K05030(H/T)-□	R88D-KNA5L-ECT	R88D-KTA5L	R88D-KNA5L-ML2
			0.32 N•m	100 W	R88M-K10030(L/S)-□	R88D-KN01L-ECT	R88D-KT01L	R88D-KN01L-ML2
			0.64 N•m	200 W	R88M-K20030(L/S)-□	R88D-KN02L-ECT	R88D-KT02L	R88D-KN02L-ML2
			1.3 N•m	400 W	R88M-K40030(L/S)-□	R88D-KN04L-ECT	R88D-KT04L	R88D-KN04L-ML2
	230 V	3000 min^{-1}	0.16 N•m	50 W	R88M-K05030(H/T)-□	R88D-KN01H-ECT	R88D-KT01H	R88D-KN01H-ML2
			0.32 N•m	100 W	R88M-K10030(H/T)-□	R88D-KN01H-ECT	R88D-KT01H	R88D-KN01H-ML2
			0.64 N•m	200 W	R88M-K20030(H/T)-□	R88D-KN02H-ECT	R88D-KT02H	R88D-KN02H-ML2
			1.3 N•m	400 W	R88M-K40030(H/T)-□	R88D-KN04H-ECT	R88D-KT04H	R88D-KN04H-ML2
			2.4 N•m	750 W	R88M-K75030(H/T)-□	R88D-KN08H-ECT	R88D-KT08H	R88D-KN08H-ML2
			3.18 N•m	1000 W	R88M-K1K030(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
			4.77 N•m	1500 W	R88M-K1K530(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
			6.37 N•m	2000 W	R88M-K2K030(H/T)-□	R88D-KN20H-ECT	R88D-KT20H	R88D-KN20H-ML2
			9.55 N•m	3000 W	R88M-K3K030(H/T)-□	R88D-KN30H-ECT	R88D-KT30H	R88D-KN30H-ML2
			12.7 N•m	4000 W	R88M-K4K030(H/T)-□	R88D-KN50H-ECT	R88D-KT50H	R88D-KN50H-ML2
			15.9 N•m	5000 W	R88M-K5K030(H/T)-□	R88D-KN50H-ECT	R88D-KT50H	R88D-KN50H-ML2
	460 V	3000 min^{-1}	2.39 N•m	750 W	R88M-K75030(F/C)-□	R88D-KN10F-ECT	R88D-KT10F	R88D-KN10F-ML2
			3.18 N•m	1000 W	R88M-K1K030(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
			4.77 N•m	1500 W	R88M-K1K530(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
			6.37 N•m	2000 W	R88M-K2K030(F/C)-□	R88D-KN20F-ECT	R88D-KT20F	R88D-KN20F-ML2
			9.55 N•m	3000 W	R88M-K3K030(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
			12.7 N•m	4000 W	R88M-K4K030(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
			15.9 N•m	5000 W	R88M-K5K030(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
	230 V	2000 min^{-1}	4.77 N•m	1000 W	R88M-K1K020(H/T)-□	R88D-KN10H-ECT	R88D-KT10H	R88D-KN10H-ML2
			7.16 N•m	1500 W	R88M-K1K520(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
			9.55 N•m	2000 W	R88M-K2K020(H/T)-□	R88D-KN20H-ECT	R88D-KT20H	R88D-KN20H-ML2
			14.3 N•m	3000 W	R88M-K3K020(H/T)-□	R88D-KN30H-ECT	R88D-KT30H	R88D-KN30H-ML2
			19.1 N•m	4000 W	R88M-K4K020(H/T)-□	R88D-KN50H-ECT	R88D-KT50H	R88D-KN50H-ML2
			23.9 N•m	5000 W	R88M-K5K020(H/T)-□	R88D-KN50H-ECT	R88D-KT50H	R88D-KN50H-ML2
	460 V	2000 min^{-1}	1.91 N•m	400 W	R88M-K40020(F/C)-□	R88D-KN06F-ECT	R88D-KT06F	R88D-KN06F-ML2
			2.86 N•m	600 W	R88M-K60020(F/C)-□	R88D-KN06F-ECT	R88D-KT06F	R88D-KN06F-ML2
			4.77 N•m	1000 W	R88M-K1K020(F/C)-□	R88D-KN10F-ECT	R88D-KT10F	R88D-KN10F-ML2
			7.16 N•m	1500 W	R88M-K1K520(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
			9.55 N•m	2000 W	R88M-K2K020(F/C)-□	R88D-KN20F-ECT	R88D-KT20F	R88D-KN20F-ML2
			14.3 N•m	3000 W	R88M-K3K020(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
			19.1 N•m	4000 W	R88M-K4K020(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
			23.9 N•m	5000 W	R88M-K5K020(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
		1500 min^{-1}	47.8 N•m	7500 W	R88M-K7K515C-□	R88D-KN75F-ECT	R88D-KT75F	–
			70.0 N•m	11000 W	R88M-K11K015C-□	R88D-KN150F-ECT	R88D-KT150F	–
			95.5 N•m	15000 W	R88M-K15K015C-□	R88D-KN150F-ECT	R88D-KT150F	–
	230 V	1000 min^{-1}	8.59 N•m	900 W	R88M-K90010(H/T)-□	R88D-KN15H-ECT	R88D-KT15H	R88D-KN15H-ML2
			19.1 N•m	2000 W	R88M-K2K010(H/T)-□	R88D-KN30H-ECT	R88D-KT30H	R88D-KN30H-ML2
			28.7 N•m	3000 W	R88M-K3K010(H/T)-□	R88D-KN50H-ECT	R88D-KT50H	R88D-KN50H-ML2
	460 V	1000 min^{-1}	8.59 N•m	900 W	R88M-K90010(F/C)-□	R88D-KN15F-ECT	R88D-KT15F	R88D-KN15F-ML2
			19.1 N•m	2000 W	R88M-K2K010(F/C)-□	R88D-KN30F-ECT	R88D-KT30F	R88D-KN30F-ML2
			28.7 N•m	3000 W	R88M-K3K010(F/C)-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
			43.0 N•m	4500 W	R88M-K4K510C-□	R88D-KN50F-ECT	R88D-KT50F	R88D-KN50F-ML2
			57.3 N•m	6000 W	R88M-K6K010C-□	R88D-KN75F-ECT	R88D-KT75F	–

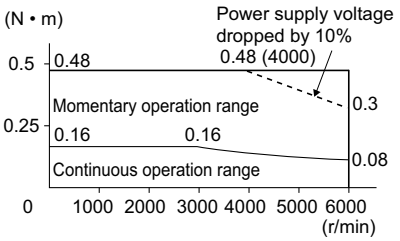
Servo Motor Specifications

Servo motors 3000 r/min rated speed driven with single-phase, 120 V servo drive

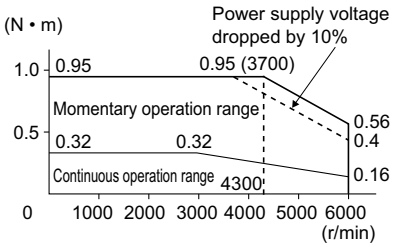
Servo drive input voltage			Single-phase, 120 V			
Applicable servo motor R88M-K□		20-bit incremental encoder	05030H-□	10030L-□	20030L-□	40030L-□
		17-bit absolute encoder	05030T-□	10030S-□	20030S-□	40030S-□
Rated output		W	50	100	200	400
Rated torque		N•m	0.16	0.32	0.64	1.3
Instantaneous peak torque		N•m	0.48	0.95	1.91	3.8
Rated current		A (rms)	1.1	1.6	2.5	4.6
Instantaneous max. current		A (rms)	4.7	6.9	10.6	19.5
Rated speed		r/min	3,000			
Max. speed		r/min	6,000			
Torque constant		N•m/ A (rms)	0.11±10%	0.14±10%	0.20±10%	0.21±10%
Rotor moment of inertia (JM)		$kg•m^2x10^{-4}$ (without brake)	0.025	0.051	0.14	0.26
		$kg•m^2x10^{-4}$ (with brake)	0.027	0.054	0.16	0.28
Allowable load moment of inertia (JL)		Multiple of (JM)	30 times the rotor inertia max.			
Rated power rate		kW/s (without brake)	10.1	19.8	28.9	62.3
		kW/s (with brake)	9.4	18.7	25.3	57.8
Allowable radial load		N	68	68	245	245
Allowable thrust load		N	58	58	98	98
Approx. weight		kg (without brake)	0.31	0.45	0.78	1.2
		kg (with brake)	0.51	0.65	1.2	1.6
Brake specifications	Rated voltage		24 VDC±10%			
	Holding brake moment of inertia (J)	$kg•m^2x10^{-4}$	0.0002	0.0002	0.0018	0.0018
	Power consumption (at 20°C)	W	7	7	9	9
	Current consumption (at 20°C)	A	0.3	0.3	0.36	0.36
	Static friction torque	N•m (minimum)	0.29	0.29	1.27	1.27
	Rise time for holding torque	ms (max.)	35	35	50	50
	Release time	ms (max.)	20	20	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 (RH)		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 and motor and encoder pins)			
	Vibration resistance		Vibration acceleration 49 m/s^2			
	Mounting		Flange-mounted			

Torque-speed characteristics

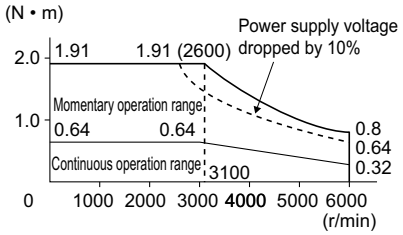
R88M-K05030(H/T)-□ (50 W)



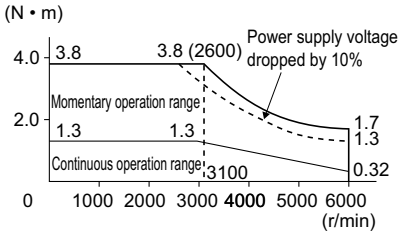
R88M-K10030(L/S)-□ (100 W)



R88M-K20030(L/S)-□ (200 W)



R88M-K40030(L/S)-□ (400 W)



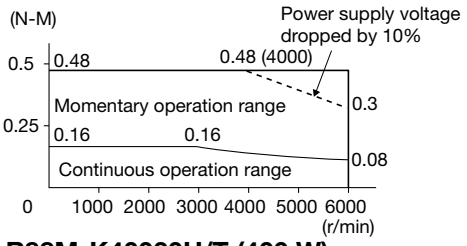
Servo Motor Specifications

Servo motors 3000 r/min rated speed driven with single-phase, 230 V servo drive

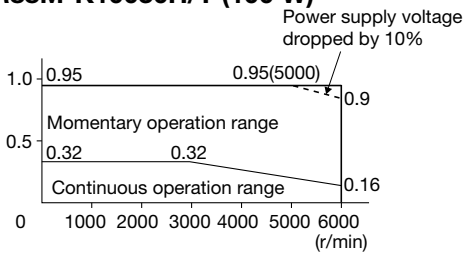
Servo drive input voltage			Single-phase, 230 V						
Servo motor model R88M-K□		20-bit incremental encoder	05030H-□	10030H-□	20030H-□	40030H-□	75030H-□	1K030H-□	1K530H-□
		17-bit absolute encoder	05030T-□	10030T-□	20030T-□	40030T-□	75030T-□	1K030T-□	1K530T-□
Rated output		W	50	100	200	400	750	1000	1500
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)	1.2	1.1	1.5	2.4	4.1	6.6	8.2
Instantaneous max. current		A (rms)	5.1	4.7	6.5	10.2	17.4	28	35
Rated speed		r/min	3,000						
Max. speed		r/min	6,000					5,000	
Torque constant		N•m/ A (rms)	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•m²x10⁻⁴ (without brake)	0.025	0.051	0.14	0.26	0.87	2.03	2.84
		kg•m²x10⁻⁴ (with brake)	0.027	0.054	0.16	0.28	0.97	2.35	3.17
Allowable load moment of inertia (JL)		Multiple of (JM)	30				20	15	
Rated power rate		kW/s (without brake)	10.1	19.9	29.0	62.4	65.6	49.8	80.1
		kW/s (with brake)	9.4	18.8	25.4	58	58.8	43	71.8
Allowable radial load		N	68		245		490		
Allowable thrust load		N	58		98		196		
Approx. mass		kg (without brake)	0.32	0.47	0.82	1.2	2.3	3.5	4.4
		kg (with brake)	0.53	0.68	1.3	1.7	3.1	4.5	5.4
Brake specifications	Rated voltage		24 VDC±10%						
	Holding brake moment of inertia (J)	kg•m²x10⁻⁴	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 (RH)		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/s²						
	Mounting		Flange-mounted						

Torque-speed characteristics

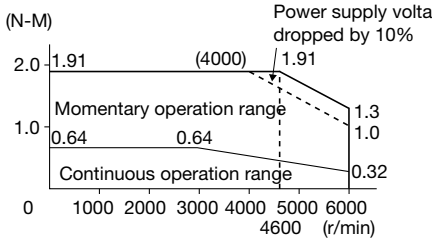
R88M-K05030H/T (50 W)



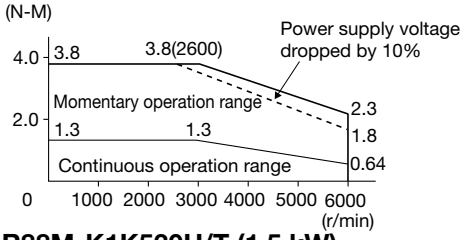
R88M-K10030H/T (100 W)



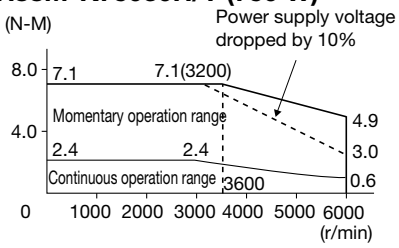
R88M-K20030H/T (200 W)



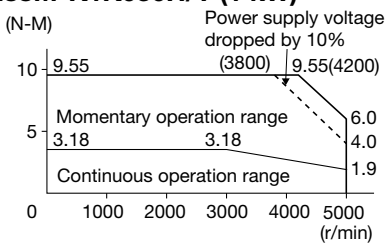
R88M-K40030H/T (400 W)



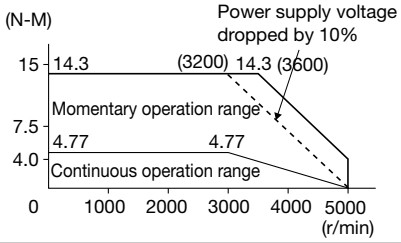
R88M-K75030H/T (750 W)



R88M-K1K030H/T (1 kW)



R88M-K1K530H/T (1.5 kW)



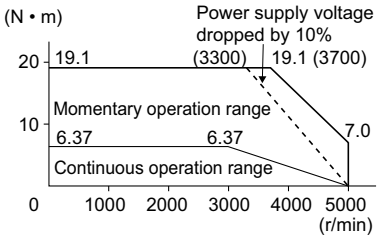
Servo Motor Specifications

Servo motors 3000 r/min rated speed driven with three-phase, 230 V servo drive

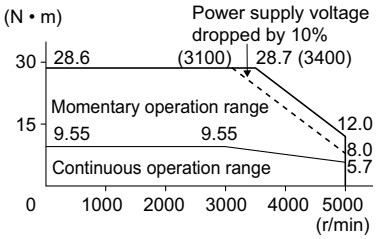
Servo drive input voltage			Three-phase, 230 V			
Applicable servo motor R88M-□		20-bit incremental encoder	K2K030H-□	K3K030H-□	K4K030H-□	K5K030H-□
		17-bit absolute encoder	K2K030T-□	K3K030T-□	K4K030T-□	K5K030T-□
Rated output		kW	2	3	4	5
Rated torque		N•m	6.37	9.55	12.7	15.9
Instantaneous peak torque		N•m	19.1	28.6	38.2	47.7
Rated current		A (rms)	11.3	18.1	19.6	24
Instantaneous max. current		A (rms)	48	77	83	102
Rated speed		r/min	3,000			
Max. speed		r/min	5,000			
Torque constant		N•m/ A (rms)	0.44	0.41	0.49	0.49
Rotor moment of inertia (JM)		$kg•m^2x10^{-4}$ (without brake)	3.68	6.5	12.9	17.4
		$kg•m^2x10^{-4}$ (with brake)	4.01	7.85	14.2	18.6
Allowable load moment of inertia (JL)		Multiple of (JM)	15 times the rotor inertia max.			
Rated power rate		kW/s (without brake)	110	140	126	146
		kW/s (with brake)	101	116	114	136
Allowable radial load		N	490	490	784	784
Allowable thrust load		N	196	196	343	343
Approx. weight		kg (without brake)	5.3	8.3	11	14
		kg (with brake)	6.3	9.4	12.6	16
Brake specifications	Rated voltage		24 VDC±10%			
	Holding brake moment of inertia (J)	$kg•m^2x10^{-4}$	0.33	0.33	1.35	1.35
	Power consumption (at 20°C)	W	19	19	22	22
	Current consumption (at 20°C)	A	0.81±10%	0.81±10%	0.90±10%	0.90±10%
	Static friction torque	N•m (minimum)	7.8	11.8	16.1	16.1
	Rise time for holding torque	ms (max.)	50	80	110	110
	Release time	ms (max.)	15	15	50	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 (RH)		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 and motor and encoder pins)			
	Vibration resistance		Vibration acceleration 49 m/s^2			
	Mounting		Flange-mounted			

Torque-speed characteristics

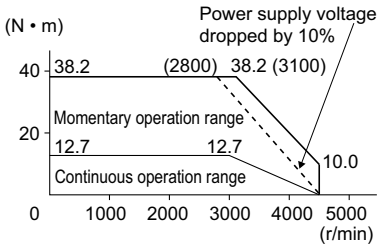
R88M-K2K030(H/T)-□ (2 kW)



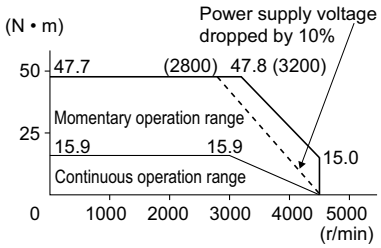
R88M-K3K030(H/T)-□ (3 kW)



R88M-K4K030(H/T)-□ (4 kW)



R88M-K5K030(H/T)-□ (5 kW)



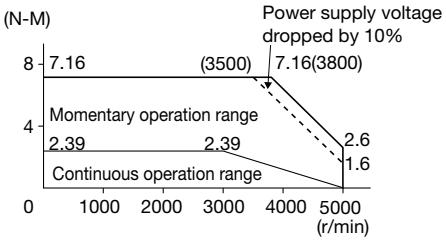
Servo Motor Specifications

Servo motors 3000 r/min rated speed driven with three-phase, 460 V servo drive

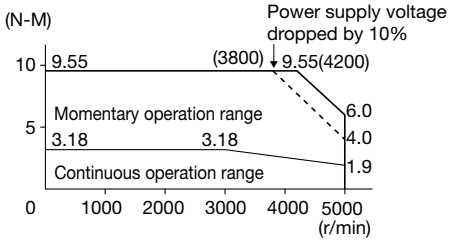
Servo drive input voltage			Three-phase, 460 V						
Servo motor model R88M-K□		20-bit incremental encoder	75030F-□	1K030F-□	1K530F-□	2K030F-□	3K030F-□	4K030F-□	5K030F-□
		17-bit absolute encoder	75030C-□	1K030C-□	1K530C-□	2K030C-□	3K030C-□	4K030C-□	5K030C-□
Rated output		W	750	1000	1500	2000	3000	4000	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		r/min	3,000						
Max. speed		r/min	5,000					4,500	
Torque constant		N•m/ A (rms)	0.78	0.75	0.89	0.87	0.81	0.98	
Rotor moment of inertia (JM)		$kg•m^2x10^{-4}$ (without brake)	1.61	2.03	2.84	3.68	6.5	12.9	17.4
		$kg•m^2x10^{-4}$ (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)	30						
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)	$kg•m^2x10^{-4}$	0.33						1.35
	Power consumption (at 20°C)	W	17	19				22	
	Current consumption (at 20°C)	A	0.70±10%	0.81±10%				0.90±10%	
	Static friction torque	N•m (minimum)	2.5	7.8			11.8	16.1	
	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 (RH)		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^2						
	Mounting		Flange-mounted						

Torque-speed characteristics

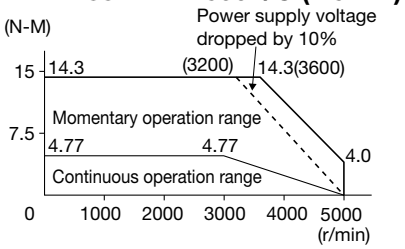
R88M-K75030F/C (750 W)



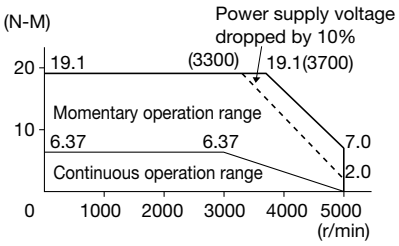
R88M-K1K030F/C (1 kW)



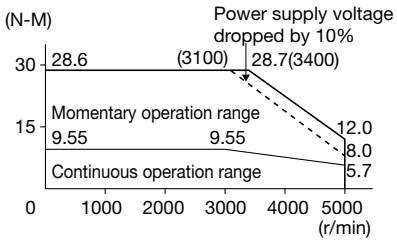
R88M-K1K530F/C (1.5 kW)



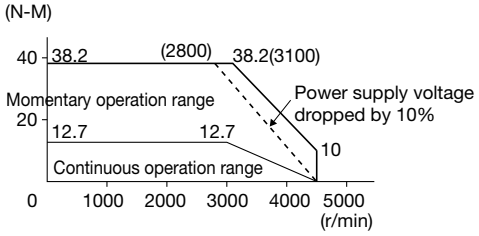
R88M-K2K030F/C (2 kW)



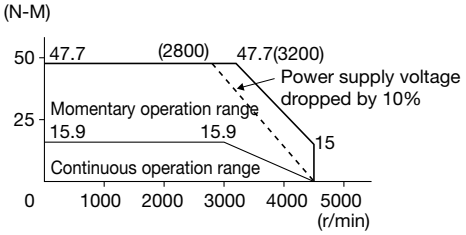
R88M-K3K030F/C (3 kW)



R88M-K4K030F/C (4 kW)



R88M-K5K030F/C (5 kW)



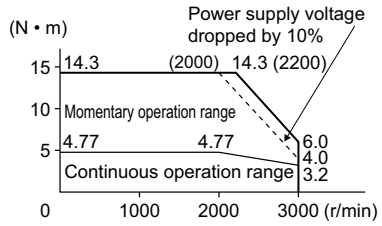
Servo Motor Specifications

Servo motors 2000 r/min rated speed driven with three-phase, 230 V servo drive

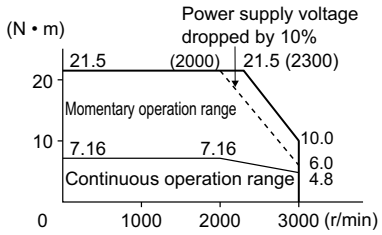
Servo drive input voltage			Three-phase, 230 V					
Applicable servo motor R88M-□		20-bit incremental encoder	K1K020H-□	K1K520H-□	K2K020H-□	K3K020H-□	K4K020H-□	K5K020H-□
		17-bit absolute encoder	K1K020T-□	K1K520T-□	K2K020T-□	K3K020T-□	K4K020T-□	K5K020T-□
Rated output		kW	1	1.5	2	3	4	5
Rated torque		N•m	4.77	7.16	9.55	14.3	19.1	23.9
Instantaneous peak torque		N•m	14.3	21.5	28.6	43	57.3	71.6
Rated current		A (rms)	5.7	9.4	11.5	17.4	21	25.9
Instantaneous max. current		A (rms)	24	40	49	74	89	110
Rated speed		r/min	2000					
Max. speed		r/min	3000					
Torque constant		N•m/ A (rms)	0.63	0.58	0.64	0.59	0.7	0.7
Rotor moment of inertia (JM)		$kg•m^2x10^{-4}$ (without brake)	4.6	6.7	8.72	12.9	37.6	48
		$kg•m^2x10^{-4}$ (with brake)	5.9	7.99	10	14.2	38.6	48.8
Allowable load moment of inertia (JL)		Multiple of (JM)	10 times the rotor inertia max.					
Rated power rate		kW/s (without brake)	49.5	76.5	105	159	97.1	119
		kW/s (with brake)	38.6	64.2	91.2	144	94.5	117
Allowable radial load		N	490	490	490	784	784	784
Allowable thrust load		N	196	196	196	343	343	343
Approx. weight		kg (without brake)	5.2	6.7	8	11	15.5	18.6
		kg (with brake)	6.7	8.2	9.5	12.6	18.7	21.8
Brake specifications	Rated voltage		24 VDC±10%					
	Holding brake moment of inertia (J)	$kg•m^2x10^{-4}$	1.35	1.35	1.35	1.35	4.7	4.7
	Power consumption (at 20°C)	W	14	19	19	22	31	31
	Current consumption (at 20°C)	A	0.59±10%	0.79±10%	0.79±10%	0.90±10%	1.3±10%	1.3±10%
	Static friction torque	N•m (minimum)	4.9	13.7	13.7	16.2	24.5	24.5
	Rise time for holding torque	ms (max.)	80	100	100	110	80	80
	Release time	ms (max.)	70	50	50	50	25	25
Basic specifications	Time rating		Continuous					
	Insulation class		Type F					
	Ambient operating/storage temperature		0 to +40 °C/ -20 to 85°C					
	Ambient operating/storage humidity (RH)		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 and motor and encoder pins)					
	Vibration resistance		Vibration acceleration 49 m/s^2					
	Mounting		Flange-mounted					

Torque-speed characteristics

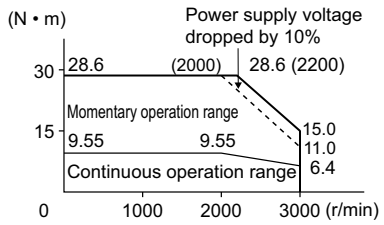
R88M-K1K020(H/T)-□ (1 kW)



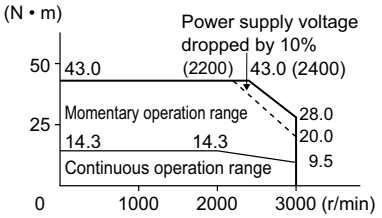
R88M-K1K520(H/T)-□ (1.5 kW)



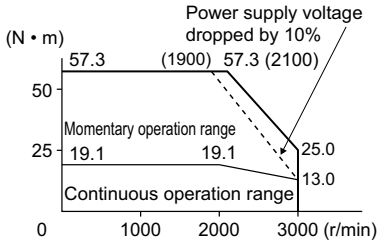
R88M-K2K020(H/T)-□ (2 kW)



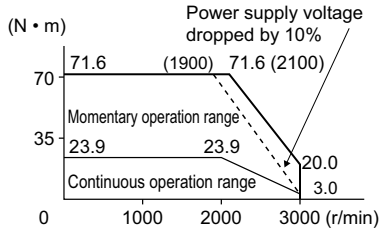
R88M-K3K020(H/T)-□ (3 kW)



R88M-K4K020(H/T)-□ (4 kW)



R88M-K5K020(H/T)-□ (5 kW)



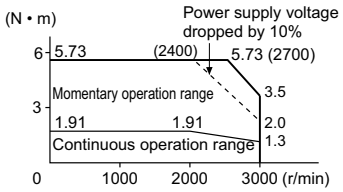
Servo Motor Specifications

Servo motors 2000 r/min rated speed driven with three-phase, 460 V servo drive

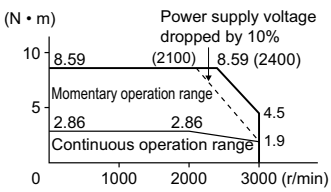
Servo drive input voltage			Three-phase, 460 V							
Applicable servo motor R88M-□		20-bit incremental encoder	40020F-□	60020F-□	K1K020F-□	K1K520F-□	K2K020F-□	K3K020F-□	K4K020F-□	K5K020F-□
		17-bit absolute encoder	40020C-□	60020C-□	K1K020C-□	K1K520C-□	K2K020C-□	K3K020C-□	K4K020C-□	K5K020C-□
Rated output		kW	0.4	0.6	1	1.5	2	3	4	5
Rated torque		N•m	1.91	2.86	4.77	7.16	9.55	14.3	19.1	23.9
Instantaneous peak torque		N•m	5.73	8.59	14.3	21.5	28.7	43	57.3	71.6
Rated current		A (rms)	1.2	1.5	2.8	4.7	5.9	8.7	10.6	13
Instantaneous max. current		A (rms)	4.9	6.5	12	20	25	37	45	55
Rated speed		r/min	2000							
Max. speed		r/min	3000							
Torque constant		N•m/ A (rms)	1.27	1.38	1.27	1.16	1.27	1.18	1.4	1.46
Rotor moment of inertia (JM)		$kg•m^2x10^{-4}$ (without brake)	1.61	2.03	4.6	6.7	8.72	12.9	37.6	48
		$kg•m^2x10^{-4}$ (with brake)	1.9	2.35	5.9	7.99	10	14.2	38.6	48.8
Allowable load moment of inertia (JL)		Multiple of (JM)	10 times the rotor inertia max.							
Rated power rate		kW/s (without brake)	22.7	40.3	49.5	76.5	105	159	97.1	119
		kW/s (with brake)	19.2	34.8	38.6	64.2	91.2	144	94.5	117
Allowable radial load		N	490	490	490	490	490	784	784	784
Allowable thrust load		N	196	196	196	196	196	343	343	343
Approx. weight		kg (without brake)	3.1	3.5	5.2	6.7	8	11	15.5	18.6
		kg (with brake)	4.1	4.5	6.7	8.2	9.5	12.6	18.7	21.8
Brake specifications	Rated voltage		24 VDC±10%							
	Holding brake moment of inertia (J)	$kg•m^2x10^{-4}$	1.35	1.35	1.35	1.35	1.35	1.35	4.7	4.7
	Power consumption (at 20°C)	W	17	17	14	19	19	22	31	31
	Current consumption (at 20°C)	A	0.70 ±10%	0.70 ±10%	0.59±10%	0.79±10%	0.79±10%	0.90±10%	1.3±10%	1.3±10%
	Static friction torque	N•m (minimum)	2.5	2.5	4.9	13.7	13.7	16.2	24.5	24.5
	Rise time for holding torque	ms (max.)	50	50	80	100	100	110	80	80
	Release time	ms (max.)	15	15	70	50	50	50	25	25
Basic specifications	Time rating		Continuous							
	Insulation class		Type F							
	Ambient operating/storage temperature		0 to +40 °C/ -20 to 85°C							
	Ambient operating/storage humidity (RH)		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 and motor and encoder pins)							
	Vibration resistance		Vibration acceleration 49 m/s^2							
	Mounting		Flange-mounted							

Torque-speed characteristics

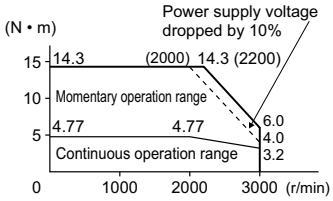
R88M-K40020F/C (400 W)



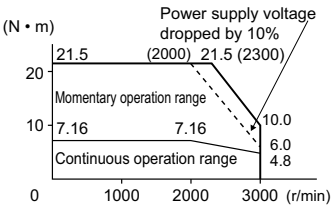
R88M-K60020F/C (600 W)



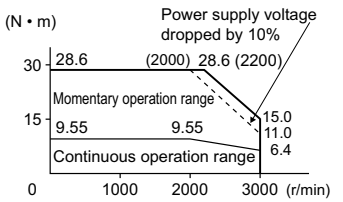
R88M-K1K020F/C (1 kW)



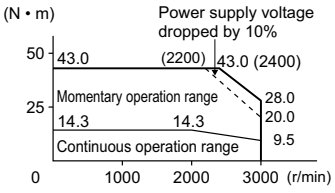
R88M-K1K520F/C (1.5 kW)



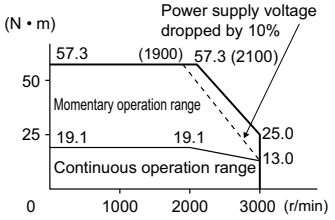
R88M-K2K020F/C (2 kW)



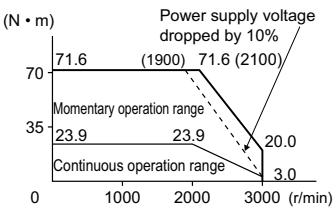
R88M-K3K0F/C (3 kW)



R88M-K4K020F/C (4 kW)



R88M-K5K020F/C (5 kW)



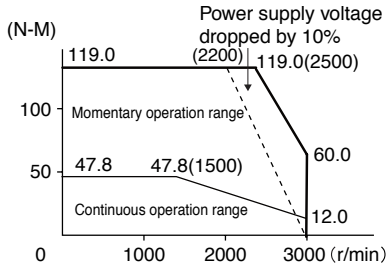
Servo Motor Specifications

Servo motors 1500 r/min rated speed driven with three-phase, 460 V servo drive

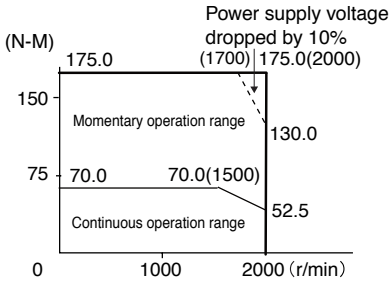
Servo drive input voltage			Three-phase, 230 V	Three-phase, 460 V		
Applicable servo motor R88M-K□		17-bit absolute encoder	K7K5015T-□	7K515C-□	11K015C-□	15K015C-□
Rated output		kW	7500	7500	11000	15000
Rated torque		N•m	47.8	47.8	70.0	95.5
Instantaneous peak torque		N•m	119.0	119.0	175.0	224.0
Rated current		A (rms)	44	22.0	27.1	33.1
Instantaneous max. current		A (rms)	165	83	101	118
Rated speed		r/min	1500			
Max. speed		r/min	3000	3000	2000	
Torque constant		N•m/ A (rms)	0.77	1.54	1.84	2.10
Rotor moment of inertia (JM)		kg•m^{2}x10^{-4} (without brake)	101	101	212	302
		kg•m^{2}x10^{-4} (with brake)	107	107	220	311
Allowable load moment of inertia (JL)		Multiple of (JM)	10 times the rotor inertia max.			
Rated power rate		kW/s (without brake)	226	226	231	302
		kW/s (with brake)	213	213	223	293
Allowable radial load		N	1176	1176	2254	2254
Allowable thrust load		N	490	490	686	686
Approx. weight		kg (without brake)	36.4	36.4	52.7	70.2
		kg (with brake)	40.4	40.4	58.9	76.3
Brake specifications	Rated voltage		24 VDC±10%			
	Holding brake moment of inertia (J)	kg•m^{2}x10^{-4}	4.7		7.1	7.1
	Power consumption (at 20°C)	W	34		26	26
	Current consumption (at 20°C)	A	1.4±10%		1.08±10%	1.08±10%
	Static friction torque	N•m (minimum)	58.8		100	100
	Rise time for holding torque	ms (max.)	150		300	300
	Release time	ms (max.)	50		140	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 (RH)		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^2			
	Mounting		Flange-mounted			

Torque-speed characteristics

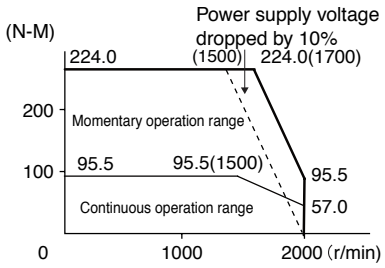
R88M-K7K515(T/C) (7.5 kW)



R88M-K11K015C (11 kW)



R88M-K15K015C (15 kW)



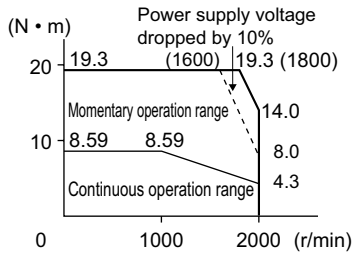
Servo Motor Specifications

Servo motors 1000 r/min rated speed driven with three-phase, 230 V or 460 V servo drive

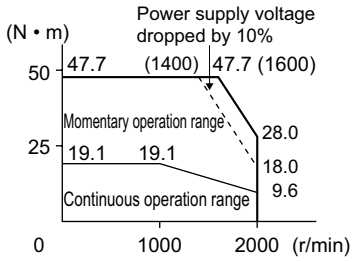
Servo drive input voltage			Three-phase, 230 V			Three-phase, 460 V			
Applicable servo motor R88M-□		20-bit incremental encoder	K90010H-□	K2K010H-□	K3K010H-□	K90010F-□	K2K010F-□	K3K010F-□	
		17-bit absolute encoder	K90010T-□	K2K010T-□	K3K010T-□	K90010C-□	K2K010C-□	K3K010C-□	K6K010C-□
Rated output		kW	0.9	2	3	0.9	2	3	6
Rated torque		N•m	8.59	19.1	28.7	8.59	19.1	28.7	57.3
Instantaneous peak torque		N•m	19.3	47.7	71.7	19.3	47.7	71.7	143.0
Rated current		A (rms)	7.6	17	22.6	3.8	8.5	11.3	19.4
Instantaneous max. current		A (rms)	24	60	80	12	30	40	74
Rated speed		r/min	1000						
Max. speed		r/min	2000						
Torque constant		N•m/ A (rms)	0.86	0.88	0.96	1.72	1.76	1.92	2.08
Rotor moment of inertia (JM)		kg•m²x10⁻⁴ (without brake)	6.7	30.3	48.4	6.7	30.3	48.4	101
		kg•m²x10⁻⁴ (with brake)	7.99	31.4	49.2	7.99	31.4	49.2	107
Allowable load moment of inertia (JL)		Multiple of (JM)	10 times the rotor inertia max.						
Rated power rate		kW/s (without brake)	110	120	170	110	120	170	325
		kW/s (with brake)	92.4	116	167	92.4	116	167	307
Allowable radial load		N	686	1176	1470	686	1176	1470	1764
Allowable thrust load		N	196	490	490	196	490	490	588
Approx. weight		kg (without brake)	6.7	14	20	6.7	14	20	36.4
		kg (with brake)	8.2	17.5	23.5	8.2	17.5	23.5	40.4
Brake specifications	Rated voltage		24 VDC±10%						
	Holding brake moment of inertia (J)	kg•m²x10⁻⁴	1.35	4.7	4.7	1.35	4.7	4.7	4.7
	Power consumption (at 20°C)	W	19	31	34	19	31	34	34
	Current consumption (at 20°C)	A	0.79±10%	1.3±10%	1.4±10%	0.79±10%	1.3±10%	1.4±10%	1.4±10%
	Static friction torque	N•m (minimum)	13.7	24.5	58.8	13.7	24.5	58.8	58.8
	Rise time for holding torque	ms (max.)	100	80	150	100	80	150	150
	Release time	ms (max.)	50	25	50	50	25	50	50
Basic specifications	Time rating		Continuous						
	Insulation class		Type F						
	Ambient operating/storage temperature		0 to +40 °C/ -20 to 85°C						
	Ambient operating/storage humidity (RH)		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 and motor and encoder pins)						
	Vibration resistance		Vibration acceleration 49 m/s²						
	Mounting		Flange-mounted						

Torque-speed characteristics

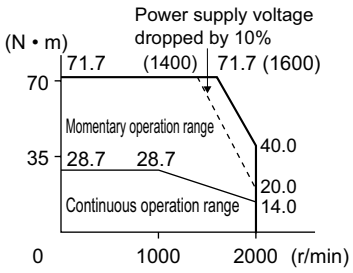
R88M-K90010(H/T/F/C)-□ (900 W)



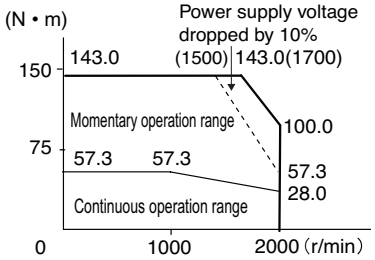
R88M-K2K010(H/T/F/C)-□ (2 kW)



R88M-K3K010(H/T/F/C)-□ (3 kW)



R88M-K6K010(C)-□ (6 kW)



Servo Motor Specifications

Single-phase, 120 V

Servo drive type	R88D-K□		A5L □	01L□	02L□	04L□
Applicable servo motor	R88M-K□		05030H□	10030L□	20030L□	40030L□
			05030T□	10030S□	20030S□	40030S□
Basic specifications	Max. Applicable motor capacity	W	50	100	200	400
	Continuous output current	A (rms)	1.2	1.7	2.5	4.6
	Input power	Main circuit	Single-phase 100 to 120 VAC + 10 to -15% (50/60 Hz)			
	Supply	Control circuit	Single-phase 100 to 120 VAC + 10 to -15% (50/60 Hz)			
	Control method		IGBT-driven PWM method, sinusoidal drive			
	Feedback		Serial encoder (incremental/absolute value)			
	Conditions	Usage/storage temperature	0 to +55 °C / -20 to 65 °C			
		Usage/storage humidity	90% RH or less (non-condensing)			
		Altitude	1000 m or less above sea level			
		Vibration/shock resistance (max.)	5.88 m/s² 10-60 Hz (Continuous operation at resonance point is not allowed) / 19.6 m/s²			
	Configuration		Base mounted			
	Approx. weight	Kg	0.8	0.8	1.0	1.6

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)□
			10030(H/T)□	–	–	–	–	1K530(H/T)□
			–	–	–	–	–	1K520(H/T)□
			–	–	–	–	–	90010(H/T)□
Basic specifications	Max. Applicable motor capacity	W	100	200	400	750	1000	1500
	Continuous output current	A (rms)	1.2	1.6	2.6	4.1	5.9	9.4
	Input power	Main circuit	Single-phase/3-phase, 200 to 240 VAC + 10 to -15% (50/60 Hz)					
	Supply	Control circuit	Single-phase, 200 to 240 VAC + 10 to -15% (50/60 Hz)					
	Control method		IGBT-driven PWM method, sinusoidal drive					
	Feedback		Serial encoder (incremental/absolute value)					
	Conditions	Usage/storage temperature	0 to +55 °C / -20 to 65 °C					
		Usage/storage humidity	90% RH or less (non-condensing)					
		Altitude	1000 m or less above sea level					
		Vibration/shock resistance (max.)	5.88 m/s² 10-60 Hz (Continuous operation at resonance point is not allowed) / 19.6 m/s²					
	Configuration		Base mounted					
	Approx. weight	Kg	0.8	0.8	1.1	1.6	1.8	1.8

Three-phase, 230 V

Servo drive type	R88D-K□		20H□	30H□	50H□	75H□
Applicable servo motor	R88M-K□		2K030(H/T)□	3K030(H/T)□	3K010(H/T)□	7K5015T□
			2K020(H/T)□	3K020(H/T)□	4K030(H/T)□	–
			–	2K010(H/T)□	4K020(H/T)□	–
			–	–	5K030(H/T)□	–
			–	–	5K020(H/T)□	–
Basic specifications	Max. Applicable motor capacity	W	2000	3000	5000	7500
	Continuous output current	A (rms)	13.4	18.7	33.0	44.0
	Input power	Main circuit	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)			Absolute encoder
	Conditions	Usage/storage temperature	0 to +55 °C / -20 to 65 °C			
		Usage/storage humidity	90% RH or less (non-condensing)			
		Altitude	1000 m or less above sea level			
		Vibration/shock resistance (max.)	5.88 m/s² 10-60 Hz (Continuous operation at resonance point is not allowed) / 19.6 m/s²			
	Configuration		Base mounted			
	Approx. weight	Kg	2.7	4.8	4.8	13.5

Three-phase, 460 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-□
			60020(F/C)-□	1K020(F/C)-□	1K530(F/C)-□	2K020(F/C)-□	3K020(F/C)-□	5K030(F/C)-□	7K515C-□	15K015C-□
			–	–	1K520(F/C)-□	–	2K010(F/C)-□	4K020(F/C)-□	–	–
			–	–	90010(F/C)-□	–	–	5K020(F/C)-□	–	–
			–	–	–	–	–	4K510C-□	–	–
			–	–	–	–	–	3K010(F/C)-□	–	–
Basic specifications	Max. Applicable motor capacity	kW	0.6	1.0	1.5	2.0	3.0	5.0	7.5	15.0
	Continuous output current	A (rms)	2.9	2.9	4.7	6.7	9.4	16.5	22.0	33.4
	Input power	Main circuit	3-phase, 380 to 480 VAC + 10 to -15% (50/60Hz)							
	Supply	Control circuit	24 VDC ±15%							
	Control method		IGBT-driven PWM method, sinusoidal drive							
	Feedback	Serial encoder	Incremental or absolute encoder						Absolute encoder	
	Conditions	Usage/storage temperature	0 to +55 °C / -20 to 65 °C							
		Usage/storage humidity	90% RH or less (non-condensing)							
		Altitude	1000 m or less above sea level							
		Vibration/shock resistance	5.88 m/s² 10-60 Hz (Continuous operation at resonance point is not allowed) / 19.6 m/s²							
	Configuration		Base mounted							
	Approx. weight	Kg	1.9			2.7	4.7		13.5	21.0