

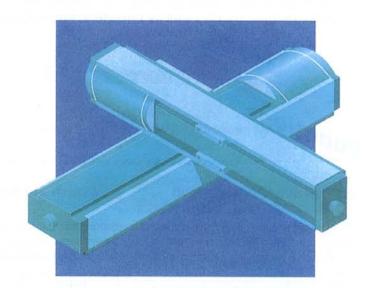
AC Servomotor and AC Servodriver

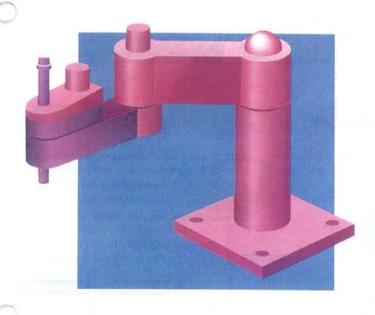
OMRON Mechatronic System Components

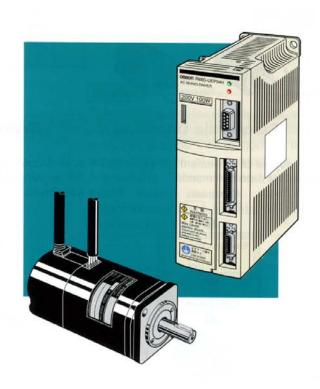
OMNUC U-Series UE Models

Easy-to-use UE Models Join the OMNUC U Series for an Even Wider Selection









JE Models Join the OMNUC U Series

Simplified Functions Offer Ease of Use

UE Models provide easy-to-use servodriver functions with approximately one-third the number of parameters and two-thirds the number of control I/O signals as other OMNUC U-series Models.

- User parameters: 9
- Control input signals: 8
- Setup parameters: 10
- Control output signals: 4

Fast Response

The power rate and maximum response frequency of a UE Model are as high as those of the other OMNUC U-series Models. Therefore, improved productivity will result from the reduced positioning time.

Use OMNUC U-series Peripheral Devices

UE Models can use the peripheral devices for the OMNUC U Series, such as the Parameter Unit and Regeneration Unit, as well as Encoders, Power Cables, and Control Cables.



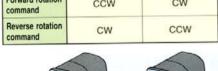
Reverse Rotation

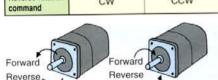
Alarm History Display

Torque Command Filter

The forward and reverse rotation commands can be reversed at the parameter level, without changing the Servomotor or encoder wirina

	Default setting	Reverse rotation		
Forward rotation command	CCW	CW		
Reverse rotation	CW	ccw		

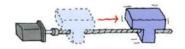


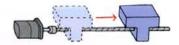


Stores the past ten errors, even if the power supply is turned off, making accurate troubleshooting possible.

Display (alarm history)	Description			
:				
A40	Overvoltage detected			
A51	Overspeed detected			
A70	Overload detected			
:	-			

If the appropriate time constant is set, resonance with the load can be prevented.

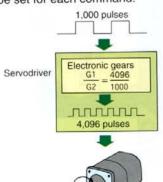




Electronic Gears

The degree of movement per pulse can be set for each command.

Servomotor



One rotation

Brake Interlock

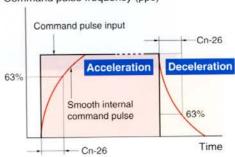
A dedicated signal is used to simplify the sequence for the holding electromagnetic brake.



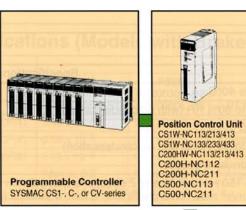
Pulse Smoothing Function

Acceleration and deceleration can be used with command pulses to smoothly execute high-frequency commands.

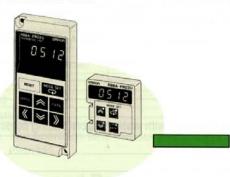
Command pulse frequency (pps)







Parameter Unit



AC Servodriver for OMNUC U-series UE Models

Pulse train input



AC Servomotor for OMNUC U-series UE Models

Rich Command Pulse Mode

Available for all types of command pulse.

	Command pulse mode	Motor forward command	Motor reverse command
900	Feed pulse and direction signal	High	Low
Positive logic setting	90° phase difference signals A-, B-phase feed pulse (Multiplication by 1, 2, or 4)	++9°	
PROPERTY OF	Reverse pulse and forward pulse		

Communications with Personal Computer

A personal computer running special software makes it possible to write and read parameters and display current, speed, and I/O signal information graphically on-screen, simplifying system adjustment and monitoring.



Table of Contents

AC Servomotor Specifications —	-4
AC Servodriver Specifications —	- 6
External Dimensions	- 9
Model Number Legends	- 13
Standard Models	- 14

Caution

This catalog contains only information required for model selection, and does not provide information on the actual operation of the products or precautions. Be sure to read the relevant user's manuals carefully before attempting to operate any product described here.

AC Servomotor Specifications

■ General Specifications

Item	Specifications
Operating ambient temperature	0°C to 40°C
Operating ambient humidity	20% to 80% RH (with no condensation)
Storage ambient temperature	-10°C to 75°C
Storage ambient humidity	20% to 85% RH (with no condensation)
Storage and operating atmosphere	No corrosive gasses.
Vibration resistance	10 to 150 Hz in X, Y, and Z directions with 0.2-mm double amplitude; acceleration: 24.5 m/s ² max.; time coefficient: 8 min; 4 sweeps (see note 1)
Impact resistance	Acceleration 98 m/s ² max., in X, Y, and Z directions, three times
Insulation resistance	Between power line terminals and case: 10 MΩ min. (500 VDC megger)
Dielectric strength	Between power line terminals and case: 1,500 VAC for 1 min (10 mA max.) at 50/60 Hz (JEC2121)
Run position	All directions
Insulation grade	Type B (JIS C4004)
Structure	Totally-enclosed self-cooling
Protective structure	IP-42 (JEM1030) (Cannot be used in environment with water-soluble cutting fluids.)
Vibration grade	V-15 (JEC2121)
Mounting method	Flange-mounting

Note: 1. Vibration may be amplified due to sympathetic resonance of machinery, so use the Servomotor Driver under conditions which will not exceed 19.6 m/s² over a long period of time.

- 2. The above items reflect individual evaluation testing. The results may differ under compounded conditions.
- 3. The Servomotor cannot be used in a misty atmosphere.

■ Performance Specifications

Item	Symbol	Unit	Model								
	IEC		R88M- UE10030H-S1	R88M- UE20030H-S1	R88M- UE40030H-S1	R88M- UE75030H-S1	R88M- UE10030L-S1	R88M- UE20030L-S1	R88M- UE30030L-S1		
Rated output (see note 1)	Pr	w	100	200	400	750	100	200	300		
Rated torque (see note 1)	Tr ·	N•m	0.318	0.637	1.27	2.39	0.318	0.637	0.954		
Rated rotational speed	ωr	r/min	3,000	3,000	3,000	3,000	3,000	3,000	3,000		
Momentary maximum rotational speed	ωm	r/min	4,500	4,500	4,500	4,500	4,500	4,500	4,500		
Momentary maximum torque (see note 1)	Tm .	N•m	0.96	1.91	3.82	7.10	0.96	1.91	3.72		
Momentary maximum/rated current ratio	lm/r	%	322	300	308	316	323	311	400		
Rated current (see note 1)	. Ir	A (rms)	0.87	2.0	2.6	4.4	2.2	2.7	3.7		
Momentary maximum current (see note 1)	<i>I</i> m	A (rms)	2.8	6.0	8.0	13.9	7.1	8.4	14.8		
Rotor inertia	Jr	kg • m² (GD²/4)	0.40 x 10 ⁻⁵	1.23 x 10 ⁻⁵	1.91 x 10 ⁻⁵	6.71 x 10 ⁻⁵	0.40 x 10 ⁻⁵	1.23 x 10 ⁻⁵	1.91 x 10 ⁻⁵		
Torque constant (see note 1)	Kt	N • m/A	0.408	0.355	0.533	0.590	0.156	0.255	0.279		
Induced voltage constant (see note 1)	Ki	mV/ (r/min)	14.0	12.4	18.6	20.6	5.43	8.9	9.74		
Power rate (see note 1)	Qρ	kW/s	25.4	32.8	84.6	85.1	25.4	32.8	47.3		
Mechanical time constant	tm	ms	0.5	0.4	0.3	0.3	0.6	0.4	0.3		
Winding resistance	<i>R</i> w	Ω	6.99	1.34	1.23	0.45	1.22	0.706	0.435		
Winding inductance	Lw	mH	13.2	7.2	7.9	5.7	2.0	4.0	2.3		
Electrical time constant	te	ms	1.9	5.4	6.4	13	1.6	5.7	5.3		
Weight	m	kg	Approx. 0.5	Approx. 1.1	Approx. 1.7	Approx. 3.4	Approx. 0.5	Approx. 1.1	Approx. 1.7		
Corresponding Servo Driver	R88D-		UEP04H	UEP08H	UEP12H	UEP20H	UEP10L	UEP12L	UEP15L		

Note: 1. Values for these items, as well as those for torque, the rotational speed characteristics, are the values at an armature winding temperature of 100°C, combined with the Servo Driver. Other values are at normal conditions (20°C, 65%). The momentary maximum torque value is the reference value.

2. An aluminum heat sink of at least t6 x 250 mm must be attached to the flange of any AC Servomotor that is in continuous operation under the above rating. Here, it is assumed that the AC Servomotor is mounted horizontally where there are no nearby objects obstructing thermal convection.

AC Servomotor Specifications

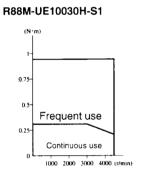
■ Performance Specifications (Models with Brake)

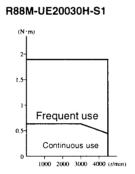
Item	Unit	Model							
		R88M- UE10030H-BS1 UE10030L-BS1	R88M- UE20030H-BS1 UE20030L-BS1	R88M- UE30030L-BS1	R88M- UE40030H-BS1	R88M- UE75030H-BS1			
Rotor inertia	kg • m ² (GD ² /4)	0.40 x 10 ⁻⁵	1.23 x 10 ⁻⁵	1.91 x 10 ⁻⁵	1.91 x 10 ^{−5}	6.71 x 10 ⁻⁵			
Brake inertia	kg • m ² (GD ² /4)	0.09 x 10 ⁻⁵	0.58 x 10 ⁻⁵	0.58 x 10 ⁻⁵	0.58 x 10 ⁻⁵	1.40 x 10 ⁻⁵			
Total inertia	kg • m ² (GD ² /4)	0.49 x 10 ⁻⁵	1.81 x 10 ⁻⁵	2.49 x 10 ⁻⁵	2.49 x 10 ⁻⁵	8.11 x 10 ⁻⁵			
Weight	kg	Approx. 0.8	Approx. 1.6	Approx. 2.2	Approx. 2.2	Approx. 4.3			
Magnetized voltage	V	24 VDC ± 10% (no	polarity)						
Power consumption	W (at 20°C)	6	6.5			6			
Current consumption	A (at 20°C)	0.25	0.27			0.25			
Static friction torque	N•m	0.34 min.	1.5 min.			2.5 min.			
Absorption time (see note)	ms	60 max.	100 max.			200 max.			
Release time (see note)	ms	30 max.	c. 40 max. 50 max.						
Backlash		± 1° (reference value)							
Rating		Continuous							
Insulation grade		Type F							

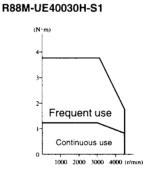
Note: The operation time measurement is the measured value with a surge killer (CR50500, by Okaya Electric Industrial Co.) installed.

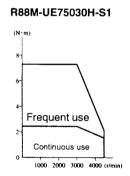
■ Torque and Rotation Speed Characteristics

200 VAC Specifications (With 3-m Standard Cable and 200-VAC Input)





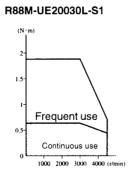


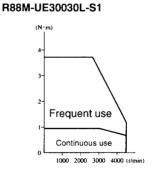


100 VAC Specifications (With 3-m Standard Cable and 100-VAC Input)

R88M-UE10030L-S1

1000 2000 3000 4000 (r/min)





AC Servodriver Specifications

■ General Specifications

Item	Specifications
Operating ambient temperature	0°C to 50°C
Operating ambient humidity	35% to 85% RH (with no condensation)
Storage ambient temperature	−10°C to 75°C
Storage ambient humidity	35% to 85% RH (with no condensation)
Storage and operating atmosphere	No corrosive gasses.
Vibration resistance	10 to 55 Hz in X, Y, and Z directions with 0.10-mm double amplitude; acceleration: 4.9 m/s ² max.; time coefficient: 8 min; 4 sweeps (see note 1)
Impact resistance	Acceleration 19.6 m/s ² max., in X, Y, and Z directions, three times
Insulation resistance	Between power line terminals and case: 5 MΩ min. (at 1,000 VDC)
Dielectric strength	Between power line terminals and case: 1,000 VAC for 1 min (20 mA max.) at 50/60 Hz
Protective structure	Built into panel.

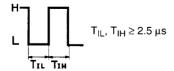
Note: 1. Vibration may be amplified due to sympathetic resonance of machinery, so use the Servomotor under conditions which will not exceed 4.9 m/s² over a long period of time.

- 2. The above items reflect individual evaluation testing. The results may differ under compounded conditions.
- 3. Absolutely do not conduct a withstand voltage test or other Megger tester tests on the Servo driver. If such tests are conducted, internal elements may be damaged.
- 4. Depending on the operating conditions, some Servodriver parts will require maintenance. Refer to the relevant operation manual for details.

Performance Specifications

					Model							
		R88D -UEP04H	R88D -UEP08H	R88D -UEP12H	R88D -UEP20H	R88D -UEP10L	R88D -UEP12L	R88D -UEP15L				
Continuou	s output current (0-P)	1.2 A	2.8 A	3.7 A	6.2 A	3.1 A	3.8 A	4.8 A				
Momentar (0-P)	y maximum output current	4.0 A	8.5 A	11.3 A	19.7 A	10 A	12 A	15 A				
Input powe	er supply	Single-phase 200/2	30 VAC (170 to 253	V) 50/60 Hz	•	Single-phase 100	/115 VAC (85 to 127 \	/) 50/60 Hz				
Control me	ethod	All-digital servo										
Speed fee	dback	Optical encoder wit	h 1,024 pulses/revol	ution								
Applicable	load inertia	Maximum of 30 tim inertia	es motor's rotor	Maximum of 20 tin inertia	nes motor's rotor	Maximum of 30 til inertia	mes motor's rotor	Maximum of 20 times motor's rotor inertia				
Inverter m	ethod	PWM method base	d on IGBT									
PWM freq	uency	11 kHz			7.8 kHz	11 kHz		7.8 kHz				
Weight		Approx. 0.9 kg		Approx. 1.2 kg	Approx. 1.5 kg	Approx. 0.9 kg	Approx. 1.2 kg	Approx. 1.5 kg				
Applicable Servomotor		R88M- UE10030H-S1	R88M- UE20030H-S1	R88M- UE40030H-S1	R88M- UE75030H-S1	R88M- UE10030L-S1	R88M- UE20030L-S1	R88M- UE30030L-S1				
Applicable	Servomotor wattage	100 W	200 W	400 W	750 W	100 W	200 W	300 W				
Capacity	Maximum response pulse frequency	200 kpps										
	Position loop gain	1 to 500 (1/s)	1 to 500 (1/s)									
	Electrical gear function	Setting range: 0.01 ≤ (G1/G2) ≤ 100 (G1, G2 = 1 to 65, 535)										
	Positioning completed width	0 to 250 (command	l units)									
	Position accel/decel time constant setting	0 to 64 ms (acceleration and deceleration are set the same)										
Input	Position command pulse input (see note)	TTL line driver inpudisparity (A-, B-pha		it power supply 6 mA	to 3 V. Feed pulse/fo	rward, reverse signa	l, forward pulse/rever	se pulse, 90°				
	Deviation counter reset input	TTL line driver input photo isolation input power supply 6 mA to 3 V.										
	Sequence input	24-VDC, 5-mA pho	tocoupler input, exte	rnal power supply: 12	to 24 VDC, 30 mA n	nin.						
Output	Position feedback output	Z-phase open-colle	ctor output: 20 mA a	output: 20 mA at 30 VDC, 1 pulse/revolution								
	Sequence output	Open-collector outp	out: 50 mA at 30 VD0	C, alarm, brake interlo	ock, positioning comp	lete						
External regeneration		Regeneration equivof 30 times motor's required.			Regeneration equivalent to minimum of 20 times motor's rotor inertia required.		ivalent to minimum 's rotor inertia	Regeneration equivalent to minimum of 20 times motor's rotor inertia required.				
Protective	functions	Overcurrent, groun overrun	ding, overload, overv	roltage, overspeeding	, overrun prevention,	transmission errors,	encoder errors, devia	ition counter				

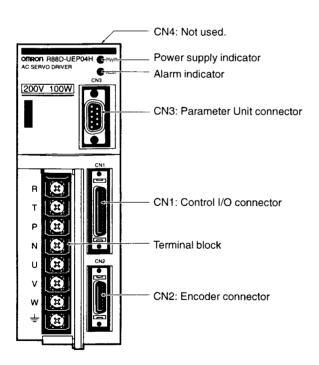
Note: Ensure that the input pulse width meets the following conditions.



AC Servo Driver Specifications

■ Control I/O CN1

			1	+PULS /+CW	Feed pulse/ reverse pulse/				19		Not used	
2	-PULS /CW	Feed pulse/ reverse pulse/	-	/+A +SIGN/	A-phase Forward/reverse signal/	20		Not used	-			
-	/–A	A-phase	3	+CCW	forward rotation pulse/ B-phase	<u> </u>			21		Not used	
4	-SIGN /-CCW	Forward/reverse signal/ forward rotation pulse/		/+B	D priase						, 101 0000	
4	/–B	B-phase			Deviation	22		Not used				
_		Deviation	5	+ECRST	counter reset				23		Not used	
6	-ECRST	counter reset	7	BKIR	Brake interlock	24		Not used	25		Not used	
8	INP	Positioning	Í	DI (II)	output				123		Not used	
8	INP	complete output			NI-A	26		Not used				
		Output ground	9		Not used				27		Not used	
10	OGND	common				28	No	Not used				
-		, , , , , , , , , , , , , , , , , , , ,	11		Not used			2			Not used	
12		Not used			Control 12 to	30		Not used				
		Run command	13	+24VIN	24-VDC input			3			Not used	
14	RUN	input				32	Z	Encoder Z- phase output			Encoder Z-	
		Forward drive	15	MING	Gain reduction				33	ZCOM	phase output ground	
16	POT	prohibit input	17	NOT	Reverse	34	ALM	Alarm output	05		Alarm output	
	Alarm reset	Alarm reset		NOT	drive prohibit input				35	ALMCOM	ground	
18	8 RESET Input					36	FG	Frame ground		<u> </u>		



AC Servo Driver Specifications

■ User Parameters

PRM No.	Parameter	Factory setting	Unit	Setting range	Description
Cn-00	System check mode				
Cn-01	Setup parameters 1				Refer to the details of setup parameters 1
Cn-02	Setup parameters 2				Refer to the details of setup parameters 2
Cn-04	Speed loop gain	80	Hz	1 to 2,000	Used to adjust speed loop response.
Cn-05	Speed loop integral time constant	20	ms	2 to 10,000	Used to set speed loop integral time constant.
Cn-12	Brake timing	0	10 ms	0 to 50	Used to set time lag between brake command and servo OFF.
Cn-17	Torque command filter time constant	4	100 μs	0 to 250	Used to set filter time constant of torque command (equivalent to 398 to 6.4 Hz).
Cn-1A	Positioning loop gain	40	1/s	1 to 500	Used to adjust positioning loop response.
Cn-1b	Positioning complete width	3	Command unit	0 to 250	Used to set width of positioning complete signal output.
Cn-24	Electronic gear ratio G1 numerator	4		1 to 65,535	Setting range: 0.01 ≦ G1/G2 ≦ 100
Cn-25	Electronic gear ratio G2 denominator	1		1 to 65,535	
Cn-26	Positioning command acceleration/deceleration time constant	0	0.1 ms	0 to 640	Used to set time pulse smoothing time constant.

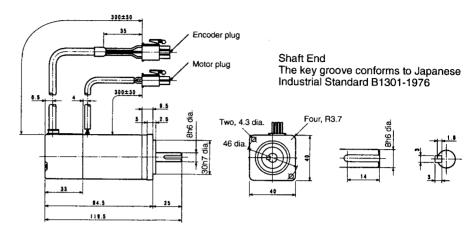
■ Setup Parameters

ltem		Bit number	Factory setting	Setting	Description
No. 1 (Cn-01)	Sequential input signal selection	0	0	0	Turns servo ON and OFF with RUN command (RUN: external input).
				1	Always keeps servo turned ON.
		2	1	0	Enables forward drive prohibit input (POT).
				1	Always enables forward drive.
		3	1	0	Enables reverse drive prohibit input (NOT).
				1	Always enables reverse drive.
	Error stop selec-	8	0	0	Stops motor with dynamic brake in case of overtravel.
	tion			1	Stops motor with maximum torque in case of overtravel.
	Deviation counter with servo OFF	Α	0	0	Clears deviation counter when servo is OFF or alarm results.
				1	Does not clear deviation counter when servo is OFF or alarm results.
No. 2	Reverse rotation	0	0	0	Forward rotation is CCW.
(Cn-02)				1	Reverse rotation is CCW.
	Command pulse	5, 4, 3	0, 0, 1	0, 0, 0	Feed pulse, forward/reverse signal
	mode			0, 0, 1	Forward pulse/reverse pulse
				0, 1, 0	90° phase difference (A/B-phase) signal multiplied by 1
				0, 1, 1	90° phase difference (A/B-phase) signal multiplied by 2
				1, 0, 0	90° phase difference (A/B-phase) signal multiplied by 4
	Deviation counter	A	1	0	Clears deviation counter high level.
	clear			1	Clears deviation counter at ON-OFF differentiation (falling edge).
	Torque command	С	0	0	First filter
	filter order			1	Second filter
	Parameter Unit's monitor level	E	0	0	Deviation monitor at 1 command unit
	selection			1	Deviation monitor at 100 command units

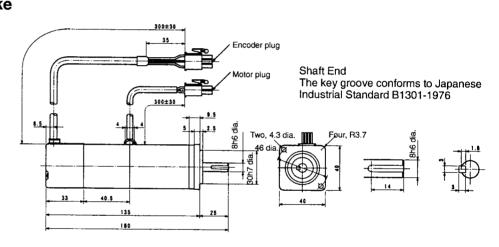
■ AC Servomotors

• 100-W Output with No Brake

R88M-UE10030H-S1 R88M-UE10030L-S1



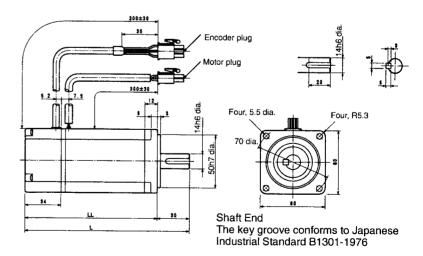
 100-W Output with Brake <u>R88M-UE10030H-BS1</u> <u>R88M-UE10030L-BS1</u>



• 200/300/400-W Output with No Brake

R88M-UE20030H-S1/-UE40030H-S1 R88M-UE20030L-S1/-UE30030L-S1

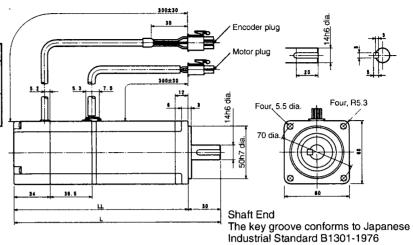
Model	L	LL
R88M-UE20030H-S1	126.5	96.5
R88M-UE20030L-S1	1	
R88M-UE40030H-S1	154.5	124.5
R88M-UE30030L-S1		



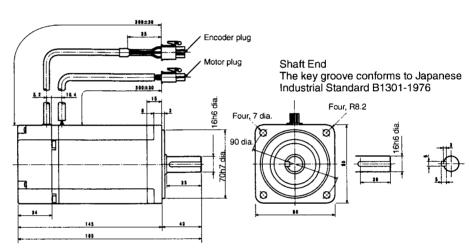
• 200/300/400-W Output with Brake

R88M-UE20030H-BS1/-UE40030H-BS1 R88M-UE20030L-BS1/-UE30030L-BS1

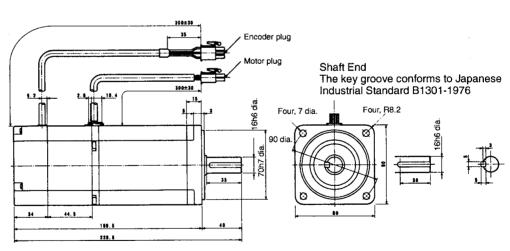
Model	L	LL
R88M-UE2003CH-BS1	166	136
R88M-UE20030L-BS1		
R88M-UE40030H-BS1	194	164
R88M-UE30030L-BS1		



R88M-UE75030H-S1

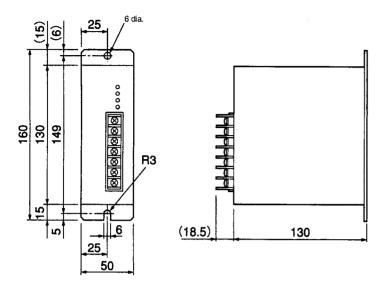


R88M-UE75030H-BS1



■ Regeneration Unit

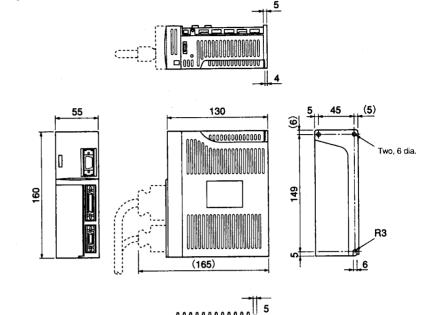
• R88A-RG08UA



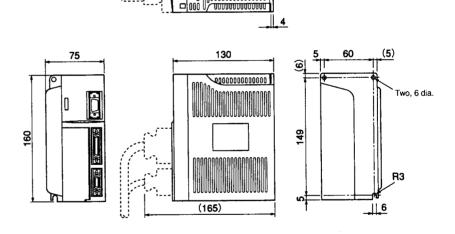
Note: Refer to User's Manual (I522-E1) for specifications of the Regeneration Unit.

■ AC Servo Drivers

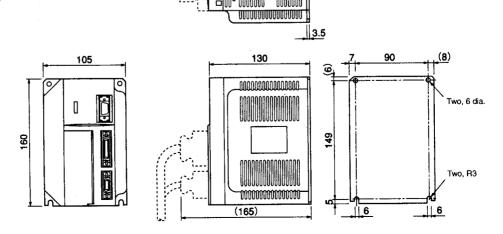
- 200 VAC, 100/200-W Output R88D-UEP04H/-UEP08H
- 100 VAC, 100-W Output R88D-UEP10L



- 200 VAC, 400-W Output R88D-UEP12H
- 100 VAC, 200-W Output R88D-UEP12L

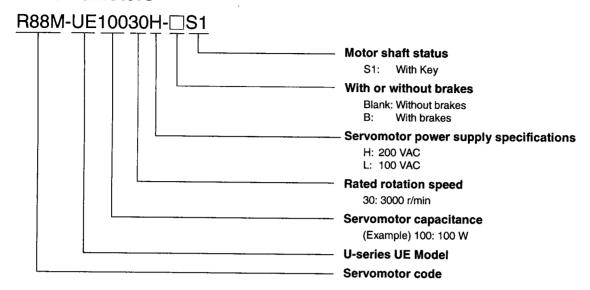


- 200 VAC, 750-W Output R88D-UEP20H
- 100 VAC, 300-W Output R88D-UEP15L

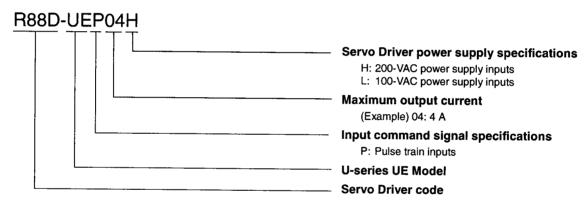


Model Number Legends

■ AC Servomotors



AC Servo Drivers



Standard Models

Servomotor

Specifications			Model	
Straight	Servo	For 200 VAC	100 W	R88M-UE10030H-S1
axis with	motor without		200 W	R88M-UE20030H-S1
key	brakes		400 W	R88M-UE40030H-S1
			750 W	R88M-UE75030H-S1
		For 100 VAC	100 W	R88M-UE10030L-S1
			200 W	R88M-UE20030L-S1
			300 W	R88M-UE30030L-S1
	Servo	For 200 VAC	100 W	R88M-UE10030H-BS1
	motor with		200 W	R88M-UE20030H-BS1
	brakes		400 W	R88M-UE40030H-BS1
			750 W	R88M-UE75030H-BS1
		For 100 VAC	100 W	R88M-UE10030L-BS1
			200 W	R88M-UE20030L-BS1
			300 W	R88M-UE30030L-BS1

Servodriver (Pulse Train Input Models)

Specifications			Model
Pulse Train	For 200 VAC	100 W	R88D-UEP04H
Input		200 W	R88D-UEP08H
		400 W	R88D-UEP12H
		750 W	R88D-UEP20H
	For 100 VAC	100 W	R88D-UEP10L
		200 W	R88D-UEP12L
		300 W	R88D-UEP15L

Parameter Units

Specifications	Model
Handy type	R88A-PR02U
Mounted type	R88A-PR03U

■ Regeneration Unit

Specifications	Model
Regeneration processing current 8 A _{DC}	R88A-RG08UA

■ External Regeneration Resistor

Specifications	Model
Regenerative capacity: 70 W at 47 Ω	R88A-RR22047S

■ Encoder Cables

Specifications		Model	
Connectors on each	3 m	R88A-CRU003C	
side	5 m	R88A-CRU005C	
	10 m	R88A-CRU010C	
	15 m	R88A-CRU015C	
	20 m	R88A-CRU020C	

Power Cables

Specifications		Model
With a single connector for	3 m	R88A-CAU003S
motors with no brakes	5 m	R88A-CAU005S
	10 m	R88A-CAU010S
	15 m	R88A-CAU015S
	20 m	R88A-CAU020S
With a single connector for motors with brakes	3 m	R88A-CAU003B
	5 m	R88A-CAU005B
	10 m	R88A-CAU010B
	15 m	R88A-CAU015B
	20 m	R88A-CAU020B

■ General-purpose Control Cables

Specifications		Model
For a general-purpose controller	1 m	R88A-CPU001S
(Connector on one side)	2 m	R88A-CPU002S

■ Connectors and Terminal Blocks

Specifications		Model
Control cable connector		R88A-CNU01C
Terminal Block Connector		XW2B-40F5-P
Conversion Cables for	1 m	R88A-CTU001N
Connector-Terminal Conversion Unit	2 m	R88A-CTU002N

■ Front Panel Mounting Brackets

Specifica	tions	Model
200 VAC: 100 to 400 W 100 VAC: 100, 200 W	For Servo Drivers	R88A-TK01U
200 VAC: 750 W 100 VAC: 300 W	For Servo Drivers	R88A-TK02U

Note: A wide variety of special cables are available for U-series AC Servomotor and Servodriver UE models for preventing wiring mistakes and reducing wiring effort. The AC Servodrivers are thus not provided with connectors.

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