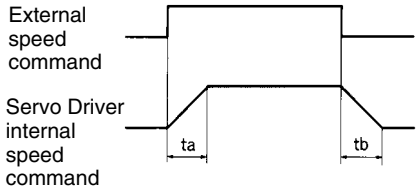
Functions

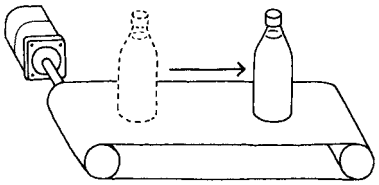
All your Servomotor functional needs combined, to make optimal operation a reality.

■ Soft Start

Speed Control

This function stops and starts the Servomotor within the set acceleration and deceleration times. A positioning system can be easily established, without the need for a positioner or host controller.

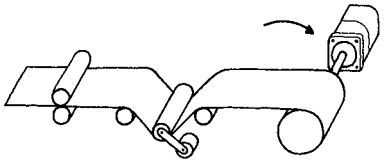




■ Torque Control

Torque Control

Controls the Servomotor using a torque proportional to the analog input voltage. It can be used for tension control and controlled stopping.

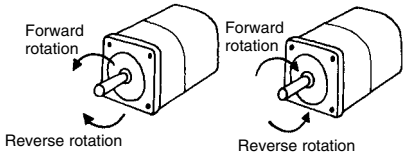


■ Reverse Rotation Mode

Position Control **Speed Control** **Torque Control**

The forward and reverse rotation commands can be switched at the parameter level, without changing the Servomotor or encoder wiring.

Command	Default setting	Reverse rotation mode
Forward rotation command	CCW	CW
Reverse rotation command	CW	CCW

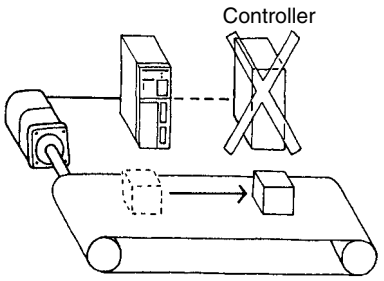


■ Internal Speed Control

Position Control **Speed Control**

With this function, the motor can be rotated at the first through to the third speeds set in the user parameters, making it easy to achieve positioning and speed switching operations.

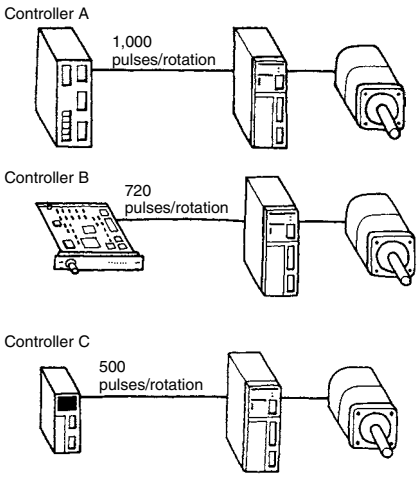
Speed	Rotation direction command	Internal speed setting
Speed 1	Forward rotation	First speed
Speed 2		Second speed
Speed 3		Third speed
Speed 4	Reverse rotation	First speed
Speed 5		Second speed
Speed 6		Third speed
Stop	Servolock engaged	



■ Encoder Resolution

Position Control **Speed Control** **Torque Control**

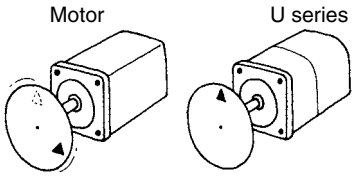
The number of encoder pulses per motor rotation can be set to match the response frequency of the host controller.



■ Position Lock

Speed Control

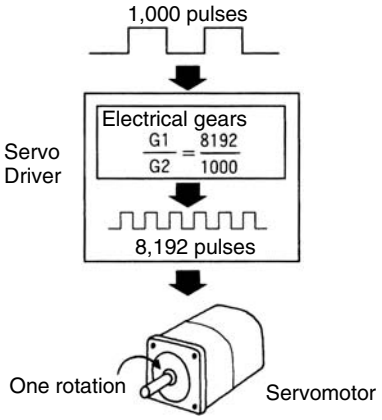
When the Servomotor stops, this function sets off the position loop and activates the position lock. It prevents drifts peculiar to analog input.



■ Electrical Gears

Position Control

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



■ Rich Command Pulse Mode

Position Control

Available for all types of command pulse.

Logic setting	Command pulse mode	Motor forward command	Motor reverse command
Positive logic setting	Feed pulse and direction signal	"H"	"L"
	90° phase difference signals A-, B-phase feed pulse (Multiplication by 1, 2, & 4 possible)	90°	90°
	Reverse pulse and forward pulse	"L"	"L"
Negative logic setting	Feed pulse and direction signal	"L"	"H"
	90° phase difference signals A-, B-phase feed pulse (Multiplication by 1, 2, & 4 possible)	90°	90°
	Reverse pulse and forward pulse	"H"	"H"

■ Alarm History Display

Position Control **Speed Control** **Torque Control**

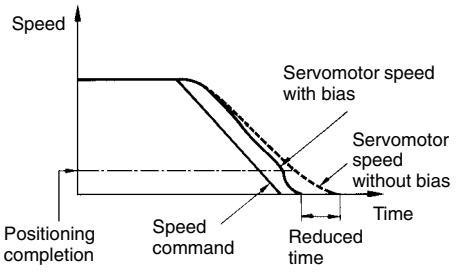
Stores the past ten errors, even if the power supply is cut off, making accurate troubleshooting possible.

Display (Alarm history)	Description
:	–
A40	Overvoltage detected
A51	Overspeed detected
A71	Overload detected
:	–

■ Bias Function

Position Control

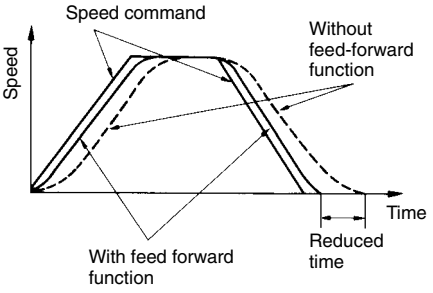
This function can be used to reduce the position control time, according to the load conditions.



■ Feed-forward Function

Position Control

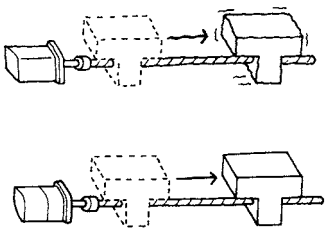
The stabilization period is reduced by using the feed-forward function.



■ Torque Command Filter

Position Control **Speed Control** **Torque Control**

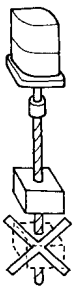
If the appropriate time constant is set, resonance with the load can be prevented.



■ Brake Interlock

Position Control **Speed Control** **Torque Control**

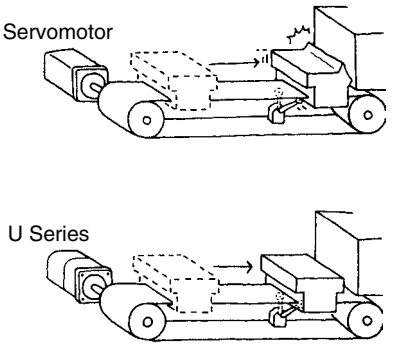
Outputs a special signal, making the holding magnetic brake operating sequence easy.



■ Emergency Stop Torque

Position Control **Speed Control** **Torque Control**

The control torque for overtravel time can be set, preventing damage to machinery.

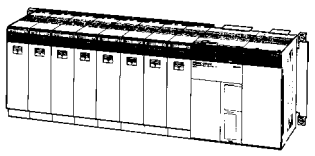


System Configuration

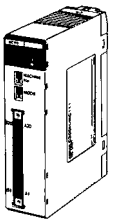
Our product synergy meets a variety of needs.

When an OMRON Position Control Unit is used, the system configuration remains the same.

Position Control in a Medium-scale System

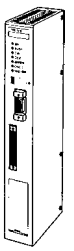


SYSMAC CS1/C/CV
Programmable Controller

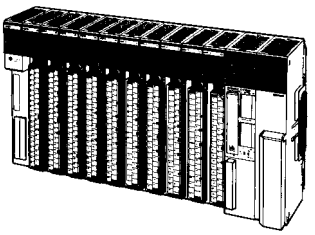


CS1W-NC113/213/413
CS1W-NC133/233/433
C200HW-NC113/213/413
Position Control Unit

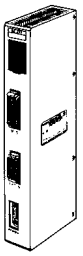
Position Control in a Large-scale System



C500-NC113/211
Position Control Unit



SYSMAC
CVM1/CV/C1000H/C2000H
Programmable Controller

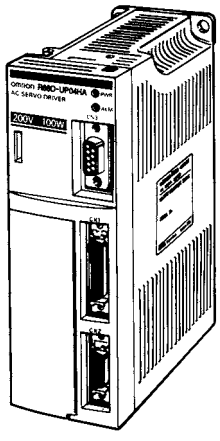


C500-NC222-E
Position Control Unit

Pulse train input

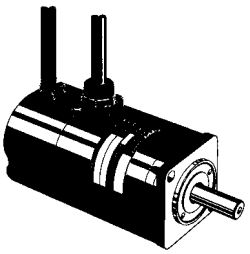
Pulse Train Input Models

AC Servo Driver



R88D-UP□□□□
(Single-phase 200 VAC)
R88D-UP□□□□
(Single-phase 100 VAC)

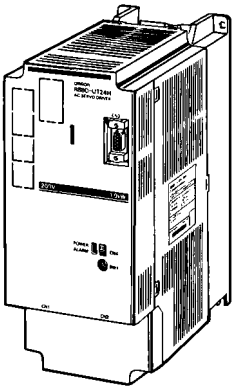
AC Servomotor with Incremental Encoder



R88M-U□□□□□□□
(30 to 750 W: 200 V)
R88M-U□□□□□□□
(30 to 300 W: 100 V)

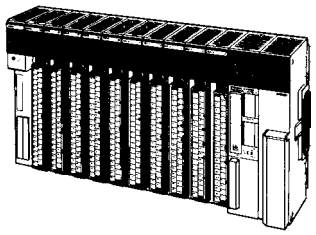
Analog/Pulse Common Input Models

AC Servo Driver

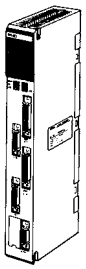


R88D-UT□□□□
(3-phase 200 VAC)

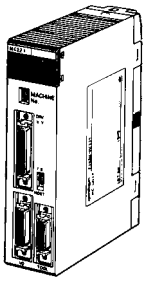
Multi-axis Control Using the G Language



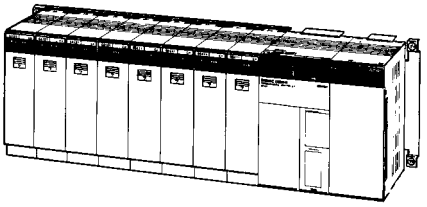
SYSMAC CVM1/CV-series Programmable Controller



CV500-MC421
CV500-MC221
Motion Control Unit



CS1W-
MC221/421
C200H-MC221
Motion Control Unit

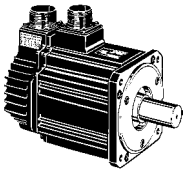


SYSMAC CS1/C/CV Programmable Controller

Note: CS1-series Motion Control Units are also available.

Analog input

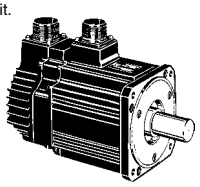
AC Servomotor with Incremental Encoder



R88M-U□□□□□□
(1 to 5 kW: 200 V)

AC Servomotor with Absolute Encoder

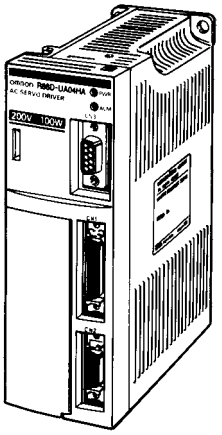
Note: AC Servomotors with Absolute Encoders must be used in combination with a Motion Control Unit.



R88M-U□□□□□□
(1 to 5 kW: 200 V)

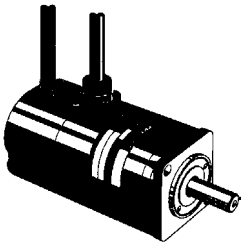
Analog Input Models

AC Servo Driver



R88D-UA□□□□
(Single-phase 200 VAC)
R88D-UA□□□□
(Single-phase 100 VAC)

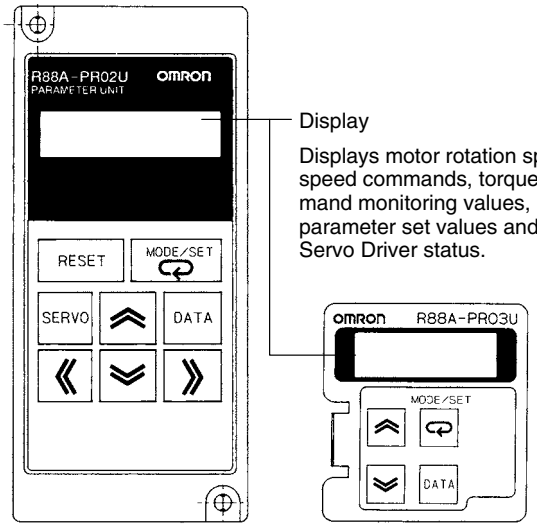
AC Servomotor with Incremental Encoder



R88M-U□□□□□□□
(30 to 750 W: 200 V)
R88M-U□□□□□□□
(30 to 300 W: 100 V)

Using Parameter Units

■ Parameter Unit Keys and Functions



Handy-type
R88A-PR02U

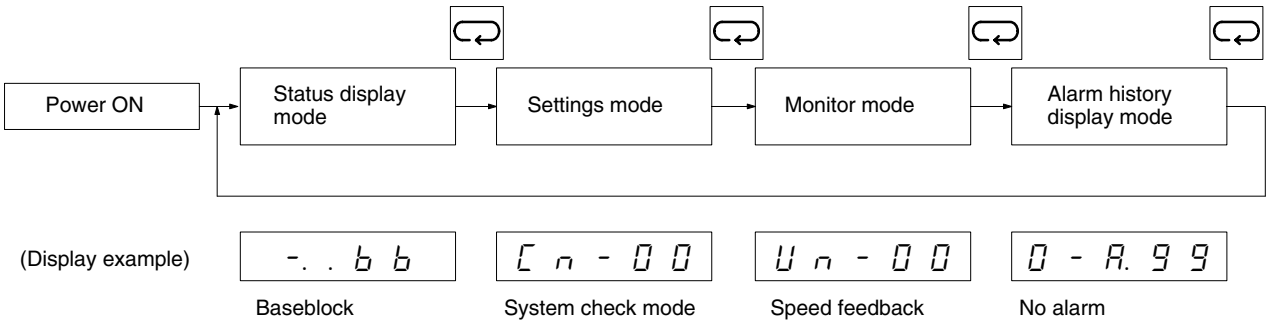
Mounted-type
R88A-PR03U

■ Keys

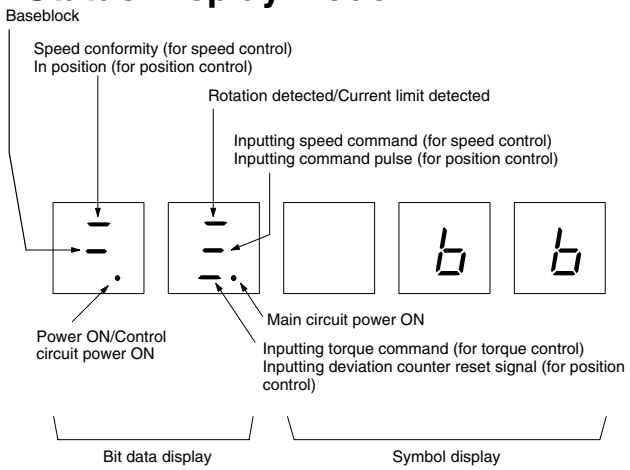
PR02U	PR03U	Function
RESET	⋀ + ⋁	Alarm reset
MODE/SET	↩	Mode switching Data memory
SERVO	DATA	Servo ON/OFF during jog operations
DATA	DATA	Switching between parameter display and data display; data memory
⋀	⋀	Increments parameter numbers and data values.
⋁	⋁	Decrements parameter numbers and data values.
《		Left shift for operation digits
》		Right shift for operation digits

■ Changing Modes

To change modes, press the MODE/SET Key.

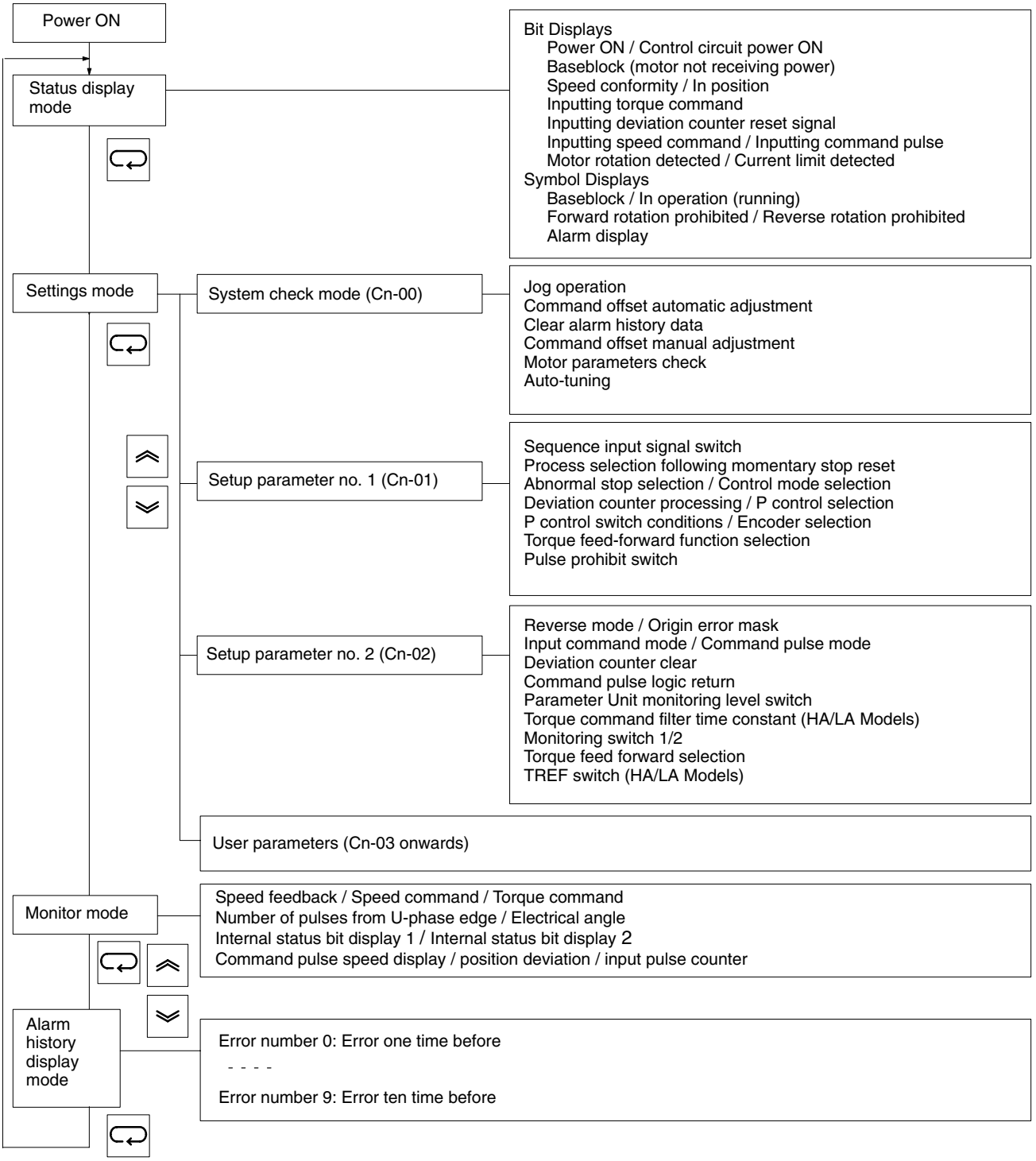


■ Status Display Mode



Symbol display	Contents
bb	Baseblock (no power to motor)
run	In operation (running)
Pot	Forward rotation prohibited
not	Reverse rotation prohibited
A.02	Alarm display (Refer to alarm table.)

■ Mode Changes and Display Contents



Note: Items which can be set and monitored differ according to the type of Servo Driver or Servomotor used. Refer to the User's Manual for details.

Using Parameter Units

■ Monitor Mode

Monitor no.	Monitor contents	Unit	Explanation
Un-00	Speed feedback	r/min	Displays actual rotational speed of motor.
Un-01	Speed command	r/min	Displays commands to speed loop when controlling via internally set speeds. "0" will be displayed when controlling with pulse trains.
Un-02	Torque command	%	The command to the current loop is displayed as 100% of the rated torque.
Un-03	Number of pulses from U-phase edge	Pulses	The number of pulses from the U-phase edge is displayed in units of encoder resolution.
Un-04	Electrical angle	Degrees	Displays the electrical angle of the motor.
Un-05	Internal status bit display 1	---	Displays Servo Driver internal information as either lit or not lit.
Un-06	Internal status bit display 2	---	
Un-07	Command pulse speed display	r/min	Displays the command pulse counter converted to a frequency (r/min).
Un-08	Position deviation (deviation counter)	Command units	Displays the pulse count (position deviation) remaining on the deviation counter in command units (based on input pulses).
Un-09	Input pulse counter	Command units	Counts and displays the input pulses.

■ Alarm Table

Display	Alarm code			Alarm	Error detection function	Detection contents; cause of error	Remarks
	ALO1	ALO2	ALO3	ALM			
A.02	OFF	OFF	OFF	OFF	Parameter corruption	The checksum for the parameters read from the EEPROM does not match.	
A.04	OFF	OFF	OFF	OFF	Parameter setting error	Incorrect parameter setting.	
A.10	ON	OFF	OFF	OFF	Overcurrent	Overcurrent or overheating detected.	
A.31	ON	ON	OFF	OFF	Deviation counter overflow	The pulses remaining on the deviation counter exceed the deviation counter overflow level set in Cn-1E.	For position control only
A.40	OFF	OFF	ON	OFF	Overvoltage	Main circuit DC voltage exceeded the allowable value.	
A.51	ON	OFF	ON	OFF	Over speed	Detected at 4,950 r/min.	
A.70	ON	ON	ON	OFF	Overload	Detected at reverse limit characteristics when the output torque exceeds120% of the rated torque.	
A.b1	OFF	OFF	OFF	OFF	Command input reading error.	The final signal from the AC Convertor was not output within the fixed time.	For speed and torque control only.
A.C1	ON	OFF	ON	OFF	Runaway detected	Faulty power or encoder wiring.	
A.C2	ON	OFF	ON	OFF	Phase error detected	Connector not properly connected. Encoder not properly wired.	
A.C3	ON	OFF	ON	OFF	Encoder A or B phase wire disconnection	Either Phase A or Phase B signal was disconnected or short circuited.	
A.C4	ON	OFF	ON	OFF	Encoder S phase wire disconnection	Encoder S phase was disconnected or short circuited.	
A.F3	OFF	ON	OFF	OFF	Momentary power failure alarm	The power supply was re-started within the power retention period.	
A.99	OFF	OFF	OFF	ON	Alarm reset power supply turned on	This is history data only, and is not an alarm.	
CPF00	OFF	OFF	OFF	OFF	Parameter Unit transmission error 1	Data could not be transmitted after the power supply was turned on. (It no longer exists in the alarm history.)	
CPF01	---	---	---	---	Parameter Unit transmission error 2	Transmission timeout error (It no longer exists in the alarm history.)	

Note: "---" means indefinite.

Servomotor Specifications

■ Performance Specifications

200-VAC Servomotors

Item		Symbol IEC	Unit	R88M-U03030□□	R88M-U05030□□	R88M-U10030□□	R88M-U20030□□	R88M-U40030□□	R88M-U75030□□
Rated output (see note 1)		P_r	W	30	50	100	200	400	750
Rated torque (see note 1)		T_r	N•m	0.095	0.159	0.318	0.637	1.27	2.39
Rated rotational speed		ω_r	r/min	3000					
Momentary maximum rotational speed		ω_m	r/min	4500					
Momentary maximum torque (see note 1)		T_m	N•m	0.29	0.48	0.96	1.91	3.82	7.10
Momentary maximum/rated current ratio		$I_{m/r}$	%	310	317	322	300	308	316
Rated current (see note 1)		I_r	A (rms)	0.42	0.60	0.87	2.0	2.6	4.4
Momentary maximum current (see note 1)		I_m	A (rms)	1.3	1.9	2.8	6.0	8.0	13.9
Rotor inertia INC (see note 4)		J_r	kg•m^2	0.21×10^{-5}	0.26×10^{-5}	0.40×10^{-5}	1.23×10^{-5}	1.91×10^{-5}	6.71×10^{-5}
Torque constant (see note 1)		K_t	N•m/A	0.255	0.286	0.408	0.355	0.533	0.590
Induced voltage constant (see note 1)		K_i	mV/ (r/min)	8.89	9.98	14.0	12.4	18.6	20.6
Power rate (see note 1)		Q_p	kW/s	4.36	9.63	25.4	32.8	84.6	85.1
Mechanical time constant		τ_m	ms	1.5	0.9	0.5	0.4	0.3	0.3
Winding resistance		R_w	Ω	15.8	9.64	6.99	1.34	1.23	0.45
Winding inductance		L_w	mH	23.1	16.9	13.2	7.2	7.9	5.7
Electrical time constant		τ_e	ms	1.5	1.8	1.9	5.4	6.4	13
Momentary allowable radial load INC (see note 4)		F_{mr}	N	186	186	186	490	490	735
Momentary allowable thrust load INC (see note 4)		F_{mt}	N	127	127	127	176	176	392
Allowable radial load INC (see note 4)		F_r	N	68	68	78	245	245	392
Allowable thrust load INC (see note 4)		F_t	N	54	54	54	74	74	147
Weight INC (see note 4)	Without brakes	m	kg	Approx. 0.3	Approx. 0.4	Approx. 0.5	Approx. 1.1	Approx. 1.7	Approx. 3.4
	With brakes		kg	Approx. 0.6	Approx. 0.7	Approx. 0.8	Approx. 1.6	Approx. 2.2	Approx. 4.3
Corresponding Servo Driver (R88D-)	Analog output			UA02HA	UA03HA	UA04HA	UA08HA	UA12HA	UA20HA
	Pulse train output			UP02HA	UP03HA	UP04HA	UP08HA	UP12HA	UP20HA
Brake specifications (see note 2)	Brake inertia	J_b	kg•m^2	0.09×10^{-5}			0.58×10^{-5}		1.40×10^{-5}
	Magnetized voltage	U_b	V	24 VDC ± 10% (no polarity)					
	Power consumption (at 20°C)	P_b	W	6			6.5		6
	Current consumption (at 20°C)	I_b	A	0.25			0.27		0.25
	Static friction torque	T_b	N•m	0.2 min.		0.34 min.	1.5 min.		2.5 min.
	Absorption time (see note 3)	t_{ba}	ms	40 max.		60 max.	100 max.		200 max.
	Release time (see note 3)	t_{br}	ms	20 max.		30 max.	40 max.		50 max.
	Backlash		---	± 1° (reference value)					
	Rating		---	Continuous					
	Insulation grade		---	Type F					

200-VAC Servomotors (continued)

Item		Symbol IEC	Unit	R88M-U1K030□	R88M-U1K530□	R88M-U2K030□	R88M-U3K030□	R88M-U4K030□	R88M-U5K030□
Rated output (see note 1)		*P*r	W	1000	1500	2000 (see note 2)	3000	4000 (see note 2)	5000 (see note 2)
Rated torque (see note 1)		*T*r	N•m	3.18	4.77	6.36	9.55	12.6	15.8
Rated rotational speed		ω_r	r/min	3000					
Momentary maximum rotational speed		ω_m	r/min	4500					
Momentary maximum torque (see note 1)		*T*m	N•m	9.54	14.3	19.1	27.4	36.8	44.4
Momentary maximum/rated current ratio		*I*m/r	%	279	283	350	289	304	320
Rated current (see note 1)		*I*r	A (rms)	6.1	9.9	12.0	19.4	25.3	26.2
Momentary maximum current (see note 1)		*I*m	A (rms)	17	28	42	56	77	84
Rotor inertia INC (see note 4)		*J*r	kg•m^2	1.74×10^{-4}	2.47×10^{-4}	3.19×10^{-4}	7.00×10^{-4}	9.60×10^{-4}	12.3×10^{-4}
Torque constant (see note 1)		*K*t	N•m/A	0.59	0.54	0.52	0.54	0.51	0.57
Induced voltage constant (see note 1)		*K*i	mV/ (r/min)	22.2	20.0	19.5	20.0	19.3	21.2
Power rate (see note 1)		*Q*p	kW/s	57.9	92.2	103	137	156	171
Mechanical time constant		τ_m	ms	0.9	0.7	0.6	0.6	0.6	0.6
Winding resistance		*R*w	Ω	0.67	0.31	0.19	0.10	0.063	0.057
Winding inductance		*L*w	mH	4.75	2.40	1.57	1.31	0.89	0.84
Electrical time constant		τ_e	ms	7.1	7.7	8.3	14.0	14.1	14.7
Momentary allowable radial load INC (see note 4)		*F*mr	N	1570	1570	1570	1570	1570	1570
Momentary allowable thrust load INC (see note 4)		*F*mt	N	590	590	590	1170	1170	1170
Allowable radial load INC (see note 4)		*F*r	N	680	680	680	980	1170	1170
Allowable thrust load INC (see note 4)		*F*t	N	190	190	190	390	390	390
Weight INC (see note 4)	Without brakes	m	kg	Approx. 4.6	Approx. 5.8	Approx. 7.0	Approx. 11	Approx. 14	Approx. 17
	With brakes		kg	Approx. 6.0	Approx. 7.5	Approx. 8.5	Approx. 14	Approx. 17	Approx. 20
Corresponding Servo Driver (R88D-)	Analog output			UT24□	UT40□	UT60□	UT80□	UT110□	UT120□ (see note)
	Pulse train output			UT24□	UT40□	UT60□	UT80□	UT110□	UT120□ (see note)
Brake specifications (see note 2)	Brake inertia	*J*b	kg•m^2	0.22×10^{-4}			2.1×10^{-4}		
	Magnetized voltage	*U*b	V	24 VDC ± 10% (no polarity)					
	Power consumption (at 20°C)	*P*b	W	7			9.8		
	Current consumption (at 20°C)	*I*b	A	0.29			0.41		
	Static friction torque	*T*b	N•m	7.8 min.			20 min.		
	Absorption time (see note 3)	t_{ba}	ms	180 max.			180 max.		
	Release time (see note 3)	t_{br}	ms	100 max.			100 max.		
	Backlash		---	± 0.5° (reference value)					
	Rating		---	Continuous					
	Insulation grade		---	Type F					

Note: UT110□ for Servomotors conforming to CE standards.

Servomotor Specifications

100-VAC Servomotors

Item		Symbol IEC	Unit	R88M-U03030□□	R88M-U05030□□	R88M-U10030□□	R88M-U20030□□	R88M-U30030□□
Rated output (see note 1)		P_r	W	30	50	100	200	300
Rated torque (see note 1)		T_r	N•m	0.095	0.159	0.318	0.637	0.954
Rated rotational speed		ω_r	r/min	3000				
Momentary maximum rotational speed		ω_m	r/min	4500				
Momentary maximum torque (see note 1)		T_m	N•m	0.29	0.48	0.96	1.91	3.72
Momentary maximum/rated current ratio		I_m/r	%	317	322	323	311	400
Rated current (see note 1)		I_r	A (rms)	0.63	0.9	2.2	2.7	3.7
Momentary maximum current (see note 1)		I_m	A (rms)	2.0	2.9	7.1	8.4	14.8
Rotor inertia INC (see note 4)		J_r	kg•m^2	0.21×10^{-5}	0.26×10^{-5}	0.40×10^{-5}	1.23×10^{-5}	1.91×10^{-5}
Torque constant (see note 1)		K_t	N•m/A	0.168	0.194	0.156	0.255	0.279
Induced voltage constant (see note 1)		K_i	mV/ (r/min)	5.87	6.79	5.43	8.9	9.74
Power rate (see note 1)		Q_p	kW/s	4.36	9.63	25.4	32.8	47.3
Mechanical time constant		τ_m	ms	1.6	0.9	0.6	0.4	0.3
Winding resistance		R_w	Ω	7.22	4.34	1.22	0.706	0.435
Winding inductance		L_w	mH	9.7	6.9	2.0	4.0	2.3
Electrical time constant		τ_e	ms	1.3	1.6	1.6	5.7	5.3
Momentary allowable radial load INC (see note 4)		F_{mr}	N	186	186	186	490	490
Momentary allowable thrust load INC (see note 4)		F_{mt}	N	127	127	127	176	176
Allowable radial load INC (see note 4)		F_r	N	68	68	78	245	245
Allowable thrust load INC (see note 4)		F_t	N	54	54	54	74	74
Weight INC (see note 4)	Without brakes	m	kg	Approx. 0.3	Approx. 0.4	Approx. 0.5	Approx. 1.1	Approx. 1.7
	With brakes		kg	Approx. 0.6	Approx. 0.7	Approx. 0.8	Approx. 1.6	Approx. 2.2
Corresponding Servo Driver (R88D-)	Analog output			UA03LA	UA04LA	UA10LA	UA12LA	UA15LA
	Pulse train output			UP03LA	UP04LA	UP10LA	UP12LA	UP15LA
Brake specifications (see note 2)	Brake inertia	J_b	kg•m^2	0.09×10^{-5}			0.58×10^{-5}	
	Magnetized voltage	U_b	V	24 VDC ± 10% (no polarity)				
	Power consumption (at 20°C)	P_b	W	6			6.5	
	Current consumption (at 20°C)	I_b	A	0.25			0.27	
	Static friction torque	T_b	N•m	0.2 min.		0.34 min.	1.5 min.	
	Absorption time (see note 3)	t_{ba}	ms	40 max.		60 max.	100 max.	
	Release time (see note 3)	t_{br}	ms	20 max.		30 max.	40 max.	
	Backlash		---	± 1° (reference value)				
	Rating		---	Continuous				
	Insulation grade		---	Type F				

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. The brakes installed in the Servomotors have non-magnetized operation. (The magnetic brake is released when a magnetic current is applied.)

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

4. INC: Servomotor with Incremental Encoder attached.

5. The magnetic brakes installed in Servomotors with brakes are status-holding brakes. The magnetic brake is not meant to be used for braking. Using it for braking will damage it. During Servomotor operation, be sure to release the magnetic brake by applying a magnetic voltage.

6. Absolutely do not impact the Servomotor or the output shaft by striking them with an implement such as a hammer. Doing so will damage the Servomotor and encoder bearings.

■ 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 80% 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.) (See note 2)
Vibration grade	V-15 (JEC2121)
Mounting method	Flange-mounting

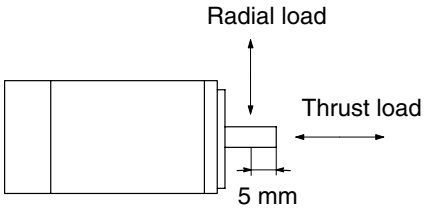
Note: 1. Vibration may be amplified due to sympathetic resonance of machinery, so use the Servomotor Driver under conditions which will not exceed 19.6 m/s^2 over a long period of time.

2. The drip-proofing specifications are special specifications covered by IP-44. (Models with drip-proof specifications provide drip-proofing on Servomotors with oil seals.)

3. The above items reflect individual evaluation testing. The results may differ under compounded conditions.

4. The Servomotor cannot be used in a misty atmosphere.

Servomotor Shaft Tolerance Load



- The allowable radial load is the value at a point 5 mm from the end of the shaft.
- The allowable radial and thrust loads are values determined with a service life of 20,000 hours taken as a criteria.

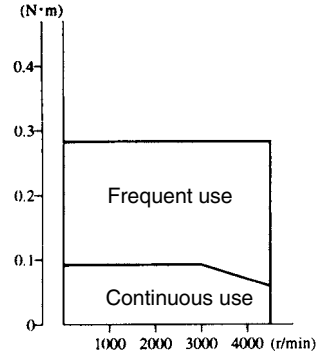
Radiant Heat Conditions

When the AC Servomotor is operated continuously at a rated current, a radiant heat board, as noted below, must be fitted to the Servomotor flange.
30 to 750 W: t6 × 250 mm angle aluminium board or the above equivalent.

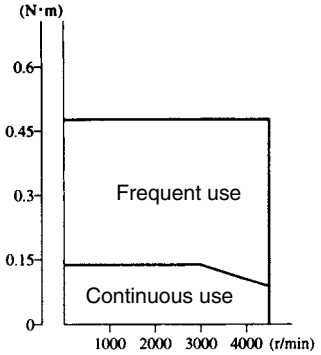
Torque and Rotation Speed Characteristics

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

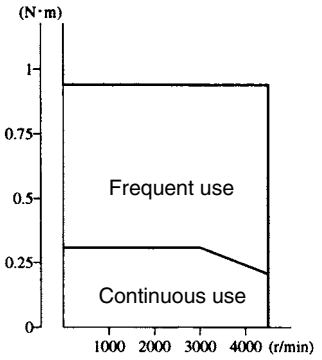
R88M-U03030□□



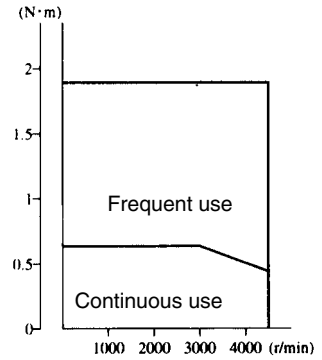
R88M-U05030□□



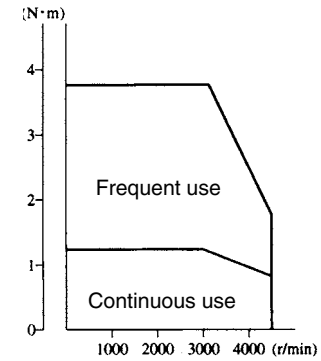
R88M-U10030□□



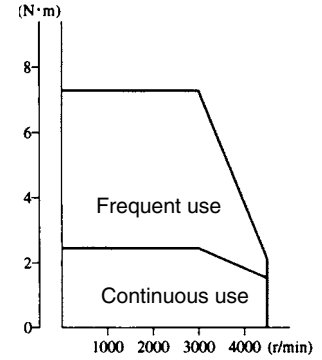
R88M-U20030□□



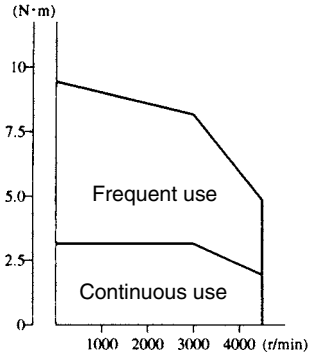
R88M-U40030□□



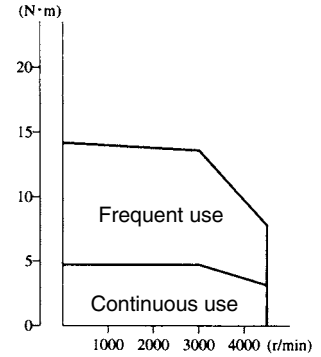
R88M-U75030□□



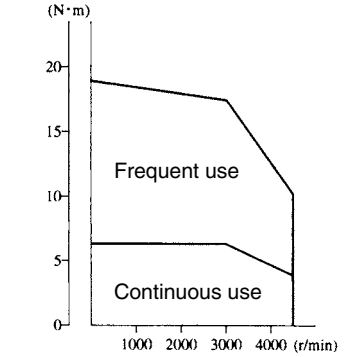
R88M-U1K030□/-U1K030□



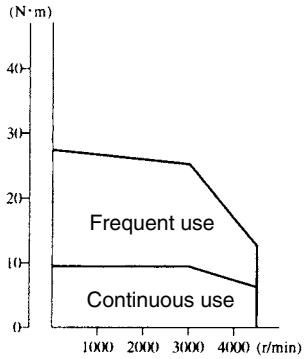
R88M-U1K530□/-U1K530□



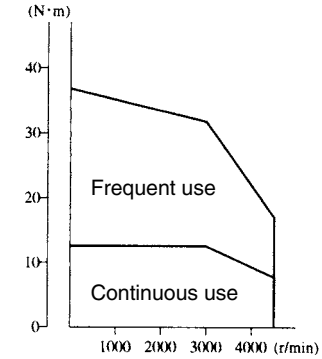
R88M-U2K030□/-U2K030□



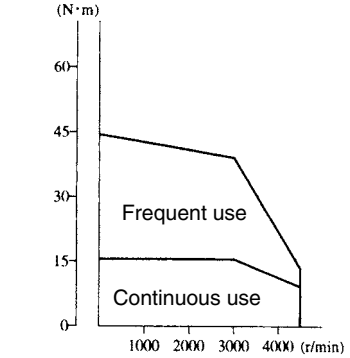
R88M-U3K030□/-U3K030□



R88M-U4K030□/-U4K030□



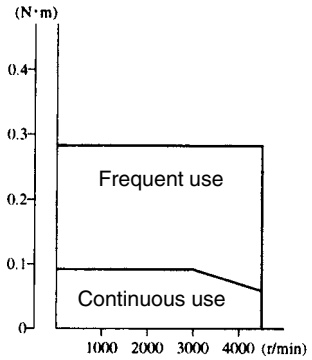
R88M-U5K030□/-U5K030□



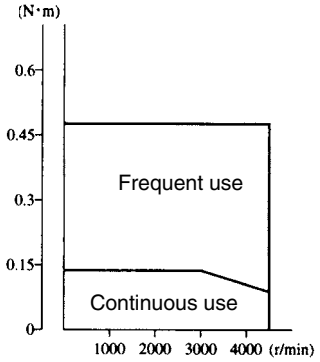
Torque and Rotation Speed Characteristics

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

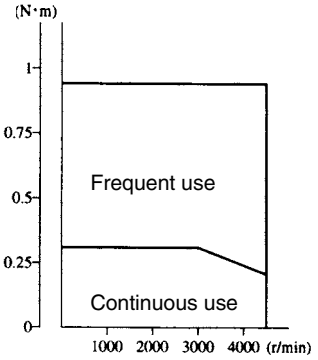
R88M-U03030□□



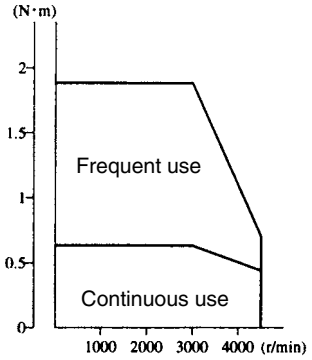
R88M-U05030□□



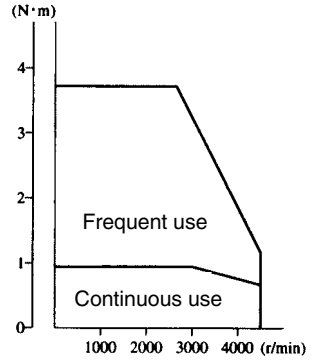
R88M-U10030□□



R88M-U20030□□



R88M-U30030□□



Servo Driver Specifications

■ General Specifications

Item	Specifications	
	30- to 750-W models	1- to 5-kW models
Operating ambient temperature	0 to 55°C	
Operating ambient humidity	35% to 85% RH (with no condensation)	20% to 85% RH (with no condensation)
Storage ambient temperature	–10 to 75°C	–20 to 85°C
Storage ambient humidity	35% to 85% RH (with no condensation)	20% 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)	Between power line terminals and case: 1 MΩ min. (at 500 VDC)
Dielectric strength	Between power line terminals and case: 1,000 VAC for 1 min (20 mA max.) at 50/60 Hz	Between power line terminals and case: 1,500 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/s^2 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 Servo Driver parts will require maintenance. Refer to the relevant operation manual for details.

■ Performance Specifications

30- to 750-W Analog Input Models

Model		200 V						100 V				
		R88D -UA02□□	R88D -UA03□□	R88D -UA04□□	R88D -UA08□□	R88D -UA12□□	R88D -UA20□□	R88D -UA03□□	R88D -UA04□□	R88D -UA10□□	R88D -UA12□□	R88D -UA15□□
Continuous output current (0-P)		0.6 A	0.85 A	1.2 A	2.8 A	3.7 A	6.2 A	0.9 A	1.3 A	3.1 A	3.8 A	4.8 A
Momentary maximum output current (0-P)		1.8 A	2.7 A	4.0 A	8.5 A	11.3 A	19.7 A	2.8 A	4.1 A	10 A	12 A	15 A
Input power supply		Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz						Single-phase 100/115 VAC (85 to 127 V) 50/60 Hz				
Control method		All-digital servo										
Speed feedback		Incremental encoder (magnetic), 2,048 pulses/revolution										
Applicable load inertia INC (see note)		Maximum of 30 times motor's rotor inertia				Maximum of 20 times motor's rotor inertia		Maximum of 30 times motor's rotor inertia				Maximum of 20 times motor's rotor inertia
Inverter method		PWM method based on IGBT										
PWM frequency		11 kHz					7.8 kHz	11 kHz				7.8 kHz
Applicable Servomotor INC (see note)		R88M-U03030□□	R88M-U05030□□	R88M-U10030□□	R88M-U20030□□	R88M-U40030□□	R88M-U75030□□	R88M-U03030□□	R88M-U05030□□	R88M-U10030□□	R88M-U20030□□	R88M-U30030□□
Applicable Servomotor wattage		30 W	50 W	100 W	200 W	400 W	750 W	30 W	50 W	100 W	200 W	300 W
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
Capacity	Speed control range	1:5000										
	Speed fluctuation rate (load characteristic)	0.01% at 0 to 100% (at rated rotation speed)										
	Speed fluctuation rate (voltage characteristic)	0% at input voltage of 170 to 253 VAC						0% at input voltage of 85 to 127 VAC				
	Speed fluctuation rate (temperature characteristic)	±0.2% max. at 0 to 50°C										
	Frequency characteristics	250 Hz (at the same load as the rotor inertia)										
	Torque control reproducibility	±2.0%										
	Acceleration time setting	0 to 10 s (Acceleration and deceleration times are set separately)										
Input signal	Speed command voltage	±2 to 10 VDC (motor rotation by +command) / rated rotation speed Input impedance: Approx. 30 kΩ; circuit time constant: Approx. 47 μs										
	Torque command voltage	±1 to 10 VDC / rated torque Input impedance: Approx. 30 kΩ; circuit time constant: Approx. 47 μs										
	Sequence input	Run command, gain deceleration, forward/reverse current limit, forward/reverse drive prohibit, alarm reset, 24-VDC, 5-mA photocoupler input, external power supply: 24±1 VDC, 50 mA min.										
Output signal	Position feedback output	A-, B-, Z-phase line driver output (EIA RS-422A) A-phase and B-phase (dividing rate setting): 16 to N pulses/revolution, N=2,048 (incremental) Z-phase: 1 pulse/revolution										
	Speed monitor output	0.5 V/1000 r/min										
	Current monitor output	0.5 V/100%										
	Sequence output	Alarm output, alarm code output, motor rotation detection, brake interlock, speed conformity, open collector output, 30 VDC, 50 mA (except for alarm code output, which is 30 VDC, 20 mA)										
Dynamic brake stopping		Operates when the power supply turns off, a servo alarm is generated or an overrun occurs.										
Protective functions		Overcurrent, grounding, overload, overvoltage, overspeeding, A/D errors, transmission errors, encoder errors, overrun prevention										

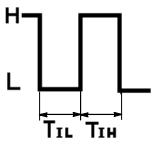
Note: INC: Servomotor with Incremental Encoder attached.

Servo Driver Specifications

30- to 750-W Pulse Train Input Models

Model		200 V						100 V				
		R88D -UP02□□	R88D -UP03□□	R88D -UP04□□	R88D -UP08□□	R88D -UP12□□	R88D -UP20□□	R88D -UP03□□	R88D -UP04□□	R88D -UP10□□	R88D -UP12□□	R88D -UP15□□
Continuous output current (0-P)		0.6 A	0.85 A	1.2 A	2.8 A	3.7 A	6.2 A	0.9 A	1.3 A	3.1 A	3.8 A	4.8 A
Momentary maximum output current (0-P)		1.8 A	2.7 A	4.0 A	8.5 A	11.3 A	19.7 A	2.8 A	4.1 A	10 A	12 A	15 A
Input power supply		Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz						Single-phase 100/115 VAC (85 to 127 V) 50/60 Hz				
Control method		All-digital servo										
Speed feedback		Incremental encoder (magnetic), 2,048 pulses/revolution										
Applicable load inertia		Maximum of 30 times motor's rotor inertia				Maximum of 20 times motor's rotor inertia		Maximum of 30 times motor's rotor inertia				Maximum of 20 times motor's rotor inertia
Inverter method		PWM method based on IGBT										
PWM frequency		11 kHz					7.8 kHz	11 kHz				7.8 kHz
Applicable Servomotor		R88M-U03030□□	R88M-U05030□□	R88M-U10030□□	R88M-U20030□□	R88M-U40030□□	R88M-U75030□□	R88M-U03030□□	R88M-U05030□□	R88M-U10030□□	R88M-U20030□□	R88M-U30030□□
Applicable Servomotor wattage		30 W	50 W	100 W	200 W	400 W	750 W	30 W	50 W	100 W	200 W	300 W
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
Capacity	Maximum response pulse frequency	200 kpps										
	Position loop gain	1 to 500 (1/s)										
	Electrical gear function	Electrical gear ratio range: 0.01 ≦ (G1/G2) ≦ 100 (G1, G2 = 1 to 65, 535)										
	Positioning completed width	0 to 250 (command units)										
	Feed forward compensation	0 to 100% of the speed command (pulse frequency)										
	Bias setting	0 to 450 r/min										
	Position accel/decel time constant setting	0 to 64 ms (acceleration and deceleration are set the same)										
Input signal	Position command pulse input (see note)	TTL line driver input photo isolation input power supply 6 mA to 3 V. Feed pulse/forward, reverse signal, forward pulse/reverse pulse, 90° disparity (A-, B-phase) signal.										
	Deviation counter reset	TTL line driver input photo isolation input power supply 6 mA to 3 V.										
	Sequence input	Run command, gain deceleration, forward/reverse current limit, forward/reverse drive prohibit, alarm reset, 24-VDC, 5-mA photocoupler input, external power supply: 24±1 VDC, 50 mA min.										
Output signal	Position feedback output	A-, B-, Z-phase line driver output (EIA RS-422A) A-phase and B-phase (dividing rate setting): 16 to 2,048 pulses/revolution Z-phase: 1 pulse/revolution										
	Speed monitor output	0.5 V/1000 r/min										
	Current monitor output	0.5 V/100%										
	Sequence output	Alarm output, alarm code output, motor rotation detection, brake interlock, positioning complete, open collector output, 30 VDC, 50 mA (except for alarm code output, which is 30 VDC, 20 mA)										
Dynamic brake stopping		Operates when the power supply turns off, a servo alarm is generated or an overrun occurs.										
Protective functions		Overcurrent, grounding, overload, overvoltage, overspeeding, overrun prevention, transmission errors, encoder errors, deviation counter overrun										

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



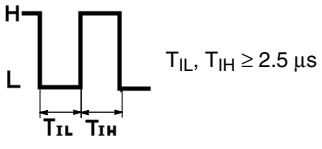
T_{IL}, $T_{IH} \geq 2.5$ μs

1- to 5-kW Analog/Pulse Common Input Models

Model			R88D -UT24□	R88D -UT40□	R88D -UT60□	R88D -UT80□	R88D -UT110□	R88D -UT120□ (see note1)
Continuous output current (0-P)			8.6 A	14.0 A	17.0 A	27.4 A	35.8 A	37.0 A
Momentary maximum output current (0-P)			24 A	40 A	59 A	79 A	108 A	119 A
Input power supply	Main circuit		3-phase 200/230 VAC (170 to 253 V) 50/60 Hz					
	Control circuit		Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz					
Control method			All-digital servo					
Speed feedback			Incremental encoder (optical), 4,096 pulses/revolution; Absolute encoder (optical), 8,192 pulses/revolution					
Applicable load inertia			Maximum of 10 times motor's rotor inertia					
Inverter method			PWM method based on IGBT					
PWM frequency			3.3 kHz					
Applicable Servomotor			R88M-U1K030□	R88M-U1K530□	R88M-U2K030□	R88M-U3K030□	R88M-U4K030□	R88M-U5K030□
Applicable Servomotor wattage			1,000 W	1,500 W	2,000 W	3,000 W	4,000 W	5,000 W
Weight			Approx. 4.0 kg		Approx. 5.0 kg		Approx. 8.0 kg	
Capacity	Analog input	Speed control range	1:5000					
		Speed fluctuation rate (load characteristic)	0.01% at 0 to 100% (at the rated rotation speed)					
		Speed fluctuation rate (voltage characteristic)	0% at input voltage 170 to 253 VAC					
		Speed fluctuation rate (temperature characteristic)	±0.1% at 25°C ±25°C					
		Frequency characteristics	250 Hz (at a load inertia equal to the motor's rotor inertia)					
		Acceleration/Deceleration time setting	0 to 10 s (acceleration and deceleration times are set separately)					
	Pulse input	Maximum response pulse frequency	200 kpps					
		Position loop gain	1 to 1,000 (1/s)					
		Electrical gear function	Electrical gear ratio range: 0.01 ≦ (G1/G2) ≦ 100 (G1, G2 = 1 to 65, 535)					
		Positioning completed width	0 to 250 (command units)					
		Feed forward compensation	0 to 100% of the speed command (pulse frequency)					
		Bias setting	0 to 450 r/min					
		Position accel/decel time constant setting	0 to 64 ms (acceleration and deceleration are set the same)					
Input signal	Input signal	Position command pulse input (see note2)	TTL line driver input photo isolation input power supply 6 mA to 3 V. Feed pulse/forward, reverse signal, forward pulse/reverse pulse, 90° disparity (A-, B-phase) signal.					
		Deviation counter reset	TTL line driver input photo isolation input power supply 6 mA to 3 V.					
		Sequence input	Run command, gain deceleration, forward/reverse current limit, forward/reverse drive prohibit, alarm reset, 24-VDC, 5-mA photocoupler input, external power supply: 24±1 VDC, 50 mA min.					
Output signal		Position feedback output	A-, B-, Z-phase line driver output (EIA RS-422A) A-phase and B-phase (dividing rate setting): 16 to 2,048 pulses/revolution Z-phase: 1 pulse/revolution					
		Speed monitor output	1 V/1000 r/min					
		Current monitor output	2 V/100%					
		Sequence output	Alarm output, alarm code output, motor rotation detection, brake interlock, positioning complete, open collector output, 30 VDC, 50 mA (except for alarm code output, which is 30 VDC, 20 mA)					
Dynamic brake stopping			Operates when the power supply turns off, a servo alarm is generated or an overrun occurs.					
Protective functions			Overcurrent, grounding, overload, overvoltage, overspeeding, overrun prevention, transmission errors, encoder errors, deviation counter overrun					

Note: 1. Connect 5-kW Servomotors that conform to CE standards to UT110□ Servo Drivers.

2. Ensure that the input pulse width meets the following conditions.



T_{IL}, $T_{IH} \geq 2.5$ μs

Options Specifications

■ Regeneration Unit Specifications (For 30- to 750-W Models)

General Specifications

Item	Specifications
Operating ambient temperature	0°C to 55°C
Storage ambient temperature	–10°C to 75°C
Operating ambient humidity	35% to 85% RH (with no condensation)
Storage ambient humidity	35% to 85% RH (with no condensation)
Storage and operating atmosphere	No corrosive gasses.
Vibration resistance	4.9 m/s^2 max.
Impact resistance	Acceleration 19.6 m/s^2 max.

Performance Specifications

Model	R88A-RG08U
Regeneration operating voltage	380 V_{DC}
Regeneration processing current	8 A_{DC}
Average regeneration power	12 W (internal resistance: 50 Ω, 60 W)
Error detection function	Regeneration resistance disconnection, regeneration transistor damage, overvoltage
Alarm output	1b contact (open contact at time of protective function operation) (200 VAC drive possible.)
Weight	Approx. 1 kg

Indicator LED Specifications

Item	Specifications
POWER	Lit while power flows through PN terminal.
REGEN	Lit during regeneration operation.
ALARM-REGEN	Lit for regeneration resistance disconnection or regeneration transistor damage.
ALARM-OV	Lit when overvoltage occurs.

Note: 1. When the error detection function operates, an alarm is output from the Unit.

2. Create a sequence so that the power supply (R–T) to the Servo Driver is cut off when an alarm is generated.

3. When the error detection function operates and the Servo Driver's power supply is cut off, the Regeneration Unit won't be restored to its normal status until 2 to 3 seconds have elapsed, even if the power supply is turned on again. (Normal status is restored after the electrolytic capacitor in the Servo Driver has been discharged and the voltage between signals P and N drops.)

■ Parameter Unit Specifications

General Specifications

Item	Specifications
Operating ambient temperature	0°C to 55°C
Storage ambient temperature	–10°C to 75°C
Operating ambient humidity	35% to 85% RH (with no condensation)
Storage ambient humidity	35% to 85% RH (with no condensation)
Storage and operating atmosphere	No corrosive gasses.
Vibration resistance	4.9 m/s^2 max.
Impact resistance	Acceleration 19.6 m/s^2 max.

Performance Specifications

Item			R88A-PR02U	R88A-PR03U
Type			Handy type	Mounted type
Accessory cable			1 m	(Connected by connectors.)
Connectors			7910-7500SC (10 pins)	D sub-connector (9 pins)
Display			7-segment LED, 5 digits	
Weight			Approx. 0.18 kg	Approx. 0.02 kg
Communications specifications	Standard		RS-232C	RS-422A
	Communications method		Asynchronous (ASYNC)	
	Baud rate		2,400 bps	
	Start bits		1 bit	
	Data		8 bits	
	Parity		None	
	Stop bits		1 bit	
Errors detected by Parameter Unit		Display	CPF00	Cannot transmit even after 5 seconds have elapses since power supply was turned on.
			CPF01	A BCC error or faulty reception data has occurred for five consecutive times, or a time overrun (1 s) has occurred for three consecutive times.

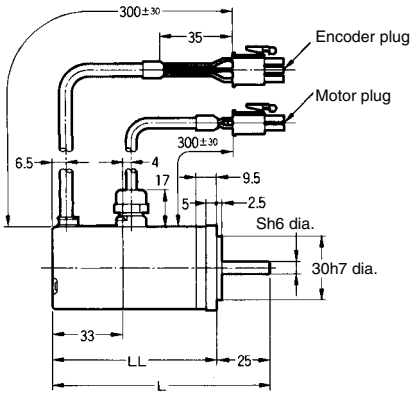
External Dimensions

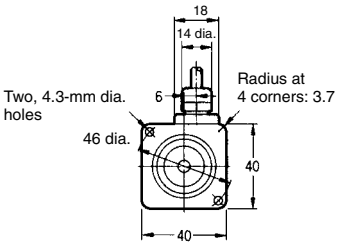
■ AC Servomotors

• 30 to 100 W INC

30 W R88M-U03030□□/U03030□□
50 W R88M-U05030□□/U05030□□
100 W R88M-U10030□□/U10030□□

Model	L	LL	S
R88M-U03030□□	94.5	69.5	6
R88M-U03030□□			
R88M-U05030□□	102	77	6
R88M-U05030□□			
R88M-U10030□□	119.5	94.5	8
R88M-U10030□□			

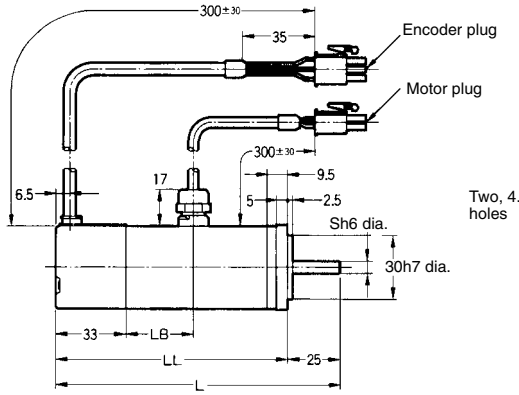


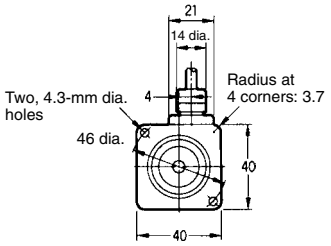


• 30 to 100 W INC With B

30 W R88M-U03030□□-B/U03030□□-B
50 W R88M-U05030□□-B/U05030□□-B
100 W R88M-U10030□□-B/U10030□□-B

Model	L	LL	LB	S
R88M-U03030□□-B	126	101	31.5	6
R88M-U03030□□-B				
R88M-U05030□□-B	133.5	108.5	31.5	6
R88M-U05030□□-B				
R88M-U10030□□-B	160	135	40.5	8
R88M-U10030□□-B				

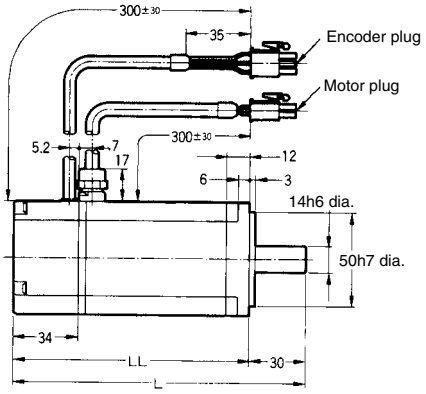


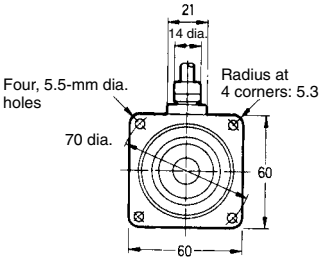


• 200 to 400 W INC

200 W R88M-U20030□□/U20030□□
300 W R88M-U30030□□
400 W R88M-U40030□□

Model	L	LL
R88M-U20030□□	126.5	96.5
R88M-U20030□□		
R88M-U30030□□	154.5	124.5
R88M-U40030□□		





Note: INC: Incremental Encoder Attached With B: With brakes

External Dimensions

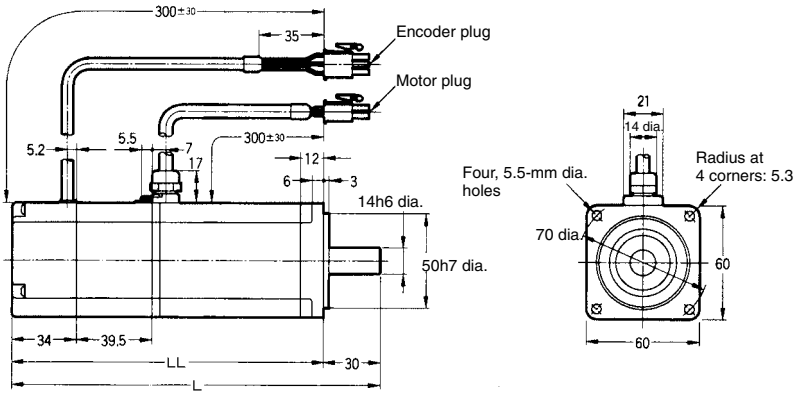
- **200 to 400 W** **INC** **With B**

  200 W R88M-U20030□□-B/U20030□□-B

  300 W R88M-U30030□□-B

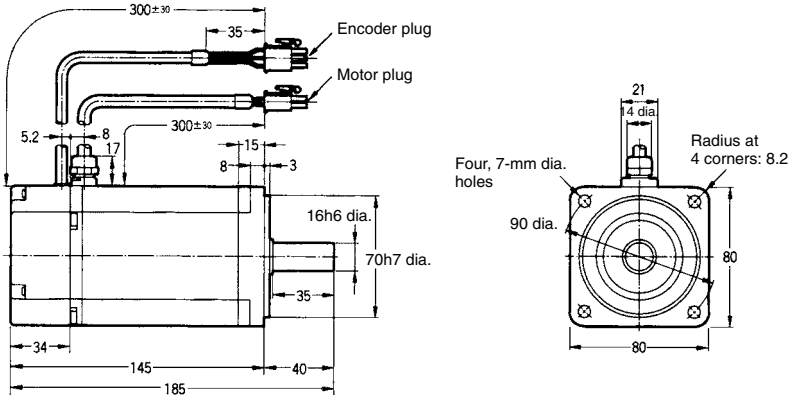
  400 W R88M-U40030□□-B

Model	L	LL
R88M-U20030□□-B	166	136
R88M-U20030□□-B		
R88M-U30030□□-B	194	164
R88M-U40030□□-B		



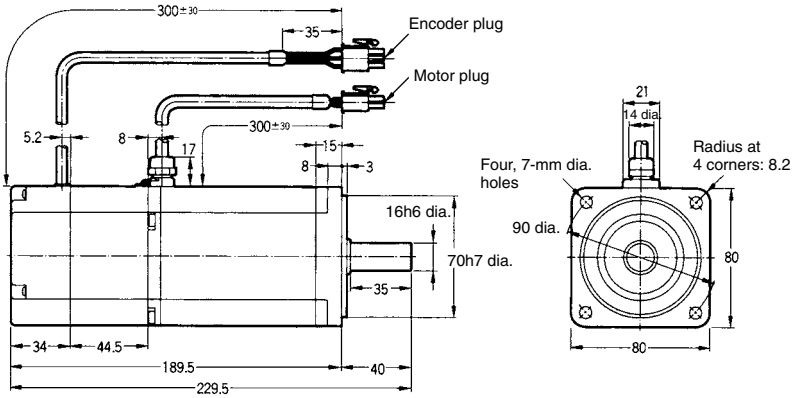
- **750 W** **INC**

  R88M-U75030□□



- **750 W** **INC** **With B**

  R88M-U75030□□-B



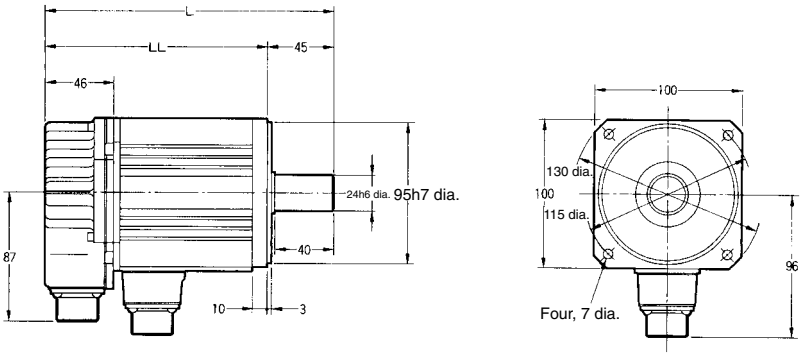
Note: **INC**: Incremental Encoder Attached **With B**: With brake

External Dimensions

- **1 to 2-kW** **INC**

1 kW R88M-U1K030□
1.5 kW R88M-U1K530□
2 kW R88M-U2K030□

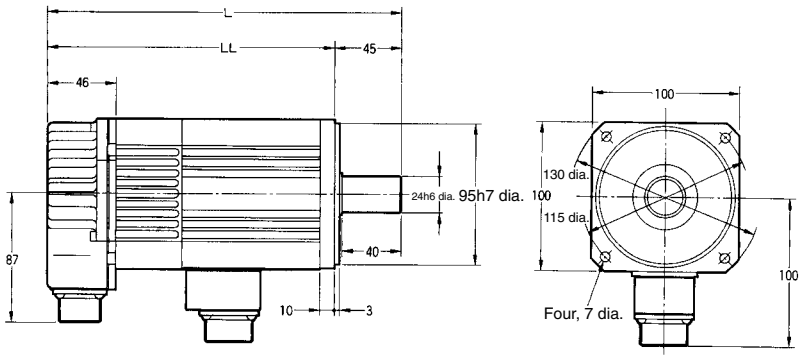
Model	L	LL
R88M-U1K030□	194	149
R88M-U1K530□	220	175
R88M-U2K030□	243	198



- **1 to 2-kW** **INC** **With B**

1 kW R88M-U1K030□-B
1.5 kW R88M-U1K530□-B
2 kW R88M-U2K030□-B

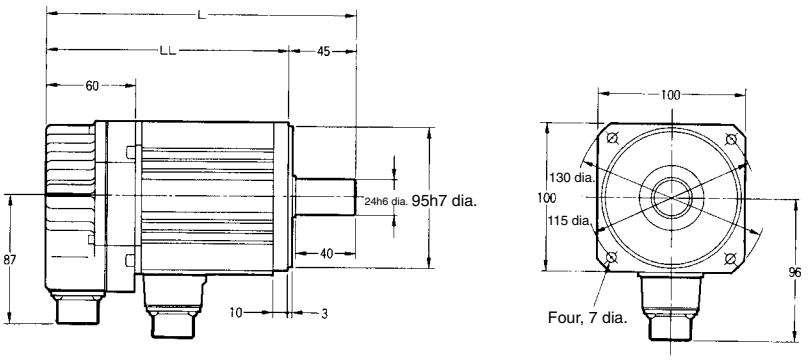
Model	L	LL
R88M-U1K030□-B	238	193
R88M-U1K530□-B	264	219
R88M-U2K030□-B	287	242



- **1 to 2-kW** **ABS**

1 kW R88M-U1K030□
1.5 kW R88M-U1K530□
2 kW R88M-U2K030□

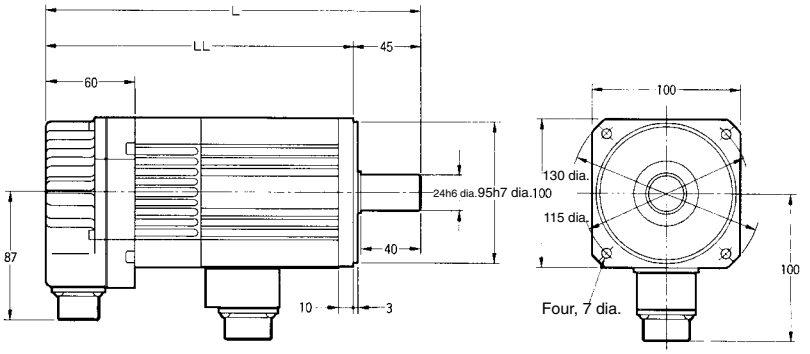
Model	L	LL
R88M-U1K030□	208	163
R88M-U1K530□	234	189
R88M-U2K030□	257	212



- **1 to 2-kW** **ABS** **With B**

1 kW R88M-U1K030□-B
1.5 kW R88M-U1K530□-B
2 kW R88M-U2K030□-B

Model	L	LL
R88M-U1K030□-B	252	207
R88M-U1K530□-B	278	233
R88M-U2K030□-B	301	256



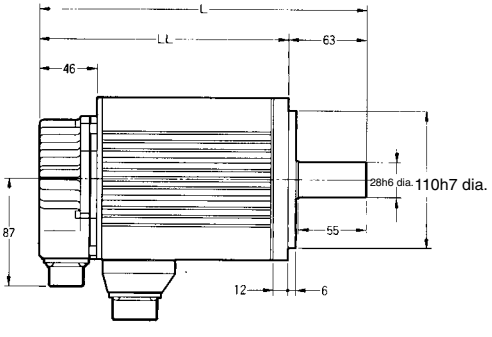
Note: **INC**: Incremental Encoder Attached **ABS**: Absolute Encoder Attached **With B**: With brake

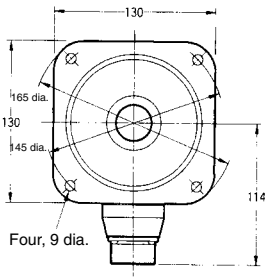
External Dimensions

- **3 to 5-kW** **INC**

3 kW R88M-U3K030□
4 kW R88M-U4K030□
5 kW R88M-U5K030□

Model	L	LL
R88M-U3K030□	262	199
R88M-U4K530□	299	236
R88M-U5K030□	339	276

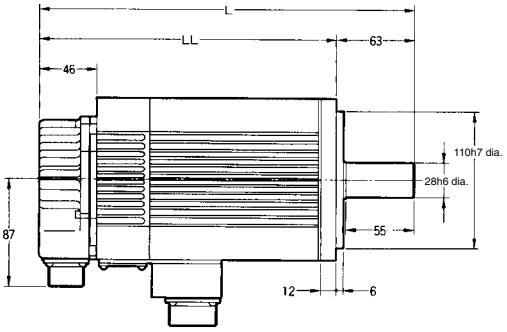


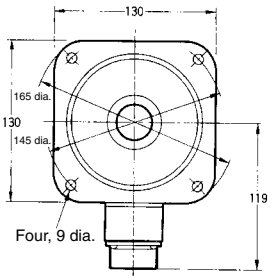


- **3 to 5-kW** **INC** **With B**

3 kW R88M-U3K030□-B
4 kW R88M-U4K030□-B
5 kW R88M-U5K030□-B

Model	L	LL
R88M-U3K030□-B	300	237
R88M-U4K530□-B	337	274
R88M-U5K030□-B	377	314

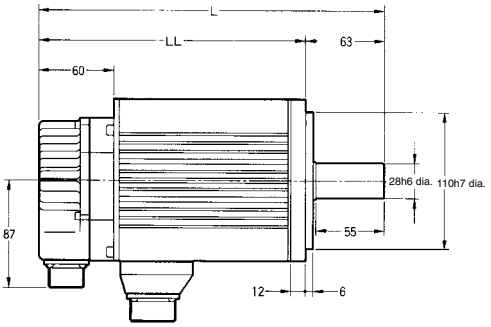


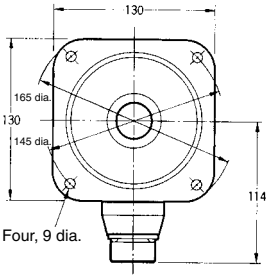


- **3 to 5-kW** **ABS**

3 kW R88M-U3K030□
4 kW R88M-U4K030□
5 kW R88M-U5K030□

Model	L	LL
R88M-U3K030□	276	213
R88M-U4K530□	313	250
R88M-U5K030□	353	290

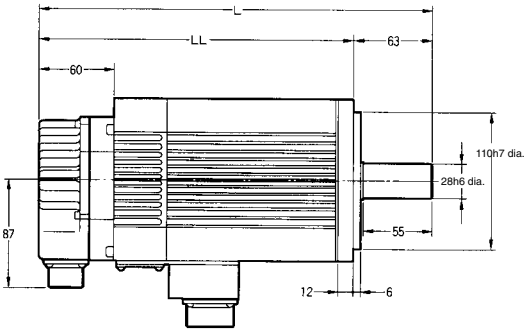


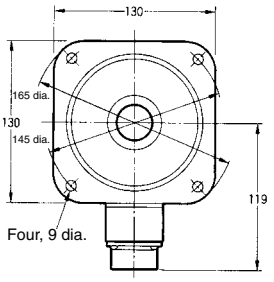


- **3 to 5-kW** **ABS** **With B**

3 kW R88M-U3K030□-B
4 kW R88M-U4K030□-B
5 kW R88M-U5K030□-B

Model	L	LL
R88M-U3K030□-B	314	251
R88M-U4K530□-B	351	288
R88M-U5K030□-B	391	328





Note: **INC**: Incremental Encoder Attached **ABS**: Absolute Encoder Attached **With B**: With brake

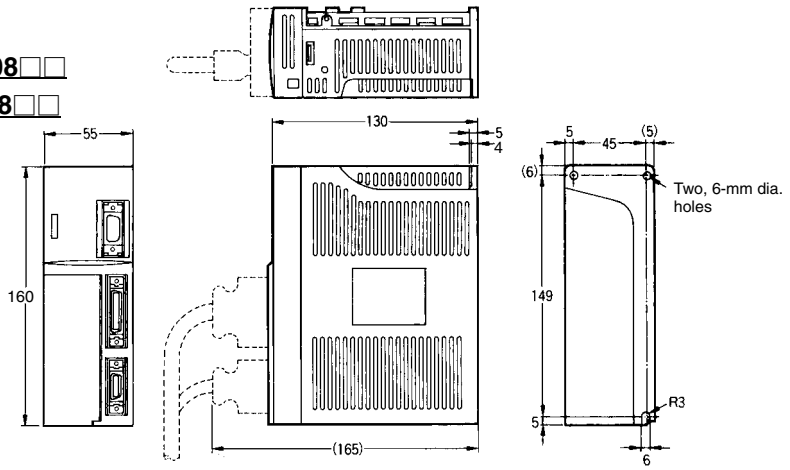
■ AC Servo Drivers

- **200 VAC, 30 to 200 W**

  R88D-UA02□□/UA03□□/UA04□□/UA08□□
  R88D-UP02□□/UP03□□/UP04□□/UP08□□

- **100 VAC, 30 to 100 W**

  R88D-UA03□□/UA04□□/UA10□□
  R88D-UP03□□/UP04□□/UP10□□

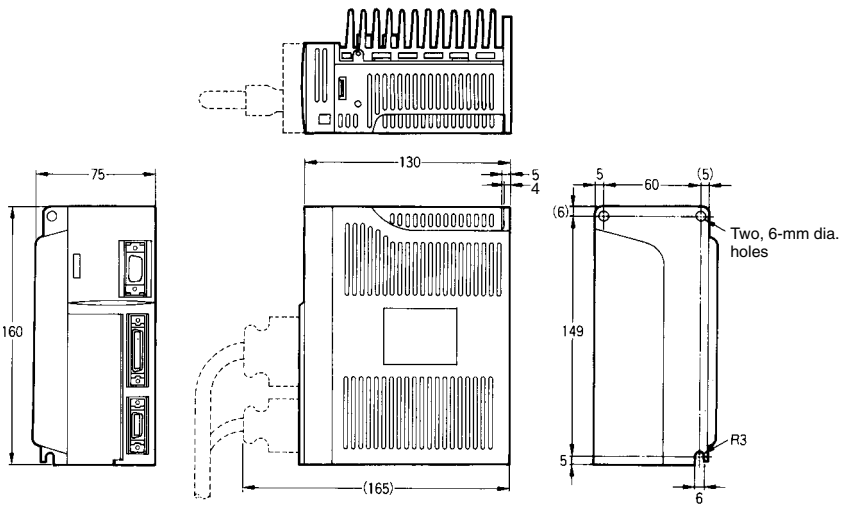


- **200 VAC, 400 W**

  R88D-UA12□□
  R88D-UP12□□

- **100 VAC, 200 W**

  R88D-UA12□□
  R88D-UP12□□

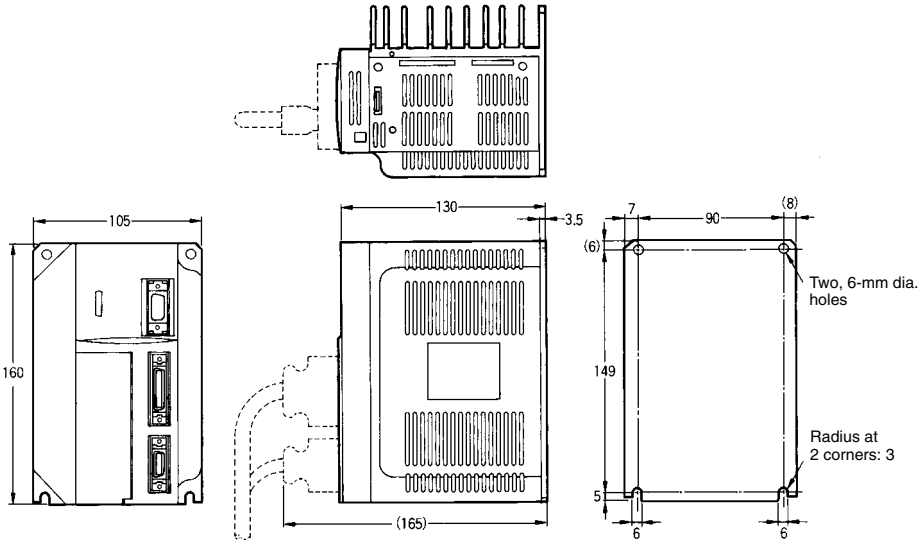


- **200 VAC, 750 W**

  R88D-UA20□□
  R88D-UP20□□

- **100 VAC, 300 W**

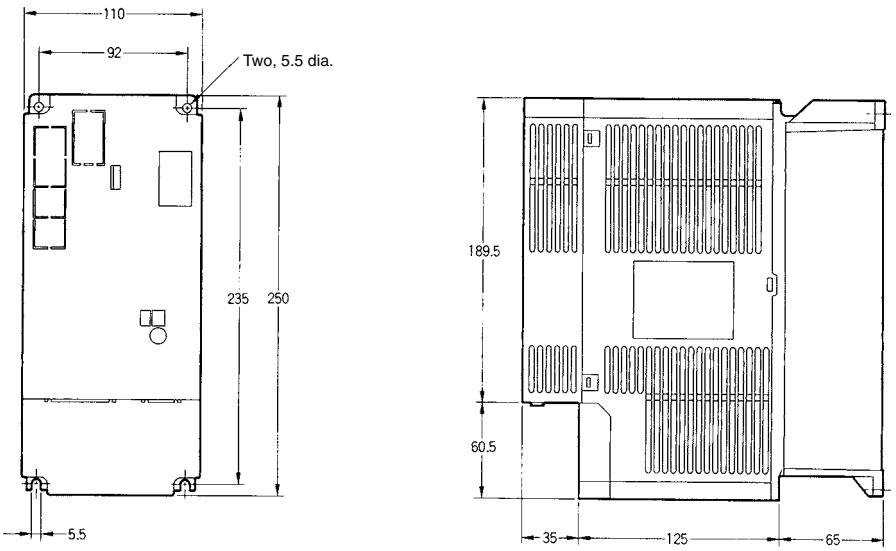
  R88D-UA15□□
  R88D-UP15□□



External Dimensions

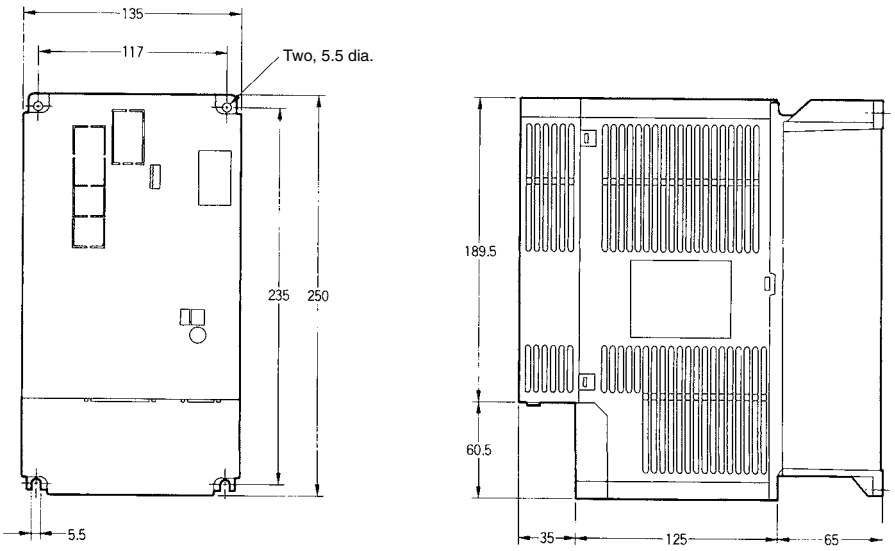
- **200 VAC, 1 to 1.5 kW**

  R88D-UT24□/UT40□



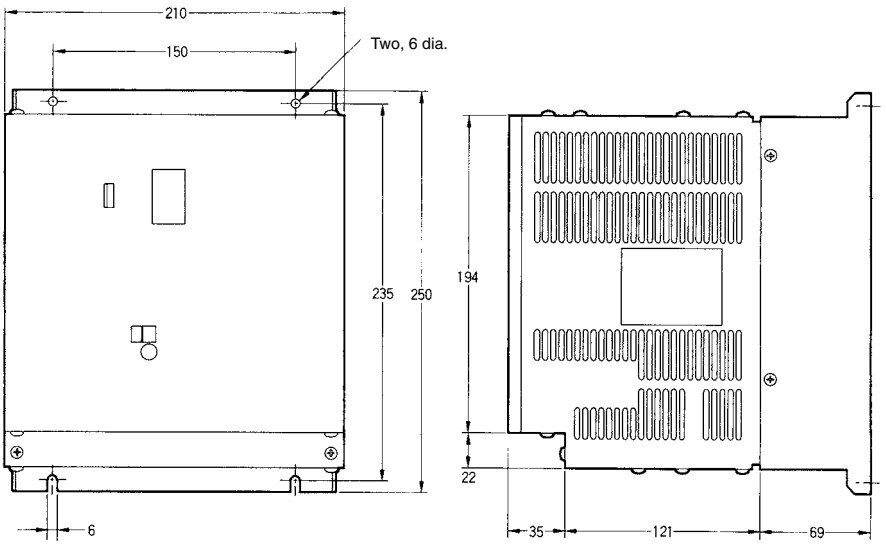
- **200 VAC, 2 to 3 kW**

  R88D-UT60□/UT80□



- **200 VAC, 4 to 5 kW**

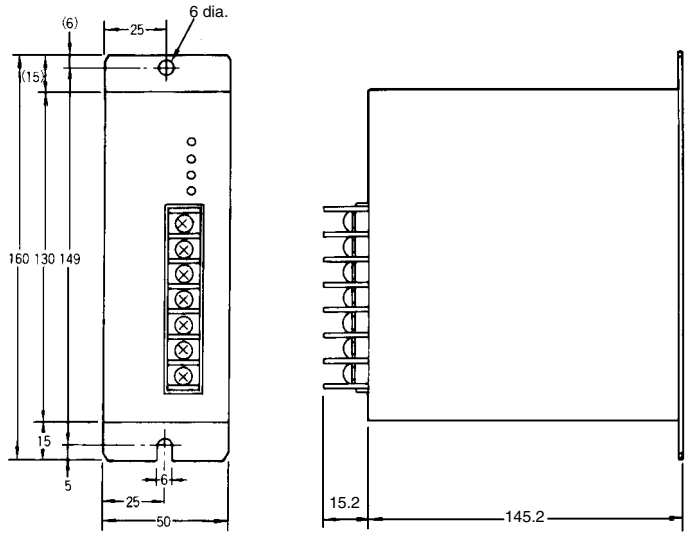
  R88D-UT110□/UT120□



External Dimensions

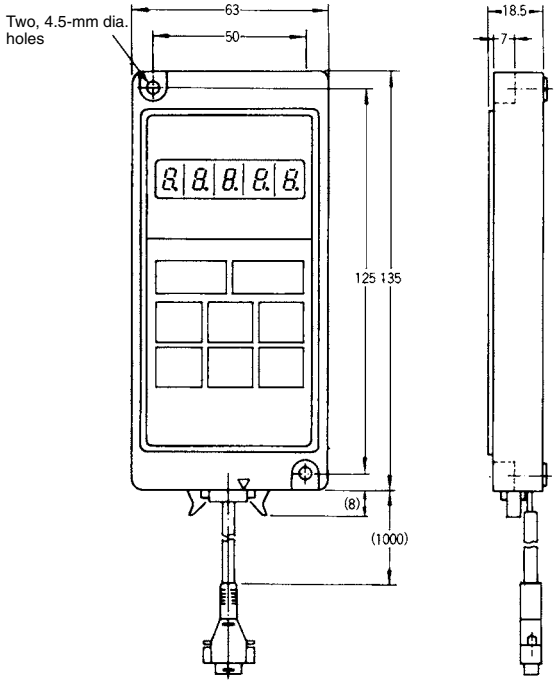
■ Regeneration Unit

- **R88A-RG08U**

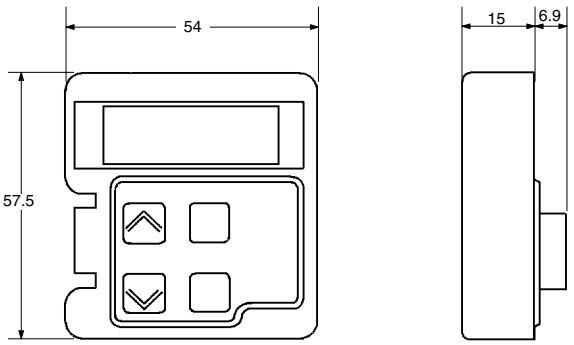


■ Parameter Units

- **R88A-PR02U**



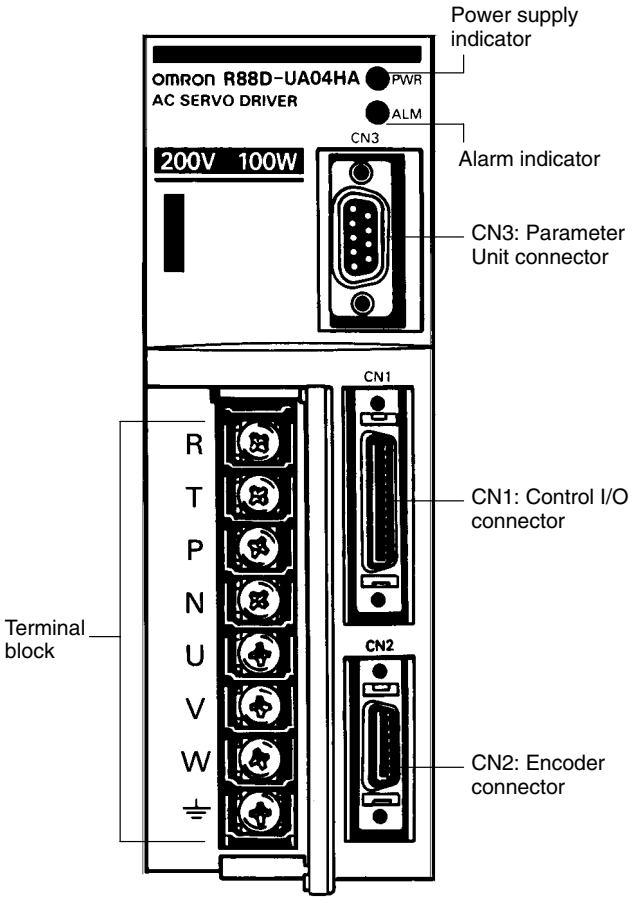
- **R88A-PR03U**



Terminal and Connector Functions (30 to 750 W)

■ Terminal Block Specifications

Signal	Name	Function	
R T	Power supply input	Power input terminal for the main circuit and control circuit. (The voltage differs according to the model type.)	
P N	Main circuit DC output	These are the connection terminals for the Regeneration Unit (R88A-RG08U). Connect these when the regeneration energy is high.	
U	Servomotor U-phase output	Red	These are the terminals for outputs to the Servomotor.
V	Servomotor V-phase output	White	
W	Servomotor W-phase output	Blue	
⏚	Frame ground	Green	This is the connection terminal. Use a class-3 or higher ground. It is used in common for Servomotor output and power supply input.



■ CN2: Encoder Input (Incremental Encoder)

Pin no.	Signal	Name	Interface
1, 2, 3	E0V	Encoder power supply GND	Power supply outlet for encoder: 5 V, 120 mA
4, 5, 6	E5V	Encoder power supply +5 V	
7	DIR	Rotation direction switch input	Connects to GND when reverse rotation is executed by + input.
8, 9, 10, 11, 12, 13	NC	Not used	Do not connect
14	S+	Encoder + S-phase input	Line driver input (conforming to EIA RS-422A) (Input impedance: 220 Ω)
15	S–	Encoder – S-phase input	
16	A+	Encoder + A-phase input	Line driver input (conforming to EIA RS-422A) (Input impedance: 220 Ω)
17	A–	Encoder – A-phase input	
18	B+	Encoder + B-phase input	Line driver input (conforming to EIA RS-422A) (Input impedance: 220 Ω)
19	B–	Encoder – B-phase input	
20	FG	Shielded ground	Cable shielded ground

Terminal and Connector Functions (30 to 750 W)

■ CN1: Control Input (Analog Input/Pulse Train Input)

Pin no.	Signal	Name	Function, Interface	Specified driver type: A: R88D-UA P: R88D-UP
1	TREF	Torque command input	±1 to ±10 V / rated torque Changeable by means of user parameter Cn-13 torque command scale.	A
2	AGND	Torque command input ground		
3	REF	Speed command input	±2 to ±10 V / rated torque Changeable by means of user parameter Cn-03 speed command scale.	
4	AGND	Speed command input ground		
5	–	–	Do not connect	
6	–	–		
1	+PULS/CW/A	Feed pulse, reverse pulse, or 90° phase difference pulse (A-phase)	Line driver input 6 mA to 3 V. Setup parameter Cn-02 bits 3, 4, and 5 allow feed pulse/forward, reverse signal, forward pulse/reverse pulse, 90° phase difference pulse (A-, B-phase) signal (X1, X2, X4) to be switched. Maximum response frequency: 200 kpps	P
2	–PULS/CW/A			
3	+SIGN/CCW/B	Forward/reverse signal, forward rotation pulse, or 90° phase difference pulse (B-phase)		
4	–SIGN/CCW/B			
5	+ECRST	+ deviation counter reset	Line driver input 6 mA to 3 V. Resets the deviation counter when command input is prohibited.	
6	–ECRST	– deviation counter reset		
11	PCL/SPD1	Forward rotation current limit input / Speed selection command 1 input	Forward/reverse rotation current limit (PCL/NCL) when setup parameter Cn-02 bit no. 2 = 0. (ON: Current limit) Internal setting speed (Cn-1F, 20, 21) selector switch when setup parameter Cn-02 bit no. 2 = 1.	A/P
12	NCL/SPD2	Reverse rotation current limit input / Speed selection command 2 input		
13	+24VIN	+24-V power supply input for control DC	Power supply for pin nos. 11, 12, 14, 15, 16, 17, 18; +24-V input	A/P
14	RUN	Run command input	ON: Servo ON, when setup parameter Cn-01 bit no. 0 = 0. When setup parameter Cn-01 bit no. 0 = 1, this signal is not used. (Automatically set to Servo ON.)	A/P
15	MING/PLOCK TVSEL/RDIR	Gain deceleration input	ON: Decrease speed loop gain, when setup parameter Cn-01 bit nos. b, A = 0, 0.	A
		Position lock command input	When setup parameter Cn-01 bit nos. b, A = 0, 1, then, when this bit is ON, position lock goes in effect if the motor rotation speed is no more than the position lock rotation speed (Cn-0F).	
		Torque / Speed control switch input	When setup parameter Cn-01 bit nos. b, A = 1, 1, then, when this bit is ON, the mode changes from the torque command (TREF) mode to the speed command (REF) mode. When in torque command mode, speed command (REF) inputs become forward/reverse rotation speed limits.	
		Rotation direction command inputs	When setup parameter Cn-02 bit no. 2 = 1, this is the rotation direction command for internal speed settings 1 to 3.	
	MING/IPG/RDIR	Gain deceleration input	When setup parameter Cn-02 bit no. 2 = 0 and setup parameter Cn-01 bit no. F = 0 then, when this bit is ON, speed loop gain decreases.	P
		Pulse prohibit	When setup parameter Cn-02 bit no. 2 = 0 and setup parameter Cn-01 bit no. F = 1 then, when this bit is ON, input command pulse is prohibited.	
		Rotation direction command input	When setup parameter Cn-02 bit no. 2 = 1, this is the rotation direction command for internal speed settings 1 to 3.	
16	POT	Forward drive prohibit input	Forward rotation overtravel input (OFF when prohibited). When setup parameter Cn-01 bit no. 2 = 1, this signal is not used.	A/P
17	NOT	Reverse drive prohibit input	Reverse rotation overtravel input (OFF when prohibited). When setup parameter Cn-01 bit no. 3 = 1, this signal is not used.	A/P

Terminal and Connector Functions (30 to 750 W)

Pin no.	Signal	Name	Function, Interface	Specified driver type: A: R88D-UA P: R88D-UP
18	RESET	Alarm reset input	ON: Servo alarm status is reset.	A/P
28	–	–	Do not connect	–
29	–	–		

Note: Those input specifications which are not recorded in the above table are 5 mA for 24 V power supply input.

■ CN1: Control Output (Analog Input/Pulse Train Input)

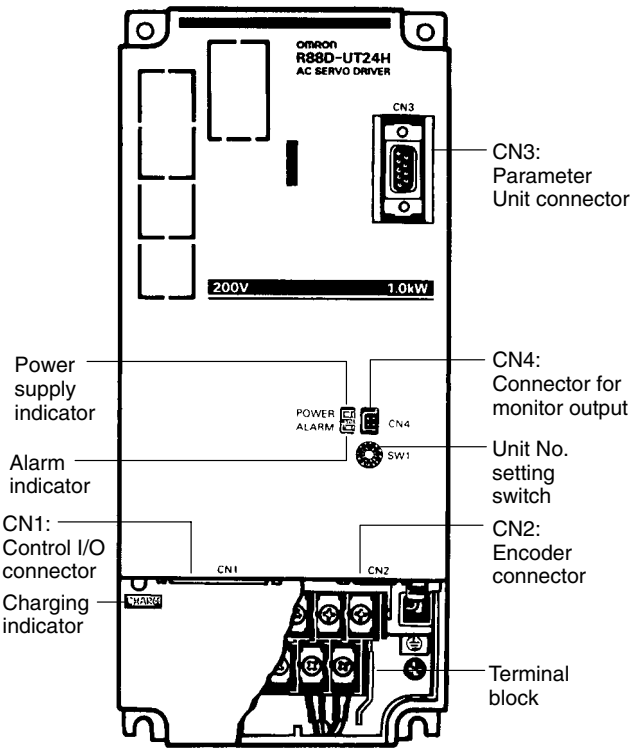
Pin no.	Signal	Name	Function, Interface	Specified driver type: A: R88D-UA P: R88D-UP
7	BKIR	Brake interlock output	Outputs external brake interlock signal. (see note)	A/P
8	VCMP	Speed conformity output	Output when the Servomotor rotation speed conforms to the speed command. (see note)	A
	INP	Positioning completed output	Turned ON when the pulse count remaining in the deviation counter is equal to or less than the positioning completed range set in user parameter Cn-1b. (see note)	P
9	TGON/CLIMT	Servomotor rotation detection output	When setup parameter Cn-01 bit no. 4 = 0, this turns ON if the Servomotor rotation speed exceeds the value set for the Servomotor rotation detection speed (Cn-0b). (see note)	A/P
		Current limit detection output	When bit 4 of setup parameter Cn-01 is set to “1,” the CLIMT signal will turned ON in any of the following 3 cases: The output torque reaches the value set for the torque limit (Cn-08, -09) The forward/reverse rotation current limit (PCL/NCL) is ON and the output torque reaches the external current limit set in Cn-18 or Cn-19. When the forward/reverse rotation power supply limit is OFF, and the output torque reaches the torque limit set in Cn-08, -09. (see note)	
10	OGND	Output ground common	Output ground common for BKIR, VCMP, INP, TGON/CLIMT	A/P
19	EGND	Encoder signal output GND	This is the ground for encoder signal outputs.	A/P
20	+A	Encoder + A-phase output	Outputs encoder pulses divided according to user parameter Cn-0A. Line driver output (conforming to RS-422A).	A/P
21	–A	Encoder – A-phase output		
22	–B	Encoder – B-phase output	Outputs encoder pulses divided according to user parameter Cn-0A. Line driver output (conforming to RS-422A).	A/P
23	+B	Encoder + B-phase output		
24	+Z	Encoder + Z-phase output	Encoder Z-phase output (1 pulse/revolution). Line driver output (conforming to RS-422A).	A/P
25	–Z	Encoder – Z-phase output		
26	–	–	Do not connect	–
27	–	–		
30	ALO1	Alarm code output 1	When an alarm is generated for the Servo Driver, the contents of the alarm are output in code. Open collector output: 30 VDC, 20 mA max.	A/P
31	ALO2	Alarm code output 2		
32	ALO3	Alarm code output 3		
33	ALOCOM	Alarm code output GND		
34	$\overline{\text{ALM}}$	Alarm output	When an alarm is generated for the Servo Driver, the output is OFF. Open collector output. (see note)	A/P
35	ALMCOM	Alarm output GND		
36	FG	Frame ground	Ground terminal for shield wire of cable and FG line.	A/P

Note: These functions are open collector output 30 V/50 mA maximum.

Terminal and Connector Functions (1 to 5 kW)

■ Terminal Block Specifications

Signal	Name	Function	
⏚	Frame ground	This is the connection terminal. Use a class-3 or higher ground.	
R S T	Main circuit power supply input	3-phase 200/230 VAC (170 to 253 V), 50/60 Hz	
P B	Main circuit DC output (positive side)	Do not connect anything to these terminals.	
r t	Control circuit power supply input	Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz	
N	Main circuit DC output (negative side)	Do not connect anything to these terminals.	
U	Motor connection terminals	Red	These are the terminals for outputs to the Servomotor. Be sure to connect these terminals correctly.
V		White	
W		Black	
⏚	Frame ground	Green	



■ CN2: Encoder Input (Incremental Encoder/Absolute Encoder)

Pin no.	Signal	Name	Interface
1, 2, 3	E0V	Encoder power supply GND	Power supply outlet for encoder: 5 V, 400 mA
4, 5, 6	E5V	Encoder power supply +5 V	
7	DIR	Rotation direction switch input	Connects to GND when reverse rotation is executed by + input.
8, 9, 10, 11	NC	Not used	Do not connect
12	BAT+	Battery (positive; see note)	Backup power supply outlet for encoder: 3. 6 V, 10 μA (backup, rotation stopped)
13	BAT–	Battery (negative; see note)	
14	S+	Encoder + S-phase input	Line driver input (conforming to EIA RS-422A) (Input impedance: 220 Ω)
	Z+	Encoder + Z-phase input (see note)	
15	S–	Encoder – S-phase input	
	Z–	Encoder – S-phase input (see note)	
16	A+	Encoder + A-phase input	Line driver input (conforming to EIA RS-422A) (Input impedance: 220 Ω)
17	A–	Encoder – A-phase input	
18	B+	Encoder + B-phase input	Line driver input (conforming to EIA RS-422A) (Input impedance: 220 Ω)
19	B–	Encoder – B-phase input	
20	FG	Shielded ground	Cable shielded ground

Note: Only used with an absolute encoder.

Terminal and Connector Functions (1 to 5 kW)

■ CN1: Control Input

Speed Control/Torque Control

Pin no.	Signal	Name	Function, Interface
5	REF	Speed command input	±2 to ±10 V / rated torque Changeable by means of user parameter Cn-03 speed command scale.
6	AGND	Speed command input ground	
9	TREF	Torque command input	±1 to ±10 V / rated torque Changeable by means of user parameter Cn-13 torque command scale.
10	AGND	Torque command input ground	

Position Control

Pin no.	Signal	Name	Function, Interface
3 13 18	PCOM	Open collector command power supply	When the CW, CCW, or ECRST signals are input using open collector output, connect the positive inputs to these terminals, and connect the negative inputs to the open collector output.
7	+PULS/CW/A	Feed pulse, reverse pulse, or 90° phase difference pulse (A-phase)	Line driver input 6 mA to 3 V. Open collector input 15 mA to 5 V. Setup parameter Cn-02 bits 3, 4, and 5 allow feed pulse/forward, reverse signal, forward pulse/reverse pulse, 90° phase difference pulse (A-, B-phase) signal (X1, X2, X4) to be switched. Maximum response frequency: 200 kpps
8	–PULS/CW/A		
11	+SIGN/CCW/B	Forward/reverse signal, forward rotation pulse, or 90° phase difference pulse (B-phase)	
12	–SIGN/CCW/B		
14	–ECRST	+ deviation counter reset	Line driver input 6 mA to 3 V. Open collector input 15 mA to 5V. Resets the deviation counter when command input is prohibited.
15	+ECRST	– deviation counter reset	

Common

Pin no.	Signal	Name	Function, Interface
40	RUN	Run command input	ON: Servo ON, when setup parameter Cn-01 bit no. 0 = 0. When setup parameter Cn-01 bit no. 0 = 1, this signal is not used. (Automatically set to Servo ON.)
41	MING/TVSEL/ PLOCK/IPG/ RDIR	Gain deceleration input	If user parameter Cn-2b = 0 or 1, or user parameter Cn-2b = 3, 4, or 5 and SPD1 and SPD2 are OFF, when this signal turns ON, the speed loop gain is decreased.
		Torque / Speed control switch input	If user parameter Cn-2b = 7, 8, or 9, when this signal turns ON, the control modes are switched.
		Position lock command input	If Cn-2b = 10, when this signal is ON, position lock goes into effect if the motor rotation speed is less than the position lock rotation speed.
		Pulse prohibit	If user parameter Cn-2b = 11, input command pulse is prohibited.
		Rotation direction command input	Internal speed setting If user parameter Cn-2b = 3, 4, 5, or 6 and SPD1 or SPD2 is ON, this is the rotation direction command for internal speed settings 1 to 3.
42	POT	Forward drive prohibit input	Forward rotation overtravel input (OFF when prohibited). When setup parameter Cn-01 bit no. 2 = 1, this signal is not used.
43	NOT	Reverse drive prohibit input	Reverse rotation overtravel input (OFF when prohibited). When setup parameter Cn-01 bit no. 3 = 1, this signal is not used.
44	RESET	Alarm reset input	ON: Servo alarm status is reset.

Pin no.	Signal	Name	Function, Interface
45	PCL/SPD1	Forward rotation current limit input / Speed selection command 1 input	Forward/reverse rotation current limit (PCL/NCL) when user parameter Cn-2b = a value other than 3, 4, 5, or 6. Internal setting speed (Cn-1F, 20, 21) selector switch when user parameter Cn-2b = 3, 4, 5, or 6.
46	NCL/SPD2	Reverse rotation current limit input / Speed selection command 2 input	
47	+24VIN	+24-V power supply input for control DC	Power supply for pin nos. 40, 41, 42, 43, 44, 45, 46; +24-V input
4	SEN	Sensor ON input (see note)	ON: Power supply for absolute encoder. When setup parameter Cn-01 bit no. 1 = 1, these signals are not used.
2	SENGND	Sensor ON input ground (see note)	
21	BAT	Backup battery +input (see note)	Connection terminal for absolute encoder backup battery.
22	BATGND	Backup battery –input (see note)	

Note: Only used with an absolute encoder.

■ CN1: Control Output

Pin no.	Signal		Name	Function, Interface
1	GND		Ground common	Ground common for encoder output and alarm code
16	AM		Current monitor	Voltage output at 2 V/[rated torque] with 0 as the center (approx. ±10% margin of error). Negative output for forward acceleration, positive output for rverse acceleration. (The same output voltage value is output to monitor output CN4-2.)
17	NM		Speed monitor	Voltage output at 1 V/[1,000 r/min] with 0 as the center (approx. ±10% margin of error). Negative output for forward acceleration, positive output for reverse acceleration. (The same output voltage value is output to monitor output CN4-1.)
19	+Z		Encoder + Z-phase output	Encoder Z-phase output (1 pulse/revolution). Line driver output (conforming to RS-422A).
20	–Z		Encoder – Z-phase output	
23	P12		Built-in command power supply	Power supply for speed commands and torque commands. By connecting to an external adjustment device, this can be used to make speed comands and torque commands.
24	N12			
25	+	VCMP(INP)/ TGON/ READY/ CLIMT/ BKIR/ OLWRN/ OLALM	Three outputs can be selected from the following output signals using the set value of user parameter Cn-2d.	
			Speed conformity output	Speed control: Output turns ON when the speed error lies within the speed conformity signal output width (Cn-22).
26	–		Positioning completed output	Position control: Outupt turns ON when the position deviation lies within the positioning completed range (Cn-1b). Torque control: Always OFF. This output can only be set for pin numbers 25 or 26.
27	+		Servomotor rotation detection output	Turns ON if the Servomotor rotation speed exceeds the value set for the Servomotor rotation detection speed (Cn-0b).
			Servo Driver ready signal	Turns ON after the main circuit power supply is turned ON if there are no irregularites.
28	–		Current limit detection output	Turns ON in either of the following 2 cases: The output torque reaches the value set for the torque limit (Cn-08, -09) The forward/reverse rotation current limit (PCL/NCL) is ON and the output torque reaches the external current limit set in Cn-18 or Cn-19.
29	+		Brake interlock output	Outputs external brake interlock signal according to the settings of Cn-12, Cn-15, and Cn-16.
			Overload alarm output	Turns ON if the load exceeds 20% of the overload detection level.
30	–		Overload detection output	Turns ON if an overload is detected. Turn OFF using alarm reset.

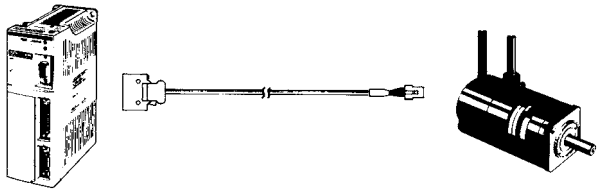
Terminal and Connector Functions (1 to 5 kW)

Pin no.	Signal	Name	Function, Interface
31	$\overline{\text{ALM}}$	Alarm output	When an alarm is generated for the Servo Driver, the output is OFF. Open collector output, 30 VDC, 50 mA max.
32	ALMCOM	Alarm output GND	
33	+A	Encoder + A-phase output	Outputs encoder pulses divided according to user parameter Cn-0A. Line driver output (conforming to RS-422A).
34	–A	Encoder – A-phase output	
35	–B	Encoder – B-phase output	Outputs encoder pulses divided according to user parameter Cn-0A. Line driver output (conforming to RS-422A).
36	+B	Encoder + B-phase output	
37	AL01	Alarm code output 1	When an alarm is generated for the Servo Driver, the contents of the alarm are output in code. Open collector output: 30 VDC, 20 mA max.
38	AL02	Alarm code output 2	
39	AL03	Alarm code output 3	
48	---	---	Do not connect
49	---	---	
50	FG	Frame ground	Ground terminal for shield wire of cable and FG line.

Special Cables

■ R88A-CRU□□□C Encoder Cables

For connection between a U-series AC Servomotor Encoder Connector and a Servo Driver.



R88D-U-series
AC Servo Driver

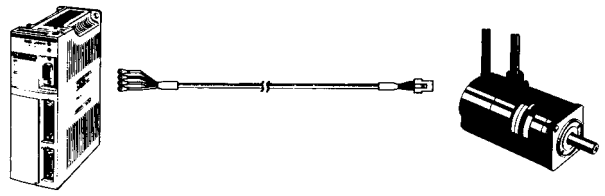
R88M-U-series
AC Servomotor

Model	Specifications
R88A-CRU□□□C	For a 30- to 750-W Servomotor with incremental encoder attached
R88A-CRUB□□□N	For a 1- to 5-kW Servomotor (Incremental encoder or absolute encoder)

Note: The three blank squares in the model number are for the cable length. The length will be 3, 5, 10, 15 or 20 m. For example, for a 3 m cable it would be: R88A-CRU003C.

■ R88A-CAU□□□□ Power Cables

For connection between a U-series Servomotor Power Connector and a Servo Driver.



R88D-U-series
AC Servo Driver

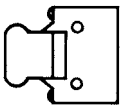
R88M-U-series
AC Servomotor

Model	Specifications
R88A-CAU□□□S	For a 30- to 750-W Servomotor without brakes
R88A-CAU□□□B	For a 30- to 750-W Servomotor with brakes
R88A-CAUB□□□S	For a 1- to 2-kW Servomotor without brakes
R88A-CAUB□□□B	For a 1- to 2-kW Servomotor with brakes
R88A-CAUC□□□S	For a 3- to 5-kW Servomotor without brakes
R88A-CAUC□□□B	For a 3- to 5-kW Servomotor with brakes

Note: The three blank squares in the model number are for the cable length. The length will be 3, 5, 10, 15 or 20 m. For example, for a 3 m cable it would be: R88A-CAU003S.

■ R88A-CNU□□□ Connector for the Control Cable

Since the Connector for the Control Cable is not attached, be sure to purchase a connector kit, use a special control cable, or use a general-purpose control cable.

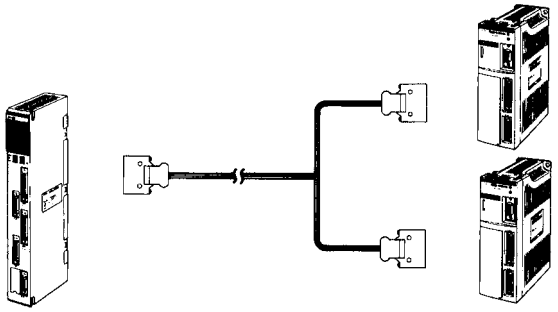


Sumitomo 3M

Model	Specifications
R88A-CNU01C	For a 30- to 750-W Servo Driver (Half-pitch 36P)
R88A-CNU11C	For a 1- to 5-kW Servo Drier (Half-pitch 50p)

■ R88A-CPU□□□M□ Connecting Cables for a CS1W-MC221/421 CV500-MC221/421 C200H-MC221 Motion Control Unit

For connection between the Motion Control Unit and U-series AC Servomotor.



CS1W-MC221/421
CV500-MC221/421
C200H-MC221
Motion Control Unit

R88D-U-series
AC Servo Driver

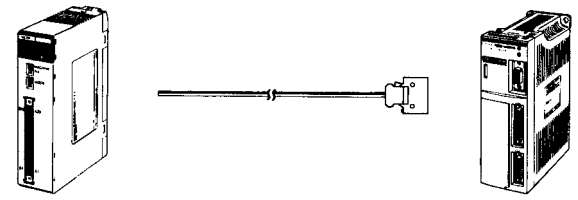
Model	Specifications	
R88A-CPU□□□M1	For 1 axis	For a 30- to 750-W Servo Driver
R88A-CPUB□□□M1		For a 1- to 5-kW Servo Driver
R88A-CPU□□□M2	For 2 axes	For a 30- to 750-W Servo Driver
R88A-CPUB□□□M2		For a 1- to 5-kW Servo Driver

Note: The three blank squares in the model number are for the cable length. The length will be 1 or 2 m. For example, for a 1-m cable it would be: R88A-CPU001M1.

Special Cables

■ R88A-CPU□□□S General-purpose Control Cable

For connection between a SYSMAC Position Control Unit or a general controller and a U-series AC Servo Driver.



Position Control Unit
or General Controller

R88D-U-series
AC Servo Driver

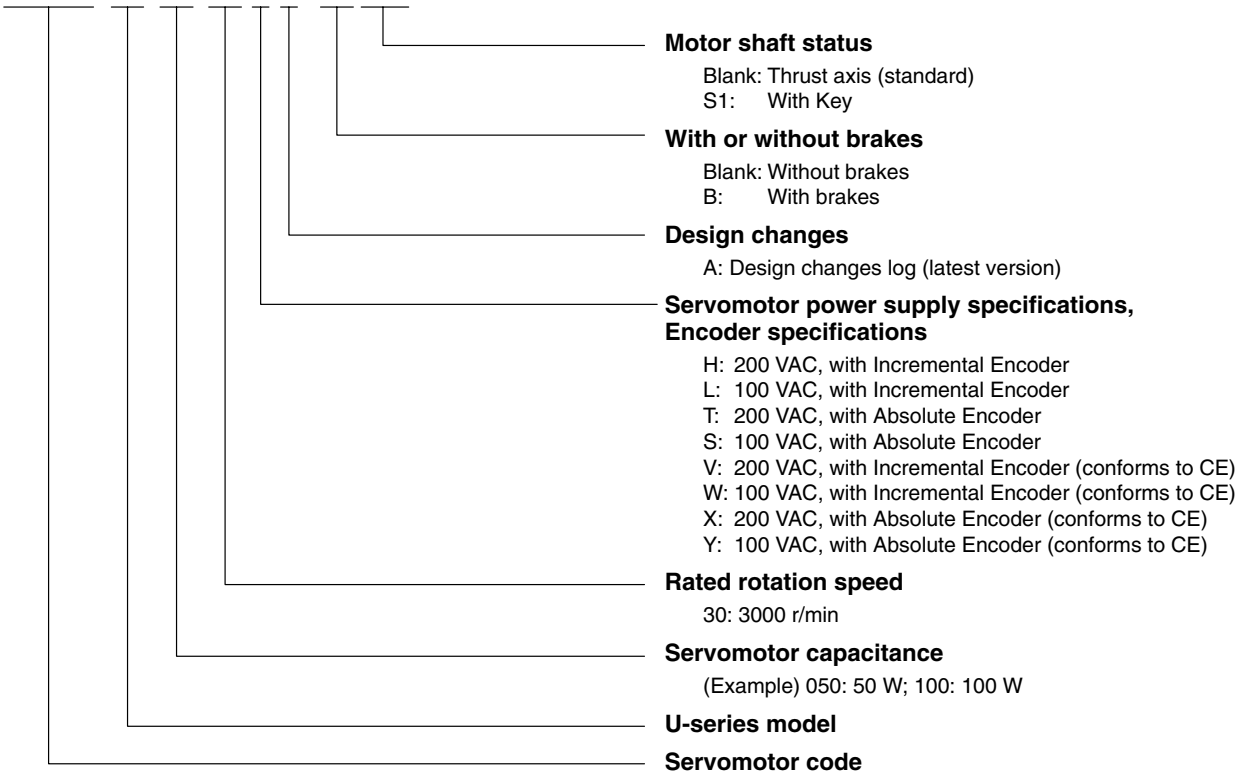
Model	Specifications
R88A-CPU□□□S	For a 30- to 750-W Servo Driver
R88A-CPUB□□□S	For a 1- to 5-kW Servo Driver

Note: The three blank squares in the model number are for the cable length. The length will be 1 or 2 m. For example, for a 1 m cable it would be: R88A-CPU001S.

Model Number Legend

■ AC Servomotors

R88M-U10030H□-□□□



Motor shaft status
Blank: Thrust axis (standard)
S1: With Key

With or without brakes
Blank: Without brakes
B: With brakes

Design changes
A: Design changes log (latest version)

Servomotor power supply specifications, Encoder specifications
H: 200 VAC, with Incremental Encoder
L: 100 VAC, with Incremental Encoder
T: 200 VAC, with Absolute Encoder
S: 100 VAC, with Absolute Encoder
V: 200 VAC, with Incremental Encoder (conforms to CE)
W: 100 VAC, with Incremental Encoder (conforms to CE)
X: 200 VAC, with Absolute Encoder (conforms to CE)
Y: 100 VAC, with Absolute Encoder (conforms to CE)

Rated rotation speed
30: 3000 r/min

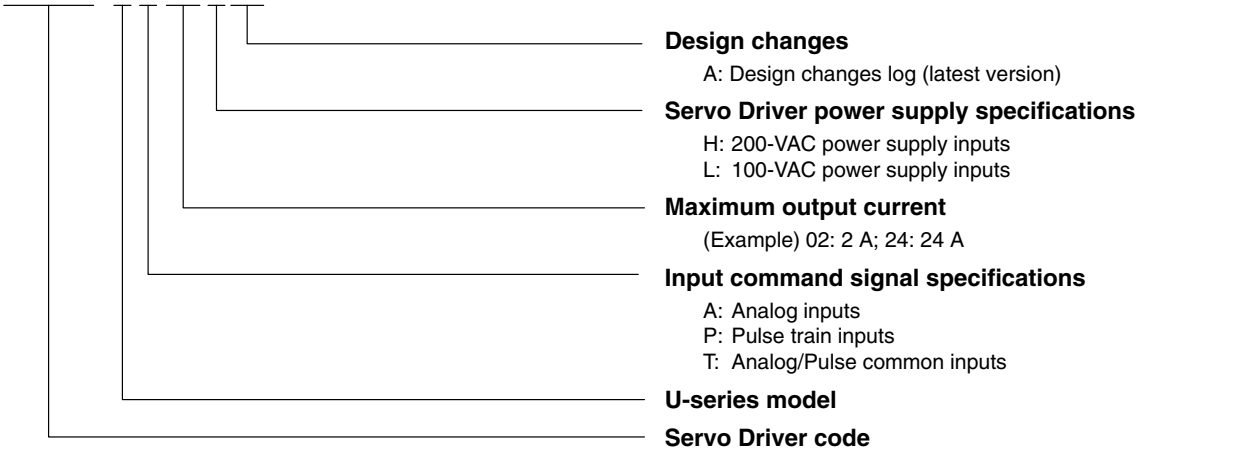
Servomotor capacitance
(Example) 050: 50 W; 100: 100 W

U-series model

Servomotor code

■ AC Servo Drivers

R88D-UA02H□



Design changes
A: Design changes log (latest version)

Servo Driver power supply specifications
H: 200-VAC power supply inputs
L: 100-VAC power supply inputs

Maximum output current
(Example) 02: 2 A; 24: 24 A

Input command signal specifications
A: Analog inputs
P: Pulse train inputs
T: Analog/Pulse common inputs

U-series model

Servo Driver code

Standard Models

■ AC Servomotors (CE Approval) (Incremental Encoder Attached)

Specifications				Model
U Series	Servo-motor without brakes	For 200 VAC	30 W	R88M-U03030VA-S1
			50 W	R88M-U05030VA-S1
			100 W	R88M-U10030VA-S1
			200 W	R88M-U20030VA-S1
			400 W	R88M-U40030VA-S1
			750 W	R88M-U75030VA-S1
			1 kW	R88M-U1K030V-S1
			1.5 kW	R88M-U1K530V-S1
			2 kW	R88M-U2K030V-S1
			3 kW	R88M-U3K030V-S1
			4 kW	R88M-U4K030V-S1
			5 kW	R88M-U5K030V-S1
		For 100 VAC	30 W	R88M-U03030WA-S1
			50 W	R88M-U05030WA-S1
			100 W	R88M-U10030WA-S1
			200 W	R88M-U20030WA-S1
			300 W	R88M-U30030WA-S1
	Servo-motor with brakes	For 200 VAC	30 W	R88M-U03030VA-BS1
			50 W	R88M-U05030VA-BS1
			100 W	R88M-U10030VA-BS1
			200 W	R88M-U20030VA-BS1
			400 W	R88M-U40030VA-BS1
			750 W	R88M-U75030VA-BS1
			1 kW	R88M-U1K030V-BS1
			1.5 kW	R88M-U1K530V-BS1
			2 kW	R88M-U2K030V-BS1
			3 kW	R88M-U3K030V-BS1
			4 kW	R88M-U4K030V-BS1
			5 kW	R88M-U5K030V-BS1
		For 100 VAC	30 W	R88M-U03030WA-BS1
			50 W	R88M-U05030WA-BS1
			100 W	R88M-U10030WA-BS1
			200 W	R88M-U20030WA-BS1
			300 W	R88M-U30030WA-BS1

■ AC Servomotors (CE Approval) (Absolute Encoder Attached)

Specifications				Model
U Series	Servo motor without brakes	For 200 VAC	30 W	R88M-U03030XA-S1
			50 W	R88M-U05030XA-S1
			100 W	R88M-U10030XA-S1
			200 W	R88M-U20030XA-S1
			400 W	R88M-U40030XA-S1
			750 W	R88M-U75030XA-S1
			1 kW	R88M-U1K030X-S1
			1.5 kW	R88M-U1K530X-S1
			2 kW	R88M-U2K030X-S1
			3 kW	R88M-U3K030X-S1
			4 kW	R88M-U4K030X-S1
			5 kW	R88M-U5K030X-S1
		For 100 VAC	30 W	R88M-U03030YA-S1
			50 W	R88M-U05030YA-S1
			100 W	R88M-U10030YA-S1
			200 W	R88M-U20030YA-S1
			300 W	R88M-U30030YA-S1
	Servo-motor with brakes	For 200 VAC	30 W	R88M-U03030XA-BS1
			50 W	R88M-U05030XA-BS1
			100 W	R88M-U10030XA-BS1
			200 W	R88M-U20030XA-BS1
			400 W	R88M-U40030XA-BS1
			750 W	R88M-U75030XA-BS1
			1 kW	R88M-U1K030X-BS1
			1.5 kW	R88M-U1K530X-BS1
			2 kW	R88M-U2K030X-BS1
			3 kW	R88M-U3K030X-BS1
			4 kW	R88M-U4K030X-BS1
			5 kW	R88M-U5K030X-BS1
		For 100 VAC	30 W	R88M-U03030YA-BS1
			50 W	R88M-U05030YA-BS1
			100 W	R88M-U10030YA-BS1
			200 W	R88M-U20030YA-BS1
			300 W	R88M-U30030YA-BS1

Note: All models have “straight axis with key” motors.

■ AC Servo Drivers (CE Approval)

Specifications				Model
U Series	Analog input models	Single-phase 200-VAC input	30 W	R88D-UA02V
			50 W	R88D-UA03V
			100 W	R88D-UA04V
			200 W	R88D-UA08V
			400 W	R88D-UA12V
			750 W	R88D-UA20V
		Single-phase 100-VAC input	30 W	R88D-UA03W
			50 W	R88D-UA04W
			100 W	R88D-UA10W
			200 W	R88D-UA12W
			300 W	R88D-UA15W
	Pulse train input models	Single-phase 200-VAC input	30 W	R88D-UP02V
			50 W	R88D-UP03V
			100 W	R88D-UP04V
			200 W	R88D-UP08V
			400 W	R88D-UP12V
			750 W	R88D-UP20V
		Single-phase 100-VAC input	30 W	R88D-UP03W
			50 W	R88D-UP04W
			100 W	R88D-UP10W
			200 W	R88D-UP12W
			300 W	R88D-UP15W
	Analog/Pulse common input models	3-phase 200-VAC input	1 kW	R88D-UT24V
			1.5 kW	R88D-UT40V
			2 kW	R88D-UT60V
			3 kW	R88D-UT80V
			4 kW	R88D-UT110V (see note 1, 2)
			5 kW	
			1 kW	R88D-UT24V-RG (see note 1)
			1.5 kW	R88D-UT40V-RG (see note 1)
			2 kW	R88D-UT60V-RG (see note 1)
			3 kW	R88D-UT80V-RG (see note 1)

Note: 1. These Servo Drivers are models for which Regeneration Resistors are connected externally. Be sure to connect an External Regeneration Resistor when using one of these models.

2. The R88D-UT110V is default set to be used for a 4-kW Servomotor.

Standard Models

■ AC Servomotors (UL/cUL Approval) (Incremental Encoder Attached)

Specifications				Model
Straight axis with no key	Servo motor without brakes	For 200 VAC	30 W	R88M-U03030HA
			50 W	R88M-U05030HA
			100 W	R88M-U10030HA
			200 W	R88M-U20030HA
			400 W	R88M-U40030HA
			750 W	R88M-U75030HA
		For 100 VAC	30 W	R88M-U03030LA
			50 W	R88M-U05030LA
			100 W	R88M-U10030LA
			200 W	R88M-U20030LA
			300 W	R88M-U30030LA
	Servo motor with brakes	For 200 VAC	30 W	R88M-U03030HA-B
			50 W	R88M-U05030HA-B
			100 W	R88M-U10030HA-B
			200 W	R88M-U20030HA-B
			400 W	R88M-U40030HA-B
			750 W	R88M-U75030HA-B
		For 100 VAC	30 W	R88M-U03030LA-B
			50 W	R88M-U05030LA-B
			100 W	R88M-U10030LA-B
			200 W	R88M-U20030LA-B
			300 W	R88M-U30030LA-B
Straight axis with key	Servo motor without brakes	For 200 VAC	30 W	R88M-U03030HA-S1
			50 W	R88M-U05030HA-S1
			100 W	R88M-U10030HA-S1
			200 W	R88M-U20030HA-S1
			400 W	R88M-U40030HA-S1
			750 W	R88M-U75030HA-S1
		For 100 VAC	30 W	R88M-U03030LA-S1
			50 W	R88M-U05030LA-S1
			100 W	R88M-U10030LA-S1
			200 W	R88M-U20030LA-S1
			300 W	R88M-U30030LA-S1
	Servo motor with brakes	For 200 VAC	30 W	R88M-U03030HA-BS1
			50 W	R88M-U05030HA-BS1
			100 W	R88M-U10030HA-BS1
			200 W	R88M-U20030HA-BS1
			400 W	R88M-U40030HA-BS1
			750 W	R88M-U75030HA-BS1
		For 100 VAC	30 W	R88M-U03030LA-BS1
			50 W	R88M-U05030LA-BS1
			100 W	R88M-U10030LA-BS1
			200 W	R88M-U20030LA-BS1
			300 W	R88M-U30030LA-BS1

■ AC Servomotors (UL/cUL Approval) (Absolute Encoder Attached)

Specifications				Model
Straight axis with no key	Servo motor without brakes	For 200 VAC	30 W	R88M-U03030TA
			50 W	R88M-U05030TA
			100 W	R88M-U10030TA
			200 W	R88M-U20030TA
			400 W	R88M-U40030TA
			750 W	R88M-U75030TA
		For 100 VAC	30 W	R88M-U03030SA
			50 W	R88M-U05030SA
			100 W	R88M-U10030SA
			200 W	R88M-U20030SA
			300 W	R88M-U30030SA
	Servo motor with brakes	For 200 VAC	30 W	R88M-U03030TA-B
			50 W	R88M-U05030TA-B
			100 W	R88M-U10030TA-B
			200 W	R88M-U20030TA-B
			400 W	R88M-U40030TA-B
			750 W	R88M-U75030TA-B
		For 100 VAC	30 W	R88M-U03030SA-B
			50 W	R88M-U05030SA-B
			100 W	R88M-U10030SA-B
			200 W	R88M-U20030SA-B
			300 W	R88M-U30030SA-B

■ AC Servo Drivers (UL/cUL Approval)

Specifications			Model
Analog input models (incremental encoder and absolute encorder)	For 200 VAC	30 W	R88D-UA02HA
		50 W	R88D-UA03HA
		100 W	R88D-UA04HA
		200 W	R88D-UA08HA
		400 W	R88D-UA12HA
		750 W	R88D-UA20HA
	For 100 VAC	30 W	R88D-UA03LA
		50 W	R88D-UA04LA
		100 W	R88D-UA10LA
		200 W	R88D-UA12LA
		300 W	R88D-UA15LA
Pulse train input models (incremental encoder)	For 200 VAC	30 W	R88D-UP02HA
		50 W	R88D-UP03HA
		100 W	R88D-UP04HA
		200 W	R88D-UP08HA
		400 W	R88D-UP12HA
		750 W	R88D-UP20HA
	For 100 VAC	30 W	R88D-UP03LA
		50 W	R88D-UP04LA
		100 W	R88D-UP10LA
		200 W	R88D-UP12LA
		300 W	R88D-UP15LA

■ AC Servomotors (Approval Pending) (Incremental Encoder Attached)

Specifications				Model
Straight axis with no key	Servo-motor without brakes	For 200 VAC	1000 W	R88M-U1K030H
			1500 W	R88M-U1K530H
			2000 W	R88M-U2K030H
			3000 W	R88M-U3K030H
			4000 W	R88M-U4K030H
			5000 W	R88M-U5K030H
	Servo-motor with brakes	For 200 VAC	1000 W	R88M-U1K030H-B
			1500 W	R88M-U1K530H-B
			2000 W	R88M-U2K030H-B
			3000 W	R88M-U3K030H-B
			4000 W	R88M-U4K030H-B
			5000 W	R88M-U5K030H-B
Straight axis with key	Servo-motor without brakes	For 200 VAC	1000 W	R88M-U1K030H-S1
			1500 W	R88M-U1K530H-S1
			2000 W	R88M-U2K030H-S1
			3000 W	R88M-U3K030H-S1
			4000 W	R88M-U4K030H-S1
			5000 W	R88M-U5K030H-S1
	Servo-motor with brakes	For 200 VAC	1000 W	R88M-U1K030H-BS1
			1500 W	R88M-U1K530H-BS1
			2000 W	R88M-U2K030H-BS1
			3000 W	R88M-U3K030H-BS1
			4000 W	R88M-U4K030H-BS1
			5000 W	R88M-U5K030H-BS1

■ AC Servomotors (Approval Pending) (Absolute Encoder Attached)

Specifications				Model
Straight axis with no key	Servo-motor without brakes	For 200 VAC	1000 W	R88M-U1K030T
			1500 W	R88M-U1K530T
			2000 W	R88M-U2K030T
			3000 W	R88M-U3K030T
			4000 W	R88M-U4K030T
			5000 W	R88M-U5K030T
	Servo-motor with brakes	For 200 VAC	1000 W	R88M-U1K030T-B
			1500 W	R88M-U1K530T-B
			2000 W	R88M-U2K030T-B
			3000 W	R88M-U3K030T-B
			4000 W	R88M-U4K030T-B
			5000 W	R88M-U5K030T-B

Note: "Straight axis with key" models can also be manufactured. Contact your sales office for details.

■ AC Servo Drivers (Approval Pending)

Specifications			Model
Analog/Pulse common input models (incremental or absolute encoder)	200 VAC	1000 W	R88D-UT24H
		1500 W	R88D-UT40H
		2000 W	R88D-UT60H
		3000 W	R88D-UT80H
		4000 W	R88D-UT110H
		5000 W	R88D-UT120H

Standard Models

■ 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 (Models with CE Approval)

Specifications	Model
70 W	R88A-RR22047S

■ Encoder Cables (Models with CE Approval)

Specifications			Model
For 30 to 750 W	For Servomotors with an Incremental Encoder	3 m	R88A-CRUD003C
		5 m	R88A-CRUD005C
		10 m	R88A-CRUD010C
		15 m	R88A-CRUD015C
		20 m	R88A-CRUD020C
	For Servomotors with an Absolute Encoder	3 m	R88A-CSUD003C
		5 m	R88A-CSUD005C
		10 m	R88A-CSUD010C
		15 m	R88A-CSUD015C
		20 m	R88A-CSUD020C

■ Encoder Cables

Specifications			Model
For 30 to 750 W	For Servomotors with an incremental encoder (Connectors on each side)	3 m	R88A-CRU003C
		5 m	R88A-CRU005C
		10 m	R88A-CRU010C
		15 m	R88A-CRU015C
		20 m	R88A-CRU020C
For 30 to 750 W	For Servomotors with an absolute encoder (Connectors on each side)	3 m	R88A-CSU003C
		5 m	R88A-CSU005C
		10 m	R88A-CSU010C
		15 m	R88A-CSU015C
		20 m	R88A-CSU020C
For 1 to 5 kW	For Servomotors with a common incremental/ absolute encoder (Connectors on each side)	3 m	R88A-CRUB003N
		5 m	R88A-CRUB005N
		10 m	R88A-CRUB010N
		15 m	R88A-CRUB015N
		20 m	R88A-CRUB020N

■ Power Cables

Specifications			Model
For 30 to 750 W	For Servomotors without brakes	3 m	R88A-CAU003S
		5 m	R88A-CAU005S
		10 m	R88A-CAU010S
		15 m	R88A-CAU015S
		20 m	R88A-CAU020S
	For Servomotors with brakes	3 m	R88A-CAU003B
		5 m	R88A-CAU005B
		10 m	R88A-CAU010B
		15 m	R88A-CAU015B
		20 m	R88A-CAU020B
For 1 to 2 kW	For Servomotors without brakes	3 m	R88A-CAUB003S
		5 m	R88A-CAUB005S
		10 m	R88A-CAUB010S
		15 m	R88A-CAUB015S
		20 m	R88A-CAUB020S
	For Servomotors with brakes	3 m	R88A-CAUB003B
		5 m	R88A-CAUB005B
		10 m	R88A-CAUB010B
		15 m	R88A-CAUB015B
		20 m	R88A-CAUB020B
For 3 to 5 kW	For Servomotors without brakes	3 m	R88A-CAUC003S
		5 m	R88A-CAUC005S
		10 m	R88A-CAUC010S
		15 m	R88A-CAUC015S
		20 m	R88A-CAUC020S
	For Servomotors with brakes	3 m	R88A-CAUC003B
		5 m	R88A-CAUC005B
		10 m	R88A-CAUC010B
		15 m	R88A-CAUC015B
		20 m	R88A-CAUC020B

■ Special Control Cables

Specifications				Model
For 30 to 750 W	For the CS1W-MC221/421 CV500-MC221/ CV500-MC421/ C200H-MC221 Motion Control Unit (Connectors on each side)	For 1-axis control	1 m	R88A-CPU001M1
			2 m	R88A-CPU002M1
		For 2-axis control	1 m	R88A-CPU001M2
			2 m	R88A-CPU002M2
For 1 to 5 kW	For the CS1W-MC221/421 CV500-MC221/ CV500-MC421/ C200H-MC221 Motion Control Unit (Connectors on each side)	For 1-axis control	1 m	R88A-CPUB001M1
			2 m	R88A-CPUB002M1
		For 2-axis control	1 m	R88A-CPUB001M2
			2 m	R88A-CPUB002M2

■ General-purpose Control Cables

Specifications			Model
For 30 to 750 W	For a general-purpose controller (Connector on one side)	1 m	R88A-CPU001S
		2 m	R88A-CPU002S
For 1 to 5 kW	For a general-purpose controller (Connector on one side)	1 m	R88A-CPUB001S
		2 m	R88A-CPUB002S

■ Connector for the Control Cable

Specifications	Model
For 30 to 750 W (Sumitomo 3M: Half pitch 36P)	R88A-CNU01C
For 1 to 5 kW (Sumitomo 3M: Half pitch 50P)	R88A-CNU11C

■ Connectors and Terminal Blocks (30- to 750-W Servo Drivers)

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

■ Front Panel Mounting Brackets (30- to 750-W Servo Drivers)

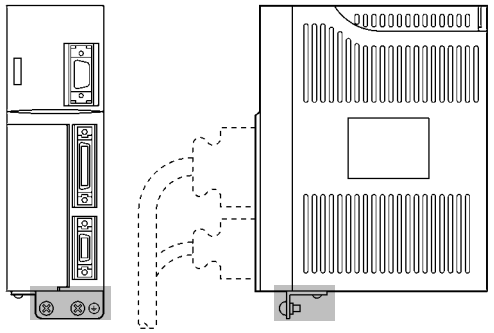
Specifications		Model
200 VAC: 30 to 400 W 100 VAC: 30 to 200 W	For Servo Drivers	R88A-TK01U
200 VAC: 750 W 100 VAC: 300 W	For Servo Drivers	R88A-TK02U

Note: For information on any products which are not listed here, contact your local sales office.

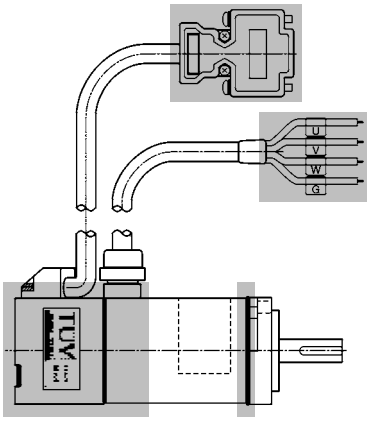
Differences between Standard Products and Products Bearing CE Markings

Appearance

■ Servo Driver



■ Servomotor



Note: 1. Shading indicates differences from the previous models not conforming to C directives.
2. The above illustration is of a Servo Driver and Servomotor with a 100-W output.

NOTICE

Before using the product under the following conditions, consult your OMRON representatives, make sure that the ratings and performance characteristics of the product are good enough for the systems, machines, or equipment, and be sure to provide the systems, machines, or equipment with double safety mechanisms.

1. Applications under conditions or environments not specified in the manual.
2. Applications for nuclear reactor control, train facilities, aviation facilities, motorized vehicles, furnaces, medical equipment, amusement equipment, and safety equipment.
3. Applications strongly related to human life or property, particularly those requiring safety.

Read and Understand this Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NONINFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

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OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it sill be used.

Know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence therof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.