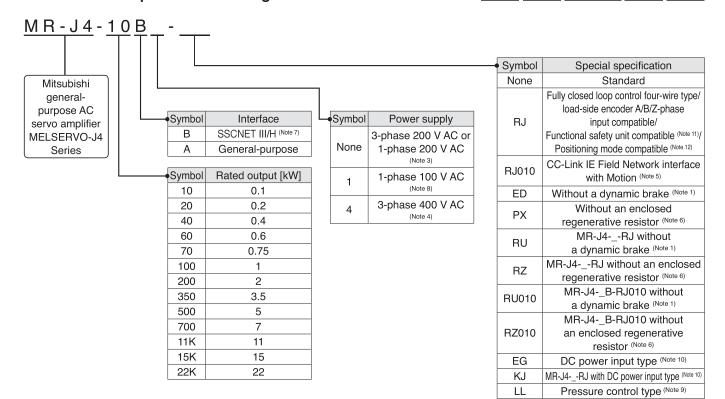
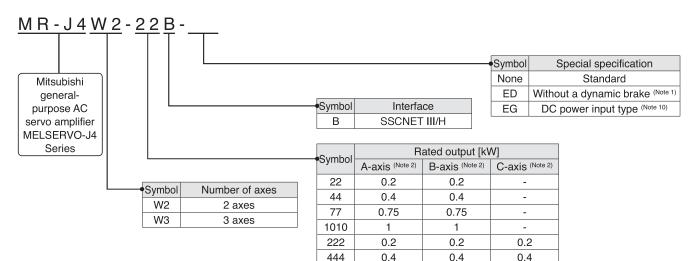
1-Axis Servo Amplifier Model Designation



B-RJ B-RJ010 A A-RJ

WВ

#### **Multi-Axis Servo Amplifier Model Designation**



Notes: 1. Dynamic brake which is built in 7 kW or smaller servo amplifiers is removed. When using the servo amplifier without a dynamic brake, the servo motor does not stop immediately at alarm occurrence or power failure. Take measures to ensure safety on the entire system.

When the following servo motors are used, an electronic dynamic brake may operate at alarm occurrence.

HG-KR053, HG-KR13, HG-KR23, HG-KR43, HG-MR053, HG-MR13, HG-MR23, HG-MR43, HG-SR51, and HG-SR52

Disable the electronic dynamic brake by setting the following parameter to "\_\_\_\_2."

For MR-J4-B/MR-J4-B-RJ/MR-J4-B-RJ010: [Pr. PF06] For MR-J4W\_-B: Disable the electronic dynamic brake for all axes with [Pr. PF06]

- For MR-J4-A/MR-J4-A-RJ: [Pr. PF09]
- In addition, when [Pr. PA04] is set to "2\_\_\_" (initial value), the servo motor may be decelerated to a stop forcibly at alarm occurrence. The forced stop deceleration function will be disabled by setting [Pr. PA04] to "0\_\_\_."
- 2. A-axis, B-axis, and C-axis indicate names of axes of the multi-axis servo amplifier. The C-axis is available for the 3-axis servo amplifier.
- 3. Servo amplifiers of 0.75 kW or smaller are available for 1-phase 200 V AC.
- 4. Servo amplifiers of 0.6 kW, and 1 kW or larger are available for 3-phase 400 V AC.
- 5. CC-Link IE Field Network interface with Motion is available only with MR-J4-\_B-RJ010. CC-Link IE Field Network interface unit (MR-J3-T10) is required.
- 6. Available in 11 kW to 22 kW servo amplifier. A regenerative resistor (standard accessory) is not enclosed.
- 7. MR-J4-\_B-RJ010 has CC-Link IE Field Network interface with Motion.
- 8. Servo amplifiers of 0.4 kW or smaller are available.
- 9. MR-J4-\_B\_-LL is available. Contact your local sales office for the pressure control compatible servo amplifiers.
- Contact your local sales office for the DC power input type servo amplifier.
   MR-D30 functional safety unit is compatible with MR-J4-B-RJ servo amplifiers. When using MR-D30, use MR-J4-B-RJ servo amplifier with software version B3 or later. MR-D30 will be compatible with MR-J4-B-RU/MR-J4-B-RZ/MR-J4-B-KJ servo amplifiers in the future.

12. The positioning mode is available with MR-J4-A-RJ servo amplifiers. Use MR-J4-A-RJ servo amplifiers with software version B3 or later.

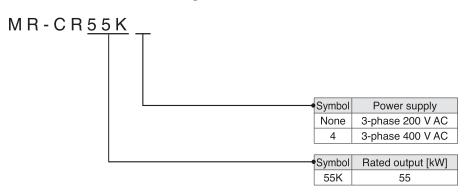
Drive Unit Model Designation (Note 4) A A-RJ B-RJ M R - J 4 - D U 3 0 K B Symbol Special specification None Standard Mitsubishi general-Fully closed loop control four-wire type/load-side encoder purpose AC RJ (Note 2) Symbol Power supply A/B/Z-phase input compatible/ servo amplifier None 3-phase 200 V AC (Note 1) Positioning mode compatible (Note 3) MELSERVO-J4 4 3-phase 400 V AC LL Pressure control type (Note 5) Series Symbol Interface В SSCNETIII/H А General-purpose Rated output [kW] Symbol 30K 30 37K 37 45K 45

55K

55

melseri⁄o-J4

#### Converter Unit Model Designation (Note 4)



Notes: 1. Drive units of 37 kW or smaller are available in 3-phase 200 V AC.

Conversion of Avery of smaller are available in 3-phase 200 V AC.
 MR-D30 functional safety unit is not compatible with the drive unit.
 Positioning mode is available with MR-J4-DU\_A\_-RJ drive unit.

4. One unit of converter unit is required for each drive unit.

5. MR-J4-DU\_B\_-LL is available. Contact your local sales office for the pressure control compatible drive units.

#### 1-2

Cautions

## Combinations of 1-Axis Servo Amplifier and Servo Motor



#### MR-J4-B/MR-J4-B-RJ/MR-J4-A/MR-J4-A-RJ (200 V)

Servo amplifier	Rotary servo motor	Linear servo motor (primary side) (Note 1)	Direct drive motor
MR-J4-10B(-RJ) MR-J4-10A(-RJ)	HG-KR053, 13 HG-MR053, 13	-	-
MR-J4-20B(-RJ) MR-J4-20A(-RJ)	HG-KR23 HG-MR23	LM-U2PAB-05M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20
MR-J4-40B(-RJ) MR-J4-40A(-RJ)	HG-KR43 HG-MR43	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-K2P1A-01M-2SS1 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0	TM-RFM004C20
MR-J4-60B(-RJ) MR-J4-60A(-RJ)	HG-SR51, 52 HG-JR53	LM-U2PBD-15M-1SS0	TM-RFM006C20 TM-RFM006E20
MR-J4-70B(-RJ) MR-J4-70A(-RJ)	HG-KR73 HG-MR73 HG-JR73 HG-UR72	LM-H3P3B-24P-CSS0 LM-H3P3C-36P-CSS0 LM-H3P7A-24P-ASS0 LM-K2P2A-02M-1SS1 LM-U2PBF-22M-1SS0	TM-RFM012E20 TM-RFM012G20 TM-RFM040J10
MR-J4-100B(-RJ) MR-J4-100A(-RJ)	HG-SR81, 102 HG-JR53 <sup>(Note 2)</sup> , 103	-	TM-RFM018E20
MR-J4-200B(-RJ) MR-J4-200A(-RJ)	HG-SR121, 201, 152, 202 HG-JR73 <sup>(Note 2)</sup> , 103 <sup>(Note 2)</sup> , 153, 203 HG-RR103, 153 HG-UR152	LM-H3P3D-48P-CSS0 LM-H3P7B-48P-ASS0 LM-H3P7C-72P-ASS0 LM-FP2B-06M-1SS0 LM-K2P1C-03M-2SS1 LM-U2P2B-40M-2SS0	-
MR-J4-350B(-RJ) MR-J4-350A(-RJ)	HG-SR301, 352 HG-JR153 <sup>(Note 2)</sup> , 203 <sup>(Note 2)</sup> , 353 HG-RR203 HG-UR202	LM-H3P7D-96P-ASS0 LM-K2P2C-07M-1SS1 LM-K2P3C-14M-1SS1 LM-U2P2C-60M-2SS0	TM-RFM048G20 TM-RFM072G20 TM-RFM120J10
MR-J4-500B(-RJ) MR-J4-500A(-RJ)	HG-SR421, 502 HG-JR353 <sup>(Note 2)</sup> , 503 HG-RR353, 503 HG-UR352, 502	LM-FP2D-12M-1SS0 LM-FP4B-12M-1SS0 LM-K2P2E-12M-1SS1 LM-K2P3E-24M-1SS1 LM-U2P2D-80M-2SS0	TM-RFM240J10
MR-J4-700B(-RJ) MR-J4-700A(-RJ)	HG-SR702 HG-JR503 <sup>(Note 2)</sup> , 703, 601, 701M	LM-FP2F-18M-1SS0 LM-FP4D-24M-1SS0	-
MR-J4-11KB(-RJ) MR-J4-11KA(-RJ)	HG-JR903, 801, 12K1, 11K1M	LM-FP4F-36M-1SS0	-
MR-J4-15KB(-RJ) MR-J4-15KA(-RJ)	HG-JR15K1, 15K1M	LM-FP4H-48M-1SS0	-
MR-J4-22KB(-RJ) MR-J4-22KA(-RJ)	HG-JR20K1, 25K1, 22K1M	-	-

Notes: 1. Models of the linear servo motor primary side are listed in this page. For compatible models of the secondary side, refer to "Combinations of Linear Servo Motor and Servo Amplifier" under section 3 Linear Servo Motor in this catalog.
2. The maximum torque can be increased from 300% to 400% of the rated torque with this combination.

#### MR-J4-DU\_B/MR-J4-DU\_B-RJ/MR-J4-DU\_A/MR-J4-DU\_A-RJ (200 V)

Drive unit	Rotary servo motor	Linear servo motor (primary side)	Direct drive motor
MR-J4-DU30KB(-RJ)	HG-JR30K1		
MR-J4-DU30KA(-RJ)	HG-JR30K1M	-	-
MR-J4-DU37KB(-RJ)	HG-JR37K1		
MR-J4-DU37KA(-RJ)	HG-JR37K1M	-	-

B-RJ A A-RJ

# Combinations of 1-Axis Servo Amplifier and Servo Motor

MR-J4-B1/MR-J4-B1-RJ/MR-J4-A1/MR-J4-A1-RJ (100 V)

Servo amplifier	Rotary servo motor	Rotary servo motor Linear servo motor (primary side) (Note 1)				
MR-J4-10B1(-RJ)	HG-KR053, 13			npli		
MR-J4-10A1(-RJ)	HG-MR053, 13	-	-	vmplifiers		
MR-J4-20B1(-RJ)	HG-KR23	LM-U2PAB-05M-0SS0		S S		
MR-J4-20A1(-RJ)	HG-MR23	LM-U2PBB-07M-1SS0	TM-RFM002C20			
MR-J4-40B1(-RJ)		LM-H3P2A-07P-BSS0		_		
	HG-KB43	LM-H3P3A-12P-CSS0		Rotary		
	HG-MR43	LM-K2P1A-01M-2SS1	TM-RFM004C20	ary		
MR-J4-40A1(-RJ)		LM-U2PAD-10M-0SS0		Ser		
		LM-U2PAF-15M-0SS0		DALE		
				S		
MR-J4-B4/MR-J4-B4	4-RJ/MR-J4-A4/MR-J4-A4-RJ	(400 V)		Motors		
		(		S		

#### MR-J4-B4/MR-J4-B4-RJ/MR-J4-A4/MR-J4-A4-RJ (400 V)

Servo amplifier	Rotary servo motor	Linear servo motor (primary side) (Note 1)	Direct drive motor	
MR-J4-60B4(-RJ) MR-J4-60A4(-RJ)	HG-SR524 HG-JR534	-	-	Linear
MR-J4-100B4(-RJ) MR-J4-100A4(-RJ)	HG-SR1024 HG-JR534 <sup>(Note 2)</sup> , 734, 1034	-	-	ear Servo
MR-J4-200B4(-RJ) MR-J4-200A4(-RJ)	HG-SR1524, 2024 HG-JR734 <sup>(Note 2)</sup> , 1034 <sup>(Note 2)</sup> , 1534, 2034	-	-	
MR-J4-350B4(-RJ) MR-J4-350A4(-RJ)	HG-SR3524 HG-JR1534 <sup>(Note 2)</sup> , 2034 <sup>(Note 2)</sup> , 3534	-	-	
MR-J4-500B4(-RJ) MR-J4-500A4(-RJ)	HG-SR5024 HG-JR3534 <sup>(Note 2)</sup> , 5034	-	-	Direct
MR-J4-700B4(-RJ) MR-J4-700A4(-RJ)	HG-SR7024 HG-JR5034 <sup>(Note 2)</sup> , 7034, 6014, 701M4	-	-	
MR-J4-11KB4(-RJ) MR-J4-11KA4(-RJ)	HG-JR9034, 8014, 12K14, 11K1M4	-	-	NIOLOIS
MR-J4-15KB4(-RJ) MR-J4-15KA4(-RJ)	HG-JR15K14, 15K1M4	-	-	]
MR-J4-22KB4(-RJ) MR-J4-22KA4(-RJ)	HG-JR20K14, 25K14, 22K1M4	LM-FP5H-60M-1SS0		Equ

#### MR-J4-DU\_B4/MR-J4-DU\_B4-RJ/MR-J4-DU\_A4/MR-J4-DU\_A4-RJ (400 V)

				D D
Drive unit	Rotary servo motor	Linear servo motor (primary side)	Direct drive motor	eral
MR-J4-DU30KB4(-RJ)	HG-JR30K14			
MR-J4-DU30KA4(-RJ)	HG-JR30K1M4	-	-	
MR-J4-DU37KB4(-RJ)	HG-JR37K14			1
MR-J4-DU37KA4(-RJ)	HG-JR37K1M4	-	-	
MR-J4-DU45KB4(-RJ)	HG-JB45K1M4			/S/
MR-J4-DU45KA4(-RJ)		-	-	N II
MR-J4-DU55KB4(-RJ)	HG-JB55K1M4			es
MR-J4-DU55KA4(-RJ)		-	-	

Notes: 1. Models of the linear servo motor primary side are listed in this page. For compatible models of the secondary side, refer to "Combinations of Linear Servo Motor and Servo Amplifier" under section 3 Linear Servo Motor in this catalog.
 The maximum torque can be increased from 300% to 400% of the rated torque with this combination.

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Cautions

# Combinations of 1-Axis Servo Amplifier and Servo Motor

# MR-J4-B-RJ010 (200 V)

MR-J4-B4-RJ010	(400)	V١
IVIT 1-04-D4-110010	(400	vj

Servo amplifier	Rotary servo motor
MR-J4-10B-RJ010	HG-KR053, 13
MR-54-10B-R3010	HG-MR053, 13
MR-J4-20B-RJ010	HG-KR23
MI1-54-20D-113010	HG-MR23
MR-J4-40B-RJ010	HG-KR43
	HG-MR43
MR-J4-60B-RJ010	HG-SR51, 52
MI1-94-90B-118010	HG-JR53
	HG-KR73
MR-J4-70B-RJ010	HG-MR73
	HG-JR73
	HG-UR72
MR-J4-100B-RJ010	HG-SR81, 102
	HG-JR53 <sup>(Note 1)</sup> , 103
	HG-SR121, 201, 152, 202
MR-J4-200B-RJ010	HG-JR73 (Note 1), 103 (Note 1), 153, 203
	HG-RR103, 153
	HG-UR152
	HG-SR301, 352
MR-J4-350B-RJ010	HG-JR153 (Note 1), 203 (Note 1), 353
	HG-RR203
	HG-UR202
	HG-SR421, 502
MR-J4-500B-RJ010	HG-JR353 <sup>(Note 1)</sup> , 503
	HG-RR353, 503
	HG-UR352, 502
MR-J4-700B-RJ010	HG-SR702
	HG-JR503 <sup>(Note 1)</sup> , 703, 601, 701M
MR-J4-11KB-RJ010	HG-JR903, 801, 12K1, 11K1M
MR-J4-15KB-RJ010	HG-JR15K1, 15K1M
MR-J4-22KB-RJ010	HG-JR20K1, 25K1, 22K1M

Servo amplifier	Rotary servo motor
MR-J4-60B4-RJ010	HG-SR524
IVIR-J4-00D4-RJ010	HG-JR534
MR-J4-100B4-RJ010	HG-SR1024
IVIN-J4-100D4-NJ010	HG-JR534 (Note 1), 734, 1034
	HG-SR1524, 2024
MR-J4-200B4-RJ010	HG-JR734 (Note 1), 1034 (Note 1), 1534,
	2034
MD 14 250B4 D 1010	HG-SR3524
1010-04-00004-00010	HG-JR1534 (Note 1), 2034 (Note 1), 3534
/R-J4-350B4-RJ010 /R-J4-500B4-RJ010	HG-SR5024
WIN-04-00004-NJ010	HG-JR3534 (Note 1), 5034
MR-J4-700B4-RJ010	HG-SR7024
WIN-04-70004-NJ010	HG-JR5034 <sup>(Note 1)</sup> , 7034, 6014, 701M4
MR-J4-11KB4-RJ010	HG-JR9034, 8014, 12K14, 11K1M4
MR-J4-15KB4-RJ010	HG-JR15K14, 15K1M4
MR-J4-22KB4-RJ010	HG-JR20K14, 25K14, 22K1M4

B-RJ010

Notes: 1. The maximum torque can be increased from 300% to 400% of the rated torque with this combination.

WB

# Combinations of Multi-Axis Servo Amplifier and Servo Motors

#### MR-J4W2-B

Servo amplifier	Rotary servo motor	Linear servo motor (primary side) (Note 1)	Direct drive motor	
/R-J4W2-22B	HG-KR053, 13, 23	LM-U2PAB-05M-0SS0	TM-RFM002C20	
////-04//2-220	HG-MR053, 13, 23	LM-U2PBB-07M-1SS0		
		LM-H3P2A-07P-BSS0		
		LM-H3P3A-12P-CSS0		
	HG-KR053, 13, 23, 43	LM-K2P1A-01M-2SS1	TM-RFM002C20	
/IR-J4W2-44B	HG-MR053, 13, 23, 43	LM-U2PAB-05M-0SS0	TM-RFM002C20	
	HG-MH053, 13, 23, 43	LM-U2PAD-10M-0SS0		
		LM-U2PAF-15M-0SS0		
		LM-U2PBB-07M-1SS0		
		LM-H3P2A-07P-BSS0		
		LM-H3P3A-12P-CSS0		
MR-J4W2-77B		LM-H3P3B-24P-CSS0	TM-RFM004C20	
	HG-KR43, 73	LM-H3P3C-36P-CSS0	TM-RFM004C20	
	HG-MR43, 73	LM-H3P7A-24P-ASS0	TM-RFM006E20	
	HG-SR51, 52	LM-K2P1A-01M-2SS1	TM-RFM008E20	
	HG-JR53, 73	LM-K2P2A-02M-1SS1	TM-RFM012E20	
	HG-UR72	LM-U2PAD-10M-0SS0	TM-RFM012G20	
		LM-U2PAF-15M-0SS0		
		LM-U2PBD-15M-1SS0		
		LM-U2PBF-22M-1SS0		
		LM-H3P2A-07P-BSS0		
		LM-H3P3A-12P-CSS0		
		LM-H3P3B-24P-CSS0	TM-RFM004C20	
	HG-KR43, 73	LM-H3P3C-36P-CSS0	TM-RFM006C20	
	HG-MR43, 73	LM-H3P7A-24P-ASS0	TM-RFM006E20	
VIR-J4W2-1010B	HG-SR51, 81, 52, 102	LM-K2P1A-01M-2SS1	TM-RFM012E20	
	HG-JR53 (Note 2), 73, 103	LM-K2P2A-02M-1SS1	TM-RFM018E20	
	HG-UR72	LM-U2PAD-10M-0SS0	TM-RFM012G20	
		LM-U2PAF-15M-0SS0	TM-RFM040J10	
		LM-U2PBD-15M-1SS0		
		LM-U2PBF-22M-1SS0		

#### MR-J4W3-B

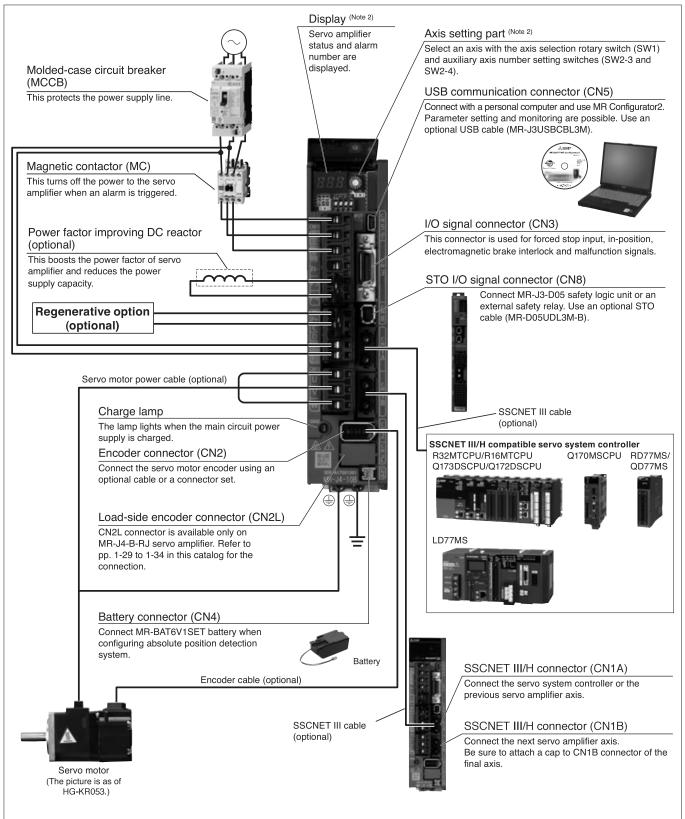
		· · · · · · · · · · · · · · · · · · ·		-
Servo amplifier	Rotary servo motor	Linear servo motor (primary side) (Note 1)	Direct drive motor	
MR-J4W3-222B	HG-KR053, 13, 23 HG-MR053, 13, 23	LM-U2PAB-05M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20	
MR-J4W3-444B	HG-KR053, 13, 23, 43 HG-MR053, 13, 23, 43	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-K2P1A-01M-2SS1 LM-U2PAB-05M-0SS0 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20 TM-RFM004C20	.VS/Wires

Notes: 1. Models of the linear servo motor primary side are listed in this page. For compatible models of the secondary side, refer to "Combinations of Linear Servo Motor and Servo Amplifier" under section 3 Linear Servo Motor in this catalog.
 The maximum torque can be increased from 300% to 400% of the rated torque with this combination.

#### MR-J4-B/MR-J4-B-RJ Connections with Peripheral Equipment (Note 1)

B B-RJ

Peripheral equipment is connected to MR-J4-B/MR-J4-B-RJ as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-J4-350B/MR-J4-350B-RJ or smaller servo amplifiers. Refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for the actual connections.

2. This picture shows when the display cover is open

Servo a	mplifier mod	el MR-J4(-	RJ)	10B	20B	40B	60B	70B	100B	200B	350B	500B	700B	11KB	15KB	22KB	10B1	20B1	40B1	
	Rated volta		- /									170 V /								
Output	Rated curre		[A]	1.1	1.5	2.8	3.2	5.8	6.0	11.0	17.0	28.0	37.0	68.0	87.0	126.0	1.1	1.5	2.8	
	Voltage/free	quency (Note 1)				1-phas AC, 50			3 <b>-</b> p	bhase :	200 V	AC to 2	40 V A	AC, 50	Hz/60	Hz		se 100 V NC, 50 H		
Main circuit	Rated curre	ent (Note 15)	[A]		1.5	2.6	3.2 (Note 8)	3.8	5.0	10.5	16.0	21.7	28.9	46.0	64.0	95.0	3.0	5.0	9.0	
power supply	Permissible fluctuation	e voltage		3-ph		1-phas 264 V /		V AC		3-	phase	170 V /	AC to :	264 V /	AC			ase 85 132 V /		ĺ
input	Permissible	frequency			10	204 0	<u> </u>				±5% m	aximun	 ו				10	102 1	<u> </u>	
	fluctuation						1-nha	se 200	V AC	to 240	VAC	50 Hz/	60 Hz					se 100 V		
Control	Rated curre		[A]				•	0.2			• / 10,			0.3			120 V A	C, 50 H 0.4	z/60 Hz	
circuit power	Permissible fluctuation	voltage						1-pha	ise 170	O V AC	to 264	V AC					•	ase 85 132 V /		
supply input	Permissible	frequency									±5% m	aximun	า				10	102 1	10	-
	fluctuation Power cons	sumption	[W]				3	30						45				30		
Interface	power suppl	•	[**]		24	V DC	-	-	ired cu	rrent c	apacity	/: 0.3 A	(inclu		N8 cor	nector	signal			
Control m		,					, .					ol/curre					_ <u>_</u> a	11		
Tolerable	Built-in regerers		[W]	-	10	10	10	20	20	100	100	130	170	-	-	-	-	10	10	
	External reg	generative	[W]	-	-	-	-	-	-	-	-	_	-	500	850	850		-	-	
	accessory)	(Note 2, 3, 11, 12)												. ,	(1300)	· · ·				-
Dynamic								Built-i	n (Note 4)					Extern	al optio	n (Note 13)	Bu	ilt-in (No	te 4)	
	III/H comma cation cycle				0.222 ms, 0.444 ms, 0.888 ms															
Communi	ication functi	on				ι	JSB: C	Connec	t a per	sonal c	compu	ter (MR	Confi	gurato	r2 com	patible	)			
	output pulse				Compatible (A/B/Z-phase pulse)															
Analog m			<u> </u>		2 channels Two-wire type communication method (Note 9)															
Fully close control	ed loop	MR-J4-B(1 MR-J4-B(1	,		Two-wire/four-wire type communication method								П							
Servo fun	nction		/	fund	Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function, power monitoring function, master-slave operation function <sup>(Note 14)</sup> , scale measurement function <sup>(Note 14)</sup> , J3 compatibility mode, super trace control <sup>(Note 16)</sup> , lost motion compensation <sup>(Note 16)</sup>								Equipment							
Load-side	e encoder	MR-J4-B(1	)		Mitsubishi high-speed serial communication															
interface		MR-J4-B(1)-RJ Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal																		
Protective	e functions			m	Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection, magnetic pole detection protection, linear servo control fault protection						-									
Functiona	al safety						-			STO (	IEC/E	N 6180	0-5-2)							
		certified by C	В	E	EN ISC	13849	9-1 Ca	<u> </u>				SIL 2, I				EN 61	800-5	-2 SIL	2	
		performance										OFF -								
Safety	Mean time	nput (STO) ( to dangerous				10	est pul	se inte	rval: 1			test pu s or lon		time:	1 ms n	naximu	m			ł
performance		TFd) coverage (D	<u>()</u>							-	-	0% to 9	-							-
	Probability of dangerous Failure per Hour (PFH)											10 <sup>-10</sup> [1/	,							
Complian	ice to standa				Re	fer to "	Confor	rmitv w	ith Glo	bal Sta	ndard	s and F	Regula	tions"	on p. 5	57 in thi	s cata	loa.		ł
· ·	(IP rating)			Nati		oling, c		1	rce coo				Force	cooling 20) <sup>(No</sup>	g, oper		Natu	iral coo en (IP2		
Close mo	ounting					· · ·	Possib	le (Note 6						t possi				sible (N		
	Ambient ter	mperature			(	Operat	ion: 0	°C to 5	5 °C (r	non-fre	ezing)	, storaç	je: <b>-</b> 20	°C to	65 °C	(non-fre	ezing	)		
	Ambient hu	midity								-		maxim								
Environment	Ambience					Indoor	s (no c	direct s				/e gas,			gas, o	il mist o	or dust			
	Altitude					-		_				above			. –					
	Vibration re	sistance		6	6		1	1		1	1	directio		1	1	1				
Mass			[kg]	0.8	0.8	1.0	1.0	1.4	1.4	2.1	2.3	4.0	6.2	13.4	13.4	18.2	0.8	0.8	1.0	1

# MR-J4-B(1)/MR-J4-B(1)-RJ (SSCNET III/H Interface) Specifications (200 V/100 V)



Notes: 1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.

2. Select the most suitable regenerative option for your system with our capacity selection software.

3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.

- 4. When using the built-in dynamic brake, refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
- 5. Terminal blocks are excluded.
- 6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use them with 75% or less of the effective load ratio.
- 7. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
- 8. The rated current is 2.9 A when the servo amplifier is used with UL or CSA compliant servo motor. 9. Fully closed loop control is compatible with the servo amplifiers with software version A3 or later.
- 10. The command communication cycle depends on the controller specifications and the number of axes connected.
- 11. The value in brackets is applicable when cooling fans (2 units of 92 mm × 92 mm, minimum air flow: 1.0 m<sup>3</sup>/min) are installed, and then [Pr. PA02] is changed.
- 12. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details.
- 13. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
- 14. This function is available with the servo amplifiers with software version A8 or later.
- 15. This value is applicable for 750 W or smaller servo amplifiers in 200 V class when a 3-phase power supply is used.
- 16. This function is available with the servo amplifiers with software version B4 or later.

# MR-J4-DU\_B/MR-J4-DU\_B-RJ (SSCNET III/H Interface) Specifications (200 V)

**B-RJ** 

Drive	unit mode	I MR-J4(-RJ)	DU30KB	DU37KB	Servo Amplifiers			
		er unit model	MR-CR5	55K (Note 5)	0 A			
0	Rated vol	tage	3-phase	170 V AC	dur			
Output	Rated cur	rent [A]	174	204	ifie			
Main circu	uit power s	upply input	Main circuit power is supplied from th	e converter unit to the drive unit (Note 5)	rs			
	Voltage/fr	equency	1-phase 200 V AC to 2	240 V AC, 50 Hz/60 Hz				
Control	rol Rated current [A]		Rated current [A] 0.3					
circuit			1-phase 170 V	AC to 264 V AC	Rotary Servo Motors			
power	fluctuation				ry s			
supply input	fluctuation	ole frequency า	±5% maximum					
	Power co	nsumption [W]	4	5	Mot			
Interface	power sup	ply	24 V DC ± 10% (required current capacity	: 0.3 A (including CN8 connector signals))	ors			
Control m	ethod		Sine-wave PWM contro	I/current control method				
Dynamic	brake		External o	ption (Note 4)	-			
	III/H comn		0.222 ms, 0.44	4 ms 0 888 ms	inea			
	cation cycl		· · · · · · · · · · · · · · · · · · ·	·	ar S			
	cation fund		USB: Connect a personal comput		Linear Servo Motors			
	output puls	e	Compatible (A/E					
Analog m	onitor		2 cha	nnels	otor			
Fully clos	ed loop	MR-J4-DU_B	Two-wire type com	munication method	ഗ			
control		MR-J4-DU_B-RJ	Two-wire/four-wire type					
Servo fun	ction		Advanced vibration suppression control II, adaptive tough drive function, drive recorder function, tighter power monitoring function, master-slave ope J3 compatibility mode, super trace	ning & press-fit control, machine diagnosis function, ration function, scale measurement function,	Direct Drive Motors			
Load-side	encoder	MR-J4-DU B	Mitsubishi high-speed		ve N			
interface	onoodor	MR-J4-DU B-RJ	Mitsubishi high-speed serial communica		Noto			
			Overcurrent shut-off, overload shut-off (electronic t		S			
Protective	e functions		error protection, undervoltage protection, instantane error excessi	eous power failure protection, overspeed protection,				
Functiona	l safety	· · · · · · · · · · · · · · · · · · ·	STO (IEC/EN		ę			
T unotione	<b>,</b>	s certified by CB		SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2	Eq			
		e performance	8 ms or less (STO input		ions/Periph Equipment			
	<u> </u>	e input (STO) (Note 2)	Test pulse interval: 1 Hz to 25 Hz,		mer			
Safety performance		e to dangerous	100 years	· · · ·	Options/Peripheral Equipment			
		c coverage (DC)	Medium (90	1% to 99%)	1			
	Probability	r of dangerous r Hour (PFH)	1.68 × 1	,	1			
	ce to stand		Refer to "Conformity with Global Standards	s and Regulations" on p. 57 in this catalog	$\leq$			
	(IP rating)		-	pen (IP20) <sup>(Note 1)</sup>	_ S			
Close mo			Not po		LVS/Wires			
0.0000		emperature	Operation: 0 °C to 55 °C (non-freezing),					
	Ambient I	· · · · · · · · · · · · · · · · · · ·	Operation/storage: 90 %RH		1			
Environment	Ambience	,	Indoors (no direct sunlight); no corrosiv	· · · · · · · · · · · · · · · · · · ·				
	Altitude		1000 m or less					
		resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (c		P			
Mass		[kg]			Product List			

3. The command communication cycle depends on the controller specifications and the number of axes connected.

4. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.

5. One unit of converter unit is required for each drive unit. Refer to "MR-CR Converter Unit Specifications (200 V/400 V)" on p. 1-14 in this catalog for the specifications of the converter unit.

# MR-J4-B4/MR-J4-B4-RJ (SSCNET III/H Interface) Specifications (400 V)

B B-RJ

		•						,			
Servo ar	mplifier mode	el MR-J4(-RJ)	60B4	100B4	200B4	350B4	500B4	700B4	11KB4	15KB4	22KB4
Output	Rated voltage		1 1 5			1	hase 323 V			44.0	
•	Rated current [A]		] 1.5	2.8	5.4	8.6	14.0		32.0	41.0	63.0
Main	Aain irouit Voltage/frequency (Note 1) Rated current [A]		1 1.4	2.5	5.1		10.8	AC, 50 Hz/6 14.4		21.0	47.6
circuit	Permissible		] 1.4	2.5	5.1	7.9	10.6	14.4	23.1	31.8	47.6
power	fluctuation	voltage		3-phase 323 V AC to 528 V AC							
supply input	Permissible fluctuation	frequency				±	5% maximu	m			
	Voltage/frec	uency			1-ph	ase 380 V A	C to 480 V	AC, 50 Hz/6	60 Hz		
Control	Rated curre	-	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz           0.1         0.2								
circuit	Permissible	voltage		1-phase 323 V AC to 528 V AC							
power	fluctuation							520 V AO			
supply input	Permissible fluctuation					±	5% maximu	m			
	Power cons			30				4	-		
	power supply	/	2	24 V DC ± 1				A (including		ector signals	))
Control m	1			1	Sine-v	vave PWM	control/curre	ent control m	nethod	1	T
Tolerable	Built-in rege resistor (Note	2, 3) [VV	] 15	15	100	100	130 (Note 11)	170 (Note 11)	-	-	-
power	External reg resistor (sta accessory)	ndard [W	] -	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)
Dynamic I					Built-i	n (Note 4)			Exte	rnal option	Note 10)
	III/H comma			0.222 ms, 0.444 ms, 0.888 ms							
	ication function		USB: Connect a personal computer (MR Configurator2 compatible)								
Encoder of	output pulse		Compatible (A/B/Z-phase pulse)								
Analog m	· · ·		2 channels								
Fully close	ed loop	MR-J4-B4	Two-wire type communication method								
control		MR-J4-B4-RJ	Two-wire/four-wire type communication method								
Servo function		Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function, power monitoring function, master-slave operation function (Note 12), scale measurement function (Note 12), J3 compatibility mode, super trace control (Note 13), lost motion compensation (Note 13)									
Load-side	encoder	MR-J4-B4	Mitsubishi high-speed serial communication								
interface		MR-J4-B4-RJ		Mitsubishi ł	high-speed	serial comm	nunication, A	VB/Z-phase	differential	input signal	
Protective functions			Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection, magnetic pole detection protection, linear servo control fault protection								
Functiona	· · · ·		STO (IEC/EN 61800-5-2)								
		ertified by CB	EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2								
	Response p		8 ms or less (STO input OFF → energy shut-off)								
Safety	Mean time t	o dangerous	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum 100 years or longer								
periormance	failure (MTTFd) Diagnostic coverage (DC)		Medium (90% to 99%)								
	Probability of dangerous Failure per Hour (PFH)		1.68 × 10 <sup>-10</sup> [1/h]								
Compliance to standards			Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.								
Structure (IP rating)			Natural cooling, open (IP20) Force cooling, open (IP20) Force cooling, open (IP20) (Note 5)								
Close mounting			Not possible								
Ambient temperature		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)									
H	Ambient humidity		Operation/storage: 90 %RH maximum (non-condensing)								
Environment	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude		1000 m or less above sea level								
	Vibration resistance				5.9 m/s <sup>2</sup> at	10 Hz to 55	Hz (direction	ons of X, Y a	and Z axes)		
Mass		[kg	1 1.7	1.7	2.1	3.6	4.3	6.5	13.4	13.4	18.2

# MR-J4-B4/MR-J4-B4-RJ (SSCNET III/H Interface) Specifications (400 V)

Notes: 1. Rated output and speed of a rotary servo motor, and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.

- 2. Select the most suitable regenerative option for your system with our capacity selection software.
- 3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
- 4. When using the built-in dynamic brake, refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
- 5. Terminal blocks are excluded.
- 6. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
- 7. The command communication cycle depends on the controller specifications and the number of axes connected.
- 8. The value in brackets is applicable when cooling fans (2 units of 92 mm × 92 mm, minimum air flow: 1.0 m<sup>3</sup>/min) are installed, and then [Pr. PA02] is changed.
- 9. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details. 10. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in
- free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake. 11. The servo amplifier built-in regenerative resistor is compatible with the maximum torque deceleration when the servo motor is used within the rated speed and the recommended load to motor inertia ratio. Contact your local sales office if the operating motor speed or the load to motor inertia ratio exceeds the rated speed or the
- recommended ratio.
- This function is available with the servo amplifiers with software version A8 or later.
   This function is available with the servo amplifiers with software version B4 or later.

B-RJ

В

# MR-J4-DU\_B4/MR-J4-DU\_B4-RJ (SSCNET III/H Interface) Specifications (400 V)

B B-RJ

Drive unit model MR-J4(-RJ)			DU30KB4	DU37KB4	DU45KB4	DU55KB4			
Compatible converter unit model				MR-CR55	5K4 (Note 5)				
Output Rated voltage			3-phase 323 V AC						
	Rated cu	rrent [A]		102	131	143			
Main circuit power supply input			Main circuit power is supplied from the converter unit to the drive unit (Note 5)						
	Voltage/fr	equency	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz						
Control	Rated current [A]		0.2						
circuit	Permissible voltage		1-phase 323 V AC to 528 V AC						
power	fluctuation								
supply	Permissible frequency		±5% maximum						
input	fluctuation		45						
lists of a second		nsumption [W]			-				
	power sup	ріу	24 V DC ± 10%	(required current capacity		onnector signals))			
Control m				Sine-wave PWM control					
Dynamic I				External of	otion (Note 4)				
	III/H comn			0.222 ms, 0.444	l ms, 0.888 ms				
	cation cycl			onnoct a porconal compute	or (MR Configurator? con	mpatible)			
			USB: Connect a personal computer (MR Configurator2 compatible) Compatible (A/B/Z-phase pulse)						
	output puls	ie							
Analog m			2 channels						
Fully close	ed loop	MR-J4-DU_B4	Two-wire type communication method						
control		MR-J4-DU_B4-RJ	Two-wire/four-wire type communication method						
			Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function,						
Servo fun	ction		power monitoring function, master-slave operation function, scale measurement function,						
			J3 compatibility mode, super trace control, lost motion compensation						
Load-side	encoder	MR-J4-DU_B4		Mitsubishi high-speed					
interface		MR-J4-DU_B4-RJ	Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal						
			Overcurrent shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder						
Protective	e functions		error protection, undervoltage protection, instantaneous power failure protection, overspeed protection,						
				error excessiv	e protection,				
Functiona	al safety		STO (IEC/EN 61800-5-2)						
	Standards certified by CB		EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2						
	Response	e performance	8 ms or less (STO input OFF $\rightarrow$ energy shut-off)						
	Test pulse	e input (STO) (Note 2)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum						
Safety		e to dangerous	100 years or longer						
performance									
	-	c coverage (DC)	Medium (90% to 99%)						
	Probability of dangerous Failure per Hour (PFH)		1.68 × 10 <sup>-10</sup> [1/h]						
-			Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.						
· ·	ce to stand	Jaros							
Structure (IP rating)			Force cooling, open (IP20) (Note 1)						
Close mounting			Not possible						
	Ambient temperature		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)						
<b>F</b> . 10	Ambient humidity		Operation/storage: 90 %RH maximum (non-condensing)						
Environment	Ambience	9	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Altitude		1000 m or less above sea level						
	Vibration resistance			9 m/s <sup>2</sup> at 10 Hz to 55 Hz (d					
Mass		[kg]	1	6		19			

Notes: 1. Terminal blocks are excluded.

The infinite biotection of the external circuit to perform self-diagnosis by turning off the signals to the drive unit instantaneously at regular intervals.
 The command communication cycle depends on the controller specifications and the number of axes connected.

4. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.

5. One unit of converter unit is required for each drive unit. Refer to "MR-CR Converter Unit Specifications (200 V/400 V)" on p. 1-14 in this catalog for the specifications of the converter unit.

В

B-RJ A A-RJ

Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

Direct Drive Motors

# MR-CR Converter Unit Specifications (200 V/400 V)

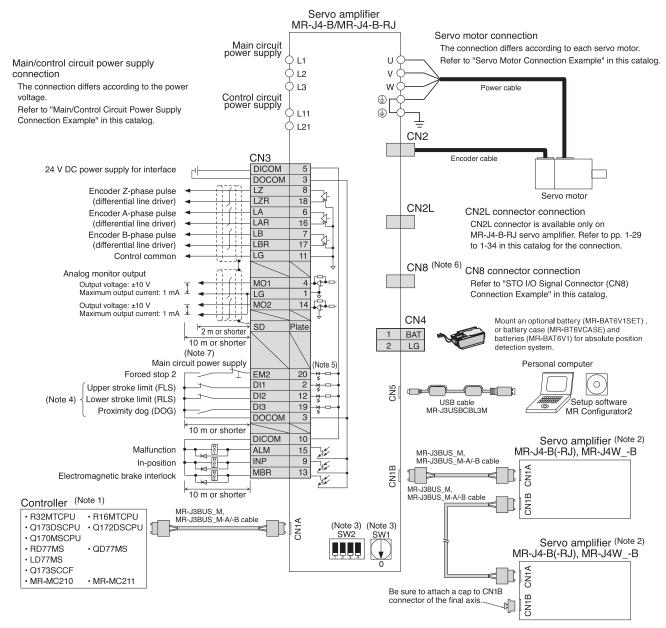
		•					
(	Converter unit model		MR-CR55K	MR-CR55K4			
Output	Rated voltage		270 V DC to 324 V DC	513V DC to 648 V DC			
Output	Rated current	[A]	215.9	113.8			
	Voltage/frequency (Note 1)		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
Main circuit	Rated current [A]		191.3	100.7			
power	Permissible voltage fluctuation		3-phase 170 V AC to 264 V AC	3-phase 323 V AC to 528 V AC			
	Permissible frequency fluctuation		±5% maximum				
	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz			
Control	Rated current	[A]	0.3	0.2			
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC	1-phase 323 V AC to 528 V AC			
supply input	Permissible frequency fluctuation		±5% maximum				
	Power consumption [W]		45				
Interface power supply			24 V DC ± 10% (required current capacity: 0.15 A)				
Rated out	put [	kW]	55				
Regenerative power (when regenerative option is used)			1300 W (one unit of MR-RB139) 3900 W (three units of MR-RB137)	1300 W (one unit of MR-RB137-4) 3900 W (three units of MR-RB13V-4)			
Protective functions			Regenerative overvoltage shut-off, overload shut-off (electronic thermal), regenerative error protection, undervoltage protection, instantaneous power failure protection				
Complian	ce to standards		Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.				
Structure	(IP rating)		Force cooling, open (IP20) (Note 2)				
	Ambient temperature		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)				
	Ambient humidity		Operation/storage: 90 %RH maximum (non-condensing)				
Environment	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Altitude		1000 m or less above sea level				
	Vibration resistance		5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)				
Mass [kg			22				

Notes: 1. Rated output and speed of a rotary servo motor are applicable when the servo amplifier, combined with the rotary servo motor, is operated within the specified power supply voltage and frequency. 2. Terminal blocks are excluded.

Options/Peripheral Equipment

### MR-J4-B/MR-J4-B-RJ Standard Wiring Diagram Example (Note 8)





Notes: 1. For details such as setting the controllers, refer to programming manual or user's manual for the controllers.

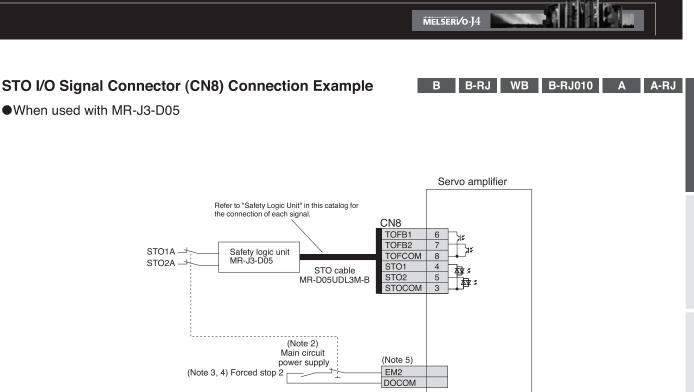
2. Connections for the second and following axes are omitted.

- 3. Up to 64 axes are set by using a combination of an axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-3 and SW2-4). Note that the number of the connectable axes depends on the controller specifications.
- 4. Devices can be assigned for DI1, DI2 and DI3 with controller setting. Refer to the controller instruction manuals for details on setting.
- 5. This is for sink wiring. Source wiring is also possible.
- 6. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 7. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.

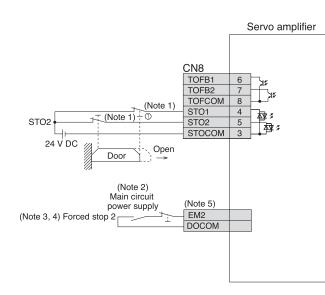
8. This standard wiring diagram is common for 200 V AC, 100 V AC and 400 V AC type servo amplifiers.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

/!\



When using a safety door



Notes: 1. When using the STO function, turn off STO1 and STO2 at the same time. Be sure to turn off STO1 and STO2 after the servo motor stops in servo-off state or after the servo motor stops with deceleration by turning off EM2 (Forced stop 2).

2. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.

3. If the controller does not have a forced stop function, install a forced stop 2 switch (normally closed contact).

4. Turn on EM2 (Forced stop 2) before starting the operation.

 $\triangle$ 

5. The connector and the pin numbers for each signal vary depending on the servo amplifier. Refer to the standard wiring diagram example for relevant servo amplifier in this catalog for details.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

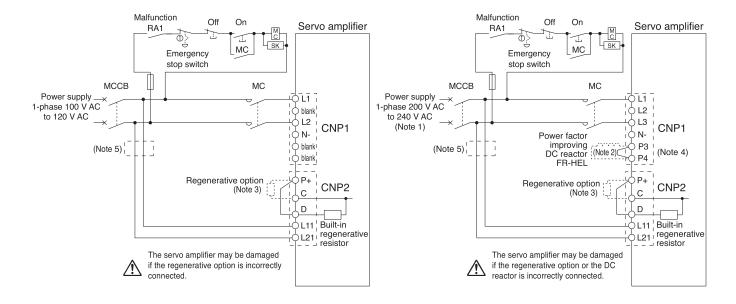
LVS/Wires

# Main/Control Circuit Power Supply Connection Example (Note 7)

•For 1-phase 100 V AC

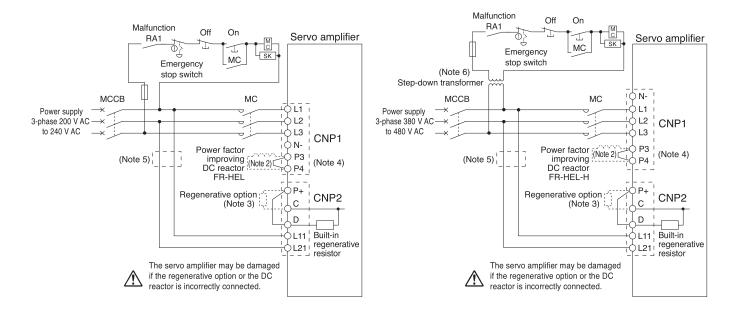
●For 1-phase 200 V AC

B B-RJ B-RJ010 A A-RJ



● For 3-phase 200 V AC, 3.5 kW or smaller

For 3-phase 400 V AC, 3.5 kW or smaller

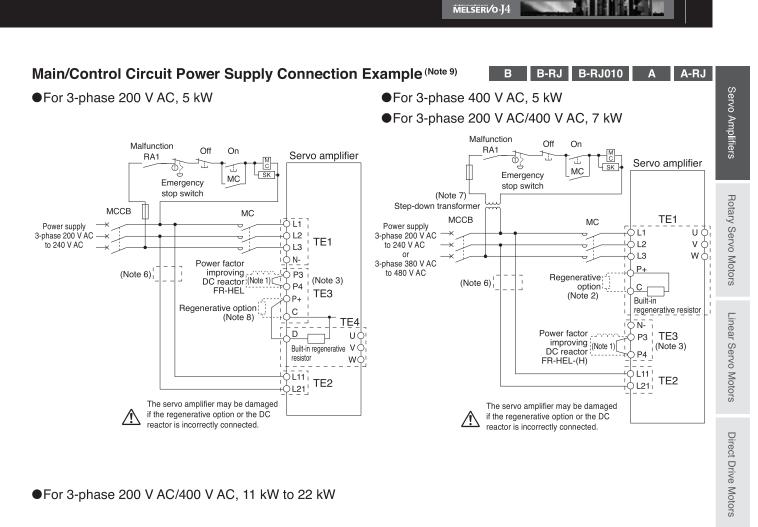


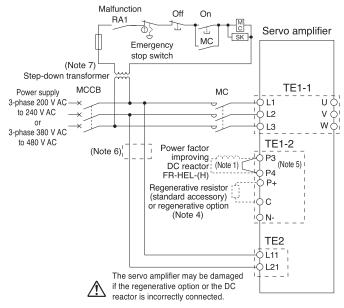
Notes: 1. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3 terminals. Do not connect anything to L2. The connections are different from MR-J3 series servo amplifiers. Be careful not to make a connection error when replacing MR-J3 with MR-J4.

- 2. Disconnect a short-circuit bar between P3 and P4 when using the power factor improving DC reactor.
- 3. Disconnect a short-circuit bar between P+ and D when connecting the regenerative option externally.
- 4. MR-J4 series servo amplifiers have P3 and P4 in the upstream of the inrush current suppression circuit. They are different from P1 and P2 (downstream of the inrush current suppression circuit) of MR-J3 series servo amplifiers. Refer to relevant Servo Amplifier Instruction Manual for details.
- 5. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker. 6. A step-down transformer is required if coil voltage of the magnetic contactor is in 200 V class.
- 7. To control main circuit power supply on/off by DC power supply, refer to relevant Servo Amplifier Instruction Manual for details.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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Notes: 1. Disconnect a short-circuit bar between P3 and P4 when using the power factor improving DC reactor.

- 2. Disconnect the wires for the built-in regenerative resistor (P+ and C) when connecting the regenerative option externally.
- 3. MR-J4 series servo amplifiers have P3 and P4 in the upstream of the inrush current suppression circuit. They are different from P1 and P2 (downstream of the inrush current suppression circuit) of MR-J3 series servo amplifiers. Refer to relevant Servo Amplifier Instruction Manual for details.
- 4. 11 kW or larger servo amplifiers do not have a built-in regenerative resistor.
- 5. MR-J4 series servo amplifiers have P3 and P4 in the upstream of the inrush current suppression circuit. They are different from P1 and P (downstream of the inrush current suppression circuit) of MR-J3 series servo amplifiers. Refer to relevant Servo Amplifier Instruction Manual for details.
- 6. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker.
- 7. A step-down transformer is required if the servo amplifier is in 400 V class, and coil voltage of the magnetic contactor is in 200 V class.
- A step-down transformer is required in the serve amplifier is in 400 v class, and convoltage of the magnetic
   Bisconnect a short-circuit bar between P+ and D when connecting the regenerative option externally.
- 9. To control main circuit power supply on/off by DC power supply, refer to relevant Servo Amplifier Instruction Manual for details.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Options/Peripheral Equipment

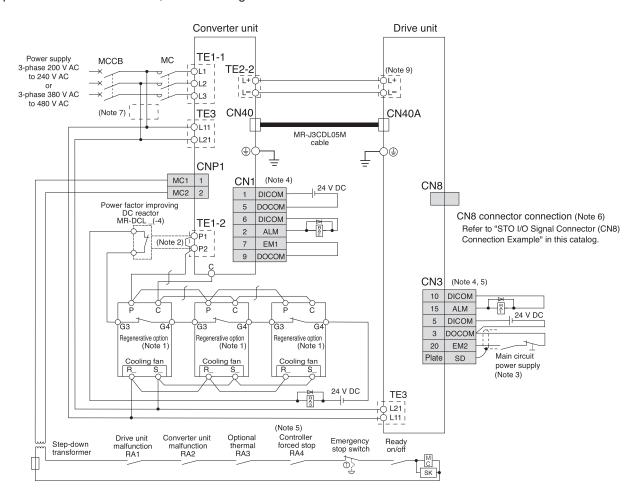
LVS/Wires

Product List

Cautions

### Main/Control Circuit Power Supply Connection Example (Note 8)

●For 3-phase 200 V AC/400 V AC, 30 kW or larger



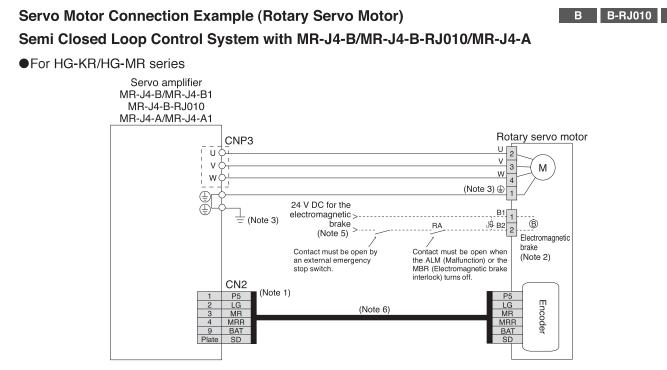
B B-RJ A A-RJ

Notes: 1. This connection is applicable when MR-RB137 (for 200 V) or MR-RB13V-4 (for 400 V) is used. Note that three units of MR-RB137 or MR-RB13V-4 are required for each converter unit. (Permissible regenerative power: 3900 W)

- 2. Disconnect a short-circuit bar between P1 and P2 when using the power factor improving DC reactor.
- 3. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the drive unit.
- 4. This is for sink wiring. Source wiring is also possible.
- 5. This connection is applicable for MR-J4-DU\_B/MR-J4-DU\_B4. For MR-J4-DU\_A/MR-J4-DU\_A4, refer to "MR-J4-DU\_(-RJ) MR-CR-55K\_ Instruction Manual."
- 6. Be sure to attach a short-circuit connector supplied with the drive unit when the STO function is not used.
- 7. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker.
- 8. To control main circuit power supply on/off by DC power supply, refer to relevant Servo Amplifier Instruction Manual for details.
- 9. Terminal varies depending on the drive unit capacities. Refer to the dimensions of the relevant drive unit in this catalog for details.

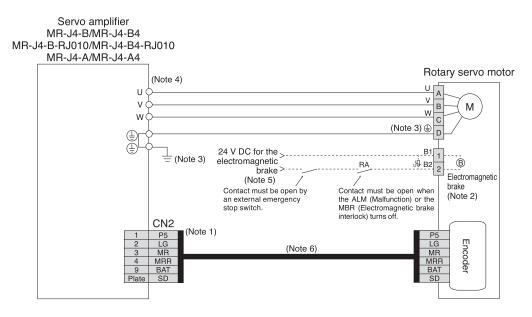
Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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#### •For HG-SR/HG-JR (9 kW or smaller) series

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Notes: 1. The signals shown is applicable when using a two-wire type encoder cable. Four-wire type is also compatible.

- 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
- 3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 4. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details. 5. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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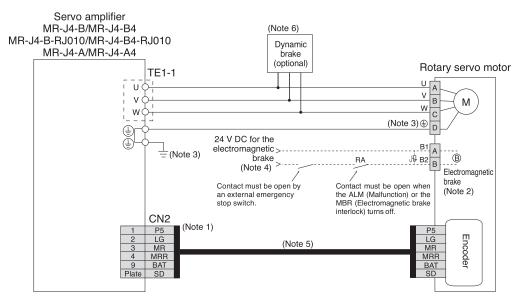
Cautions

## Servo Motor Connection Example (Rotary Servo Motor)

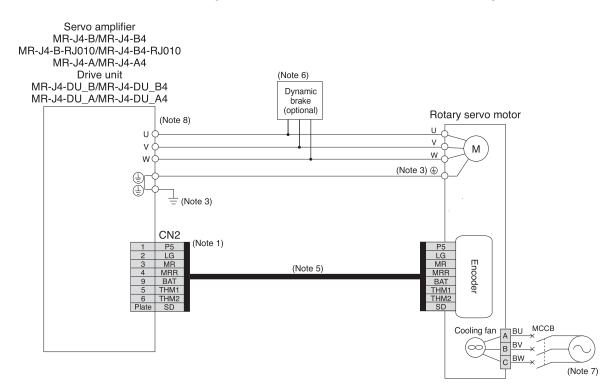


#### Semi Closed Loop Control System with MR-J4-B/MR-J4-B-RJ010/MR-J4-A

For HG-JR 1500 r/min series (11 kW and 15 kW)



For HG-JR 1000 r/min series (15 kW or larger) and HG-JR 1500r/min series (22 kW or larger)



Notes: 1. The signals shown is applicable when using a two-wire type encoder cable. Four-wire type is also compatible.

2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

- 3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 5. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 6. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Refer to relevant Servo Amplifier Instruction Manual when wiring the dynamic brake.
- 7. Be sure to supply power to the cooling fan terminals. Refer to the cooling fan power supply described in the servo motor specifications in this catalog for the required power.

8. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

B-RJ010

Α

Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

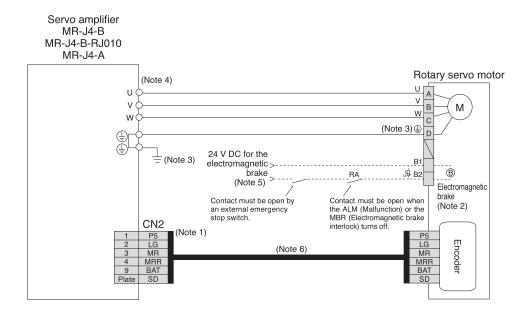
**Direct Drive Motors** 

# Servo Motor Connection Example (Rotary Servo Motor)

# Semi Closed Loop Control System with MR-J4-B/MR-J4-B-RJ010/MR-J4-A

For HG-RR/HG-UR series

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Notes: 1. The signals shown is applicable when using a two-wire type encoder cable. Four-wire type is also compatible.

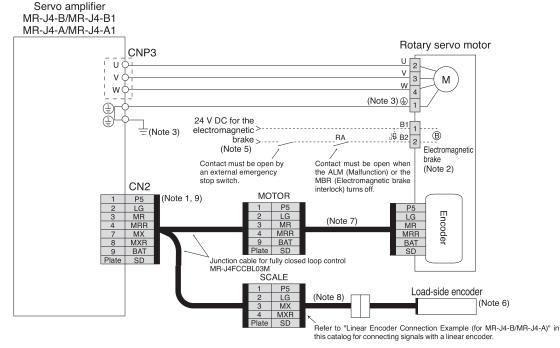
- 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity. A separate connector from the motor power connector is prepared as an electromagnetic brake connector for HG-UR202B to HG-UR502B. The pin numbers vary depending on the servo motor capacity. Refer to the dimensions of the relevant servo motor in this catalog for details.
- 3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 4. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.
- 5. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake. 6. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

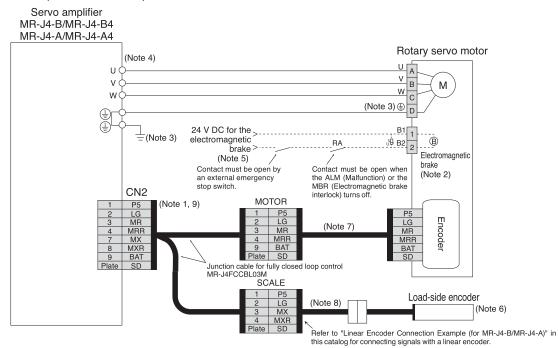
Cautions

# Servo Motor Connection Example (Rotary Servo Motor) Fully Closed Loop Control System with MR-J4-B/MR-J4-A

#### For HG-KR/HG-MR series



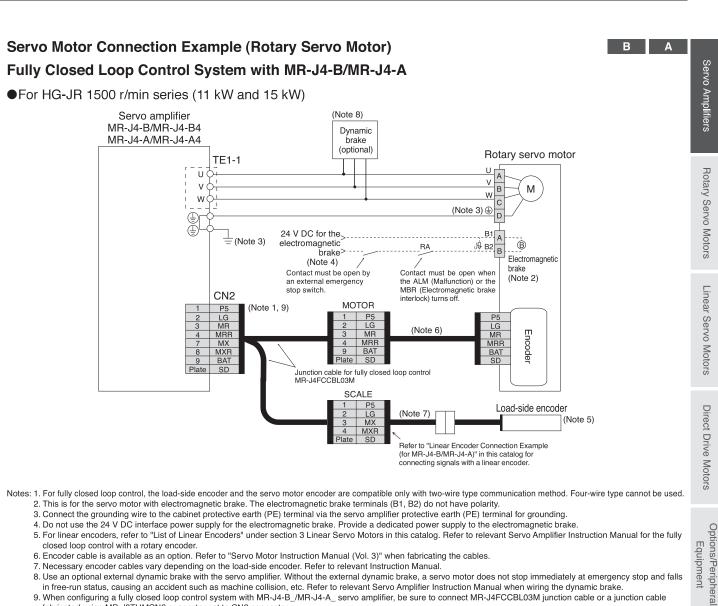
For HG-SR/HG-JR (9 kW or smaller) series



Notes: 1. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used. 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

- 3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 4. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.
- 5. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 6. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 7. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 8. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 9. When configuring a fully closed loop control system with MR-J4-B\_ or MR-J4-A\_ servo amplifier, be sure to connect MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.



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- 5. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 6. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 7. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.

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- 8. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls
- in free-run status, causing an accident such as machine collision, etc. Refer to relevant Servo Amplifier Instruction Manual when wiring the dynamic brake.
- 9. When configuring a fully closed loop control system with MR-J4-B\_/MR-J4-A\_ servo amplifier, be sure to connect MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

LVS/Wires

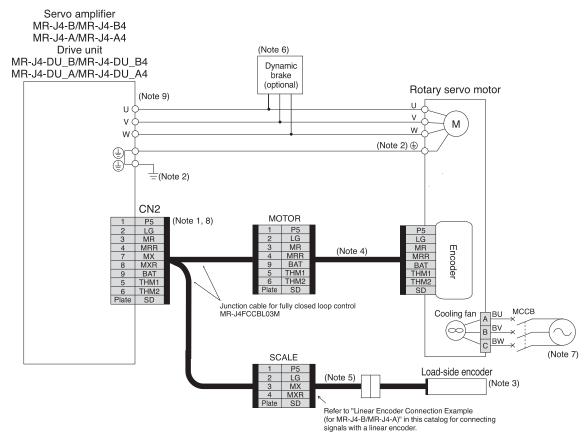
Equipment

Cautions

### Servo Motor Connection Example (Rotary Servo Motor)

#### Fully Closed Loop Control System with MR-J4-B/MR-J4-A

For HG-JR 1000 r/min series (15 kW or larger) and HG-JR 1500r/min series (22 kW or larger)



Notes: 1. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used.

- 2. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 3. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 4. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 5. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 6. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Refer to relevant Servo Amplifier Instruction Manual when wiring the dynamic brake.
- 7. Be sure to supply power to the cooling fan terminals. Refer to the cooling fan power supply described in the servo motor specifications in this catalog for the required power.

8. When configuring a fully closed loop control system with MR-J4-B\_/MR-J4-A\_ servo amplifier, be sure to connect MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.

9. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.

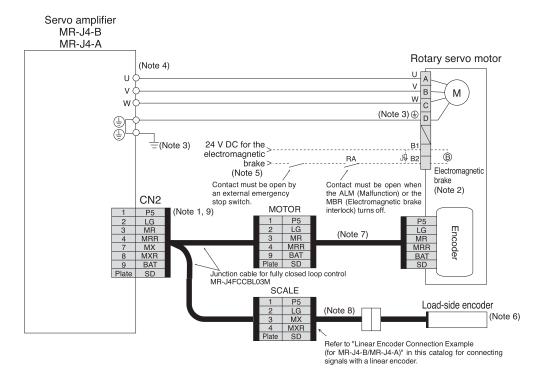
Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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# Servo Motor Connection Example (Rotary Servo Motor) Fully Closed Loop Control System with MR-J4-B/MR-J4-A

•For HG-RR/HG-UR series

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Notes: 1. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used.

- 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity. A separate connector from the motor power connector is prepared as an electromagnetic brake connector for HG-UR202B to HG-UR502B. The pin numbers vary depending on the servo motor capacity. Refer to the dimensions of the relevant servo motor in this catalog for details.
- 3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 4. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.
- 5. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 6. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 7. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 8. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 9. When configuring a fully closed loop control system with MR-J4-B/MR-J4-A servo amplifier, be sure to connect MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

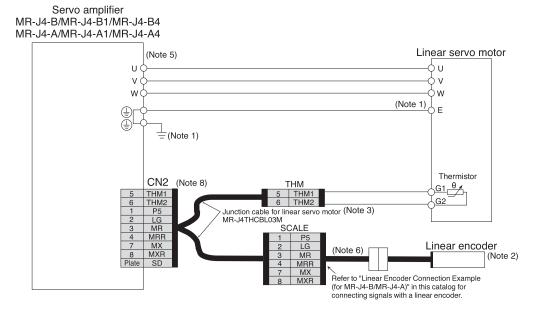
Α

LVS/Wires

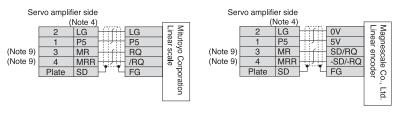
# Servo Motor Connection Example (Linear Servo Motor)

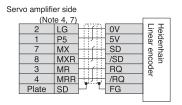
Linear Servo Motor System with MR-J4-B/MR-J4-A

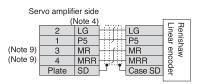
For LM-H3/LM-F/LM-K2/LM-U2 series



#### Linear Encoder Connection Example (for MR-J4-B/MR-J4-A)







Ser	vo amplifi	er side			
	1)	lote 4)			
	2	LG	Hiff	Vcc	Nidec Linear
	1	P5	HHH	GND	
(Note 9)	3	MR	l (	RQIDT	en
(Note 9)	4	MRR		/RQI/DT	Sankyo ( encoder
	Plate	SD	μı	Plate	
			-		Corporation r

Notes: 1. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.

2. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog

3. MR-J4THCBL03M junction cable for linear servo motor is compatible with both two-wire and four-wire type linear encoders.

4. For the number of the wire pairs for LG and P5, refer to "Linear Encoder Instruction Manual."

5. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.

6. Necessary encoder cables vary depending on the linear encoder. Refer to relevant Instruction Manual.

7. When fully closed loop control is configured with a rotary servo motor, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used.

8. When using a linear servo motor with MR-J4-B\_/MR-J4-A\_ servo amplifier, be sure to connect MR-J4THCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.

9. For the fully closed loop control, the signals of 3-pin and 4-pin are as follows: 3-pin:  $\mathsf{MX}$ 

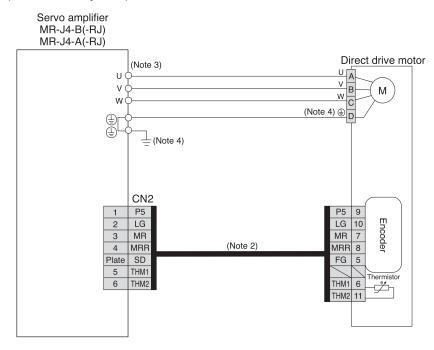
4-pin: MXR

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

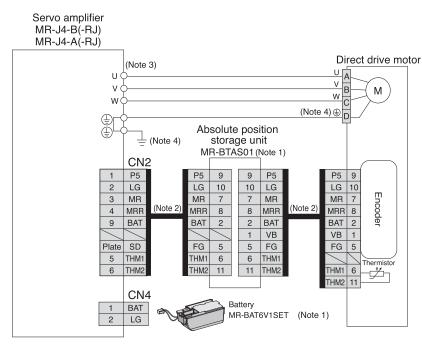
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# Servo Motor Connection Example (Direct Drive Motor)

#### • For TM-RFM series (incremental system)



#### • For TM-RFM series (absolute position detection system)



Notes: 1. Optional MR-BTAS01 absolute position storage unit and MR-BAT6V1SET battery are required for absolute position detection system. Refer to relevant Servo Amplifier Instruction Manual and "Direct Drive Motor Instruction Manual" for details.

2. Fabricate this encoder cable. Refer to "Direct Drive Motor Instruction Manual" for fabricating the encoder cable.

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- 3. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.
- 4. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

B-RJ A A-RJ

#### **Encoder Connection Specifications**

B B-RJ WB A A-RJ

When configuring a linear servo motor system or a fully closed loop control system, or when using the scale measurement function, use the servo amplifier with the following software version.

Refer to the following tables for the encoder communication method compatible with each system and for the servo amplifier connector to which a load-side encoder should be connected.

	External encoder	Connector to be connected with the external encoder						
Operation mode	communication method	MR-J4-B_ MR-J4-DU_B_	MR-J4-BRJ MR-J4-DU_BRJ	MR-J4-A_ MR-J4-DU_A_	MR-J4-ARJ MR-J4-DU_ARJ	MR-J4W2-B	MR-J4W3-B	
	Two-wire type	CN2 (Note 1)	CN2 (Note 1)	CN2 (Note 1, 6)	CN2 (Note 1)	CN2A (Note 1)	CN2A (Note 1)	
Linear servo motor system	Four-wire type					CN2B (Note 1)	CN2B (Note 1) CN2C (Note 1)	
(Note 9)	A/B/Z-phase differential output type		CN2L (Note 8)		CN2L (Note 8)			
Fully closed loop control system	Two-wire type	CN2 (Note 2, 3, 5)	CN2L	CN2 (Note 2, 3, 6)	CN2L	CN2A (Note 2, 4, 5) CN2B (Note 2, 4, 5)		
	Four-wire type A/B/Z-phase differential output type							
Scale measurement function	Two-wire type	CN2 (Note 2, 3, 7)	CN2L (Note 7)			CN2A (Note 2, 4, 7) CN2B (Note 2, 4, 7)		
	Four-wire type A/B/Z-phase differential output type							

Notes: 1. MR-J4THCBL03M junction cable is required.

2. MR-J4FCCBL03M junction cable is required.

3. MR-J4-B\_/MR-DU\_B\_/MR-J4-A\_/MR-J4-DU\_A\_ servo amplifier is not compatible with a servo motor encoder with four-wire type communication method.

Use MR-J4-B\_-RJ/MR-DU\_B\_-RJ/MR-J4-A\_-RJ/MR-J4-DU\_A\_-RJ servo amplifier.

4. MR-J4W2-B servo amplifier is not compatible with a servo motor encoder with four-wire communication method. Use MR-J4-B-RJ servo amplifier.

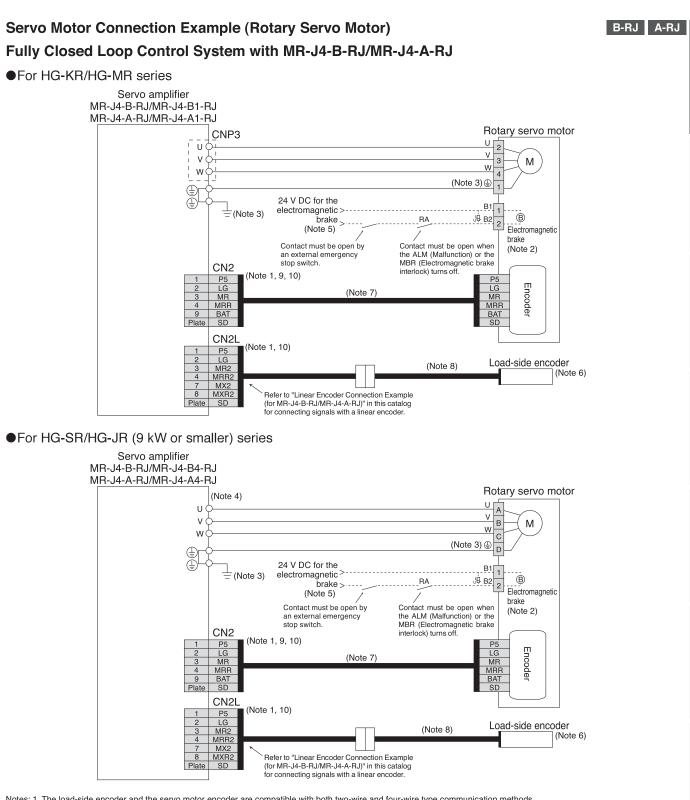
5. The servo amplifier with software version A3 or later is compatible.

6. The servo amplifier with software version A5 or later is compatible.

7. The servo amplifier with software version A8 or later is compatible.

8. Connect a thermistor to CN2 connector.

9. Refer to pp. 1-3 to 1-6 in this catalog for servo amplifier that is compatible with linear servo motors.



Notes: 1. The load-side encoder and the servo motor encoder are compatible with both two-wire and four-wire type communication methods.

2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.

- 4. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.
- 5. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 6. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 7. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 8. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 9. This wiring of the servo motor encoder is applicable for the two-wire type communication method.

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10. When configuring a fully closed loop control system with MR-J4-B\_-RJ or MR-J4-A\_-RJ servo amplifier, be sure to connect a servo motor encoder to CN2 connector and a load-side encoder to CN2L connector. Do not use MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.

Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

**Direct Drive Motors** 

**Options/Peripheral** 

LVS/Wires

Product List

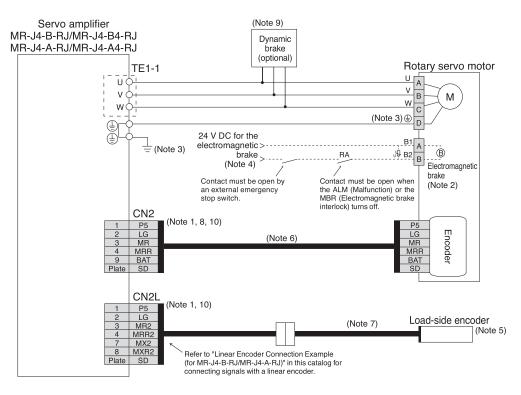
Cautions

Equipment



# Servo Motor Connection Example (Rotary Servo Motor) Fully Closed Loop Control System with MR-J4-B-RJ/MR-J4-A-RJ

For HG-JR 1500 r/min series (11 kW and 15 kW)



Notes: 1. The load-side encoder and the servo motor encoder are compatible with both two-wire and four-wire type communication methods.

2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.

4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.

- 5. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 6. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 7. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 8. This wiring of the servo motor encoder is applicable for the two-wire type communication method.
- Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Refer to relevant Servo Amplifier Instruction Manual when wiring the dynamic brake.
   When configuring a fully closed loop control system with MR-J4-B\_-RJ/MR-J4-A\_-RJ servo amplifier, be sure to connect a servo motor encoder to CN2 connector and a
- load-side encoder to CN2L connector. Do not use MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.

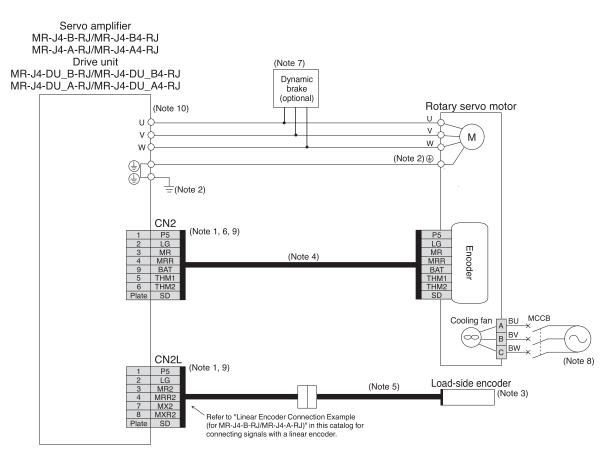
Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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# Servo Motor Connection Example (Rotary Servo Motor)

# Fully Closed Loop Control System with MR-J4-B-RJ/MR-J4-A-RJ

●For HG-JR 1000 r/min series (15 kW or larger) and HG-JR 1500r/min series (22 kW or larger)



Notes: 1. The load-side encoder and the servo motor encoder are compatible with both two-wire and four-wire type communication methods.

- 2. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
- 3. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
- 4. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 5. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 6. This wiring of the servo motor encoder is applicable for the two-wire type communication method.
- 7. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls

in free-run status, causing an accident such as machine collision, etc. Refer to relevant Servo Amplifier Instruction Manual when wiring the dynamic brake. 8. Be sure to supply power to the cooling fan terminals. Refer to the cooling fan power supply described in the servo motor specifications in this catalog for the required power.

- 9. When configuring a fully closed loop control system with MR-J4-B\_-RJ/MR-J4-A\_-RJ servo amplifier, be sure to connect a servo motor encoder to CN2 connector and a load-side encoder to CN2L connector. Do not use MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.
- 10. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.

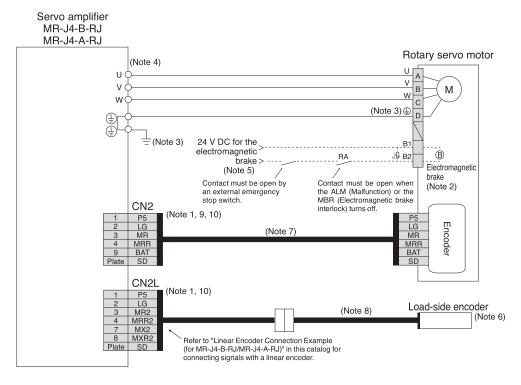
Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

B-RJ A-RJ

LVS/Wires

# Servo Motor Connection Example (Rotary Servo Motor) Fully Closed Loop Control System with MR-J4-B-RJ/MR-J4-A-RJ

For HG-RR/HG-UR series



B-RJ A-RJ

- Notes: 1. The load-side encoder and the servo motor encoder are compatible with both two-wire and four-wire type communication methods.
  - 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity. A separate connector from the motor power connector is prepared as an electromagnetic brake connector for HG-UR202B to HG-UR502B. The pin numbers vary depending on the servo motor capacity. Refer to the dimensions of the relevant servo motor in this catalog for details.
  - 3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
  - 4. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.
  - 5. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
  - 6. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to relevant Servo Amplifier Instruction Manual for the fully closed loop control with a rotary encoder.
  - 7. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
  - 8. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.

  - 9. This wiring of the servo motor encoder is applicable for the two-wire type communication method. 10. When configuring a fully closed loop control system with MR-J4-B-RJ/MR-J4-A-RJ servo amplifier, be sure to connect a servo motor encoder to CN2 connector and a loadside encoder to CN2L connector. Do not use MR-J4FCCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.

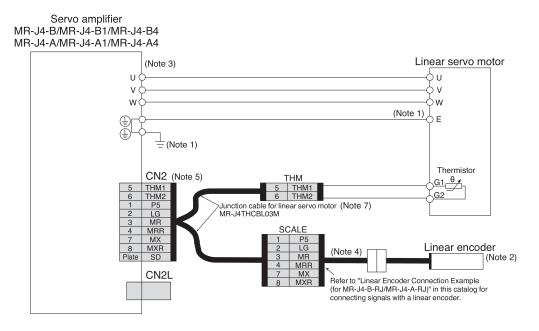
Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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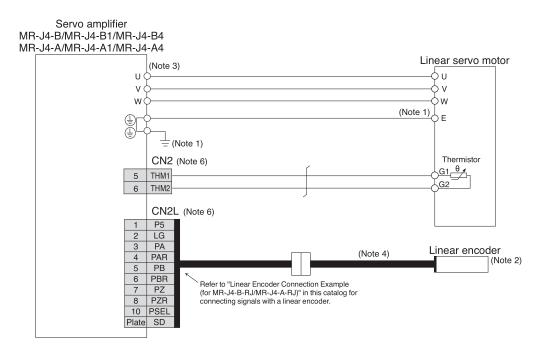
# Servo Motor Connection Example (Linear Servo Motor)

# Linear Servo Motor System with MR-J4-B-RJ/MR-J4-A-RJ (LM-H3, LM-F, LM-K2, LM-U2 Series)

#### Connecting a serial linear encoder



#### Connecting an A/B/Z-phase differential output linear encoder



Notes: 1. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.

2. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog.

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3. Connector or terminal varies depending on the servo amplifier capacities. Refer to the dimensions of the relevant servo amplifier in this catalog for details.

4. Necessary encoder cables vary depending on the linear encoder. Refer to "Linear Encoder Instruction Manual." 5. When configuring a linear servo system with MR-J4-B\_-RJ/MR-J4-A\_-RJ servo amplifier and a serial linear encoder, be sure to connect MR-J4THCBL03M junction cable

or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector. 6. When configuring a linear servo system with MR-J4-B\_-RJ/MR-J4-A\_-RJ servo amplifier and an A/B/Z-phase differential output type linear encoder, be sure to connect a thermistor to CN2 connector and the linear encoder to CN2L connector. Do not use MR-J4THCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.

7. MR-J4THCBL03M junction cable for linear servo motor is compatible with two-wire and four-wire type linear encoders.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

B-RJ A-RJ

#### Linear Encoder Connection Example (for MR-J4-B-RJ/MR-J4-A-RJ)

#### Servo amplifier side Servo amplifier side Servo amplifier side (Note 1) (Note 1) (Note 1) Magnescale Co., Ltd. Linear encoder Mitutoyo Corporation Linear scale LG 0V 5V SD 0V Linear encoder LG LG LG Heidenhain LG P5 RQ //RQ FG 5V SD/RQ P5 P5 P5 MX MR MR (Note 3) (Note 3) (Note 3) MRR -SD/-RQ FG /SD RQ (Note 3) (Note 3) 4 MRR (Note 3) MXR 4 8 j Plate SD Plate SD (Note 3) MR (Note 3) 4 MRR /RQ FG Ň Plate SD Servo amplifier side Servo amplifier side Servo amplifier side (Note 2) (Note 1) (Note 1) (Note 1) Nidec Sankyo Corporation Linear encoder Linear encoder Renishaw Vcc GND RQIDT /RQI/DT A/B/Z phase differential output linear encoder LG P5 LG P5 LG P5 5 P5 0V LG PA PAR MR MR (Note 3) MR (Note 3) A-phase Ā-phase 3 (Note 3) MRR MRR (Note 3) MRR 4 4 Case SD Plate j, j Plate SD Plate SD PΒ B-phase PBR **B**-phase Z-phase Z-phase PZ PZR PSEL 8 Ľ 10 FG Plate SD

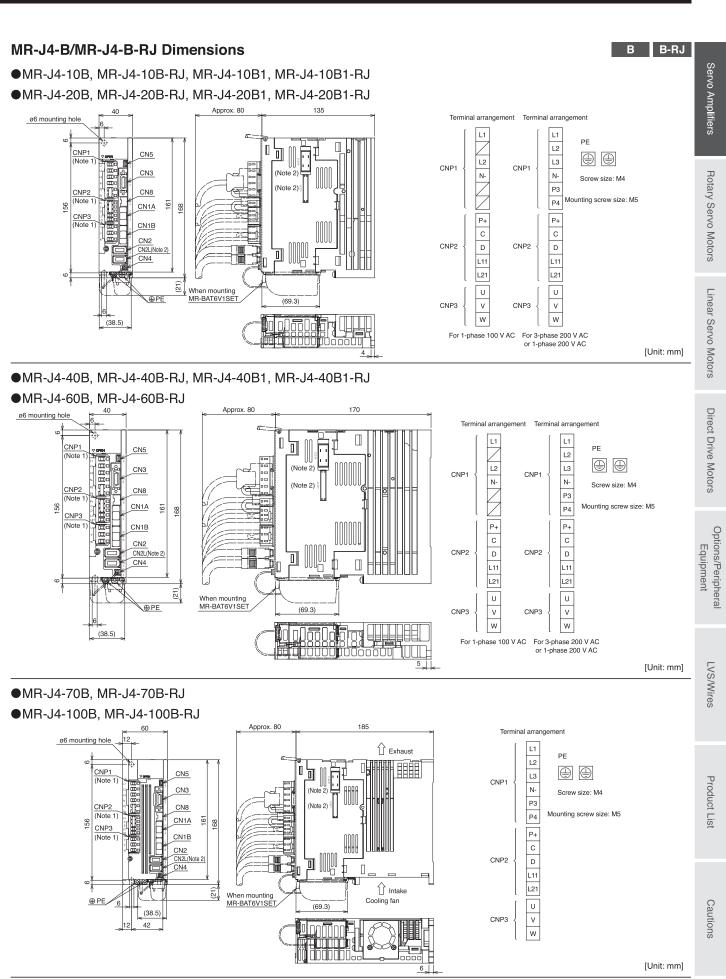
Notes: 1. For the number of the wire pairs for LG and P5, refer to "Linear Encoder Instruction Manual." 2. If the encoder's current consumption exceeds 350 mA, supply power from an external source.

- 3. For CN2L connector, the signals of 3-pin, 4-pin, and 7-pin, and 8-pin are as follows:
  - 3-pin: MR2
  - 4-pin: MRR2
  - 7-pin: MX2
  - 8-pin: MXR2

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Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.





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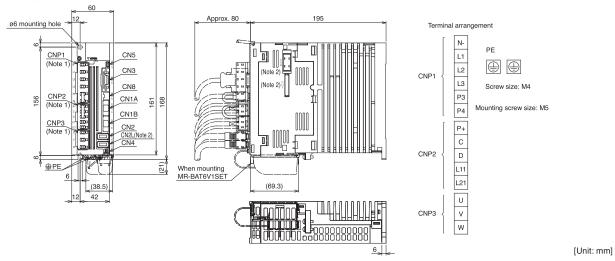
Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

## MR-J4-B/MR-J4-B-RJ Dimensions

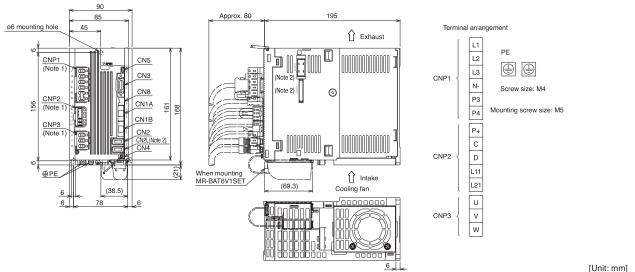
B B-RJ

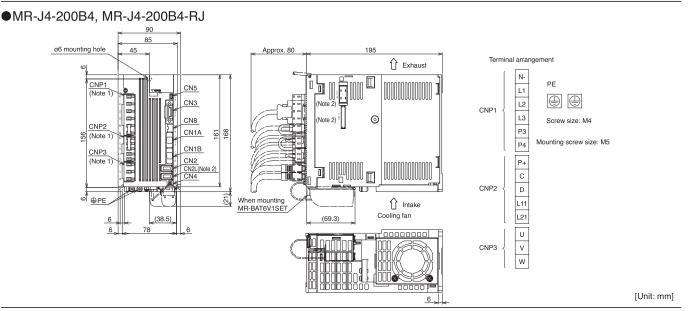
#### •MR-J4-60B4, MR-J4-60B4-RJ

•MR-J4-100B4, MR-J4-100B4-RJ

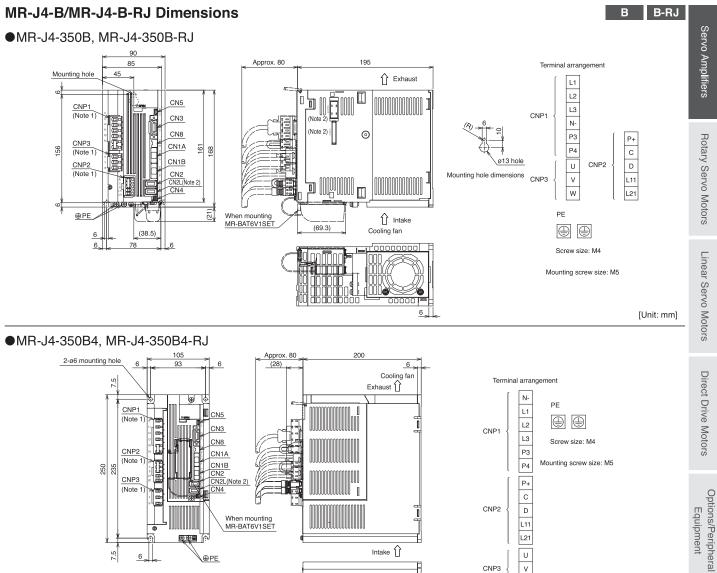


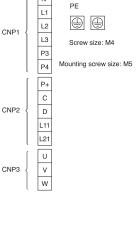
#### •MR-J4-200B, MR-J4-200B-RJ



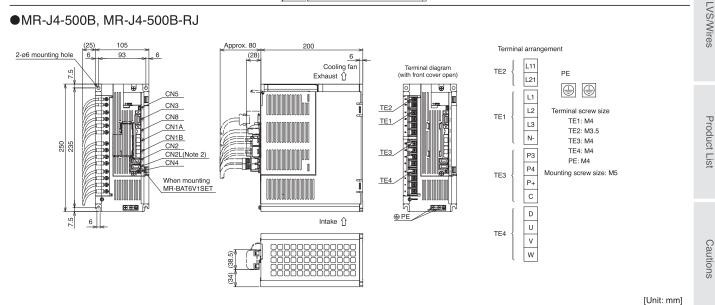


Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.





•MR-J4-500B, MR-J4-500B-RJ



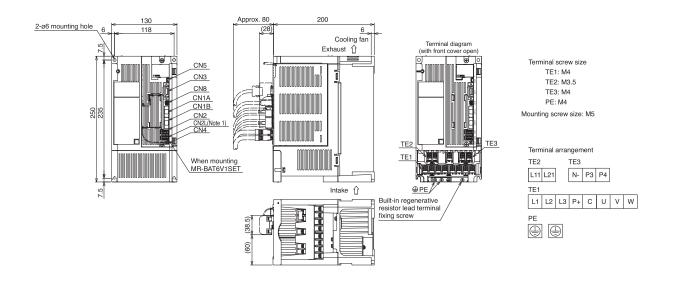
Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

[Unit: mm]

## MR-J4-B/MR-J4-B-RJ Dimensions

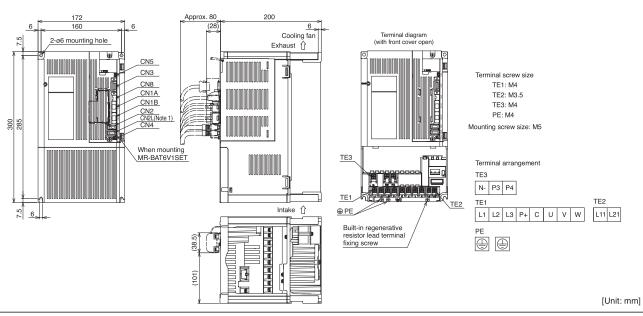


#### •MR-J4-500B4, MR-J4-500B4-RJ

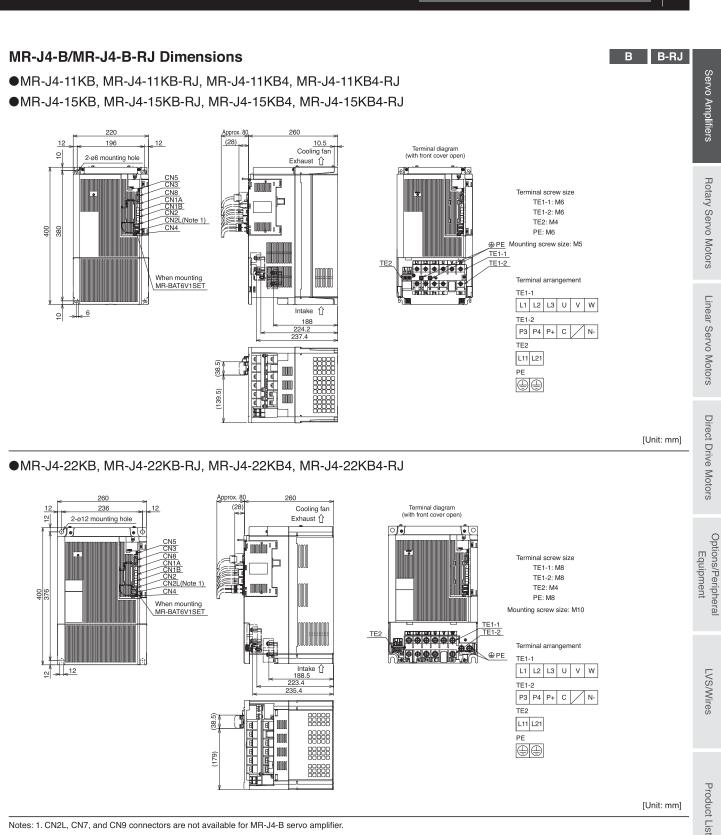


[Unit: mm]

### •MR-J4-700B, MR-J4-700B-RJ, MR-J4-700B4, MR-J4-700B4-RJ



Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.



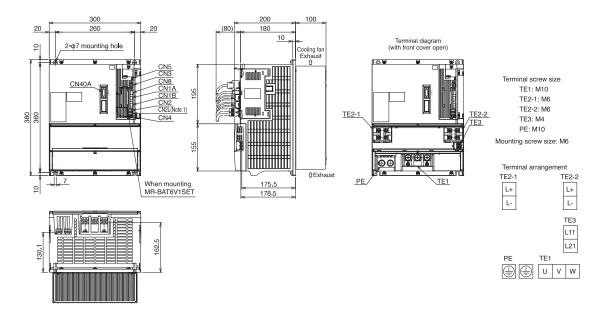
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Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

Cautions

## MR-J4-DU\_B/MR-J4-DU\_B-RJ Dimensions

- •MR-J4-DU30KB, MR-J4-DU30KB-RJ
- •MR-J4-DU37KB, MR-J4-DU37KB-RJ
- •MR-J4-DU45KB4, MR-J4-DU45KB4-RJ
- •MR-J4-DU55KB4, MR-J4-DU55KB4-RJ

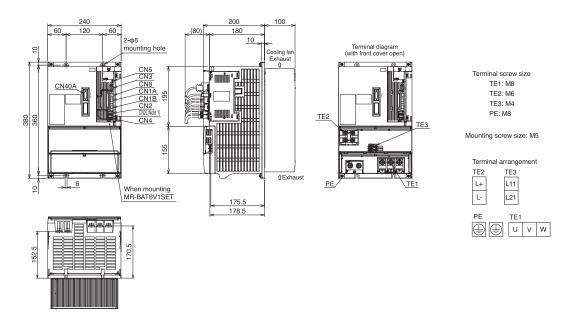


[Unit: mm]

B B-RJ

# •MR-J4-DU30KB4, MR-J4-DU30KB4-RJ

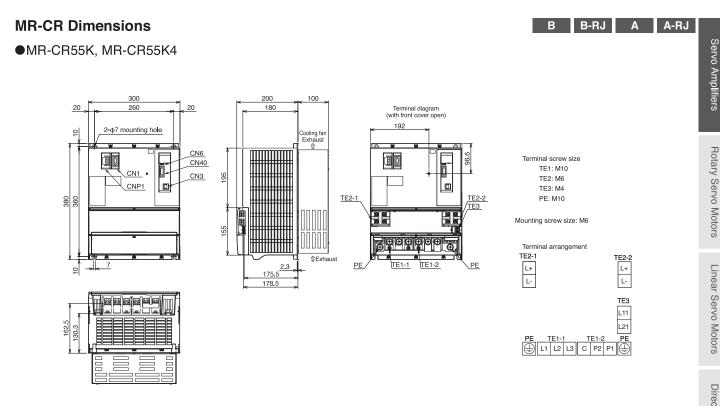
•MR-J4-DU37KB4, MR-J4-DU37KB4-RJ



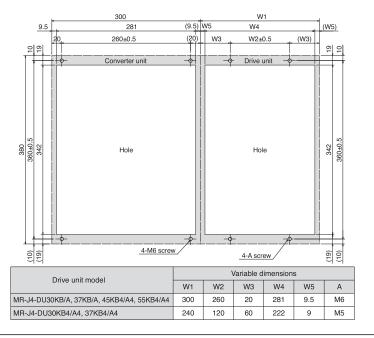
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-DU\_B\_ drive unit.





## Panel Cut Dimensions for Converter Unit and Drive Unit (Note 1)



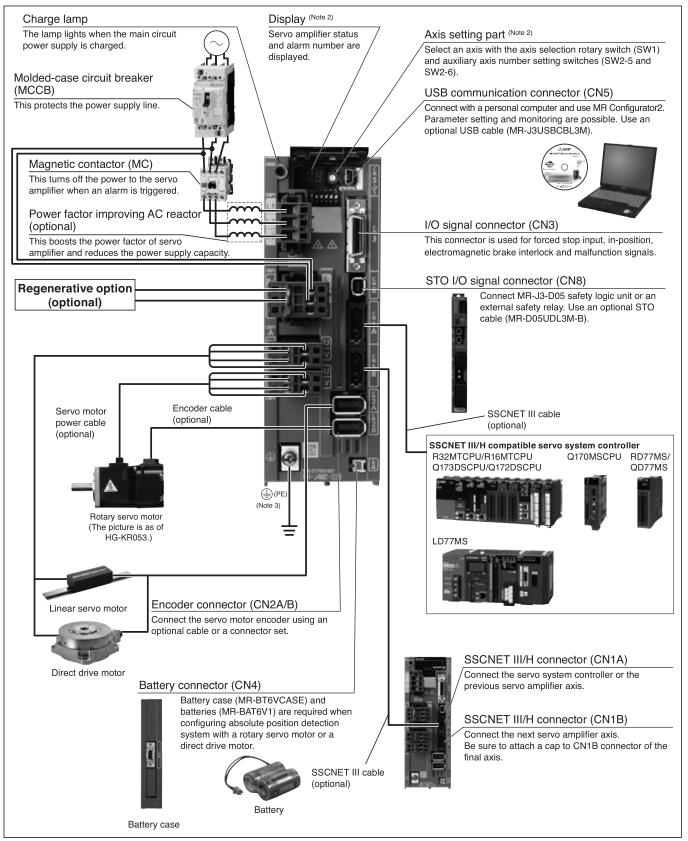
Notes:1. The panel cut dimensions for coverter unit and drive unit are applicable for MR-J4-DU\_B\_/MR-J4-DU\_B\_-RJ/MR-J4-DU\_A\_/MR-J4-DU\_A\_-RJ.

# [Unit: mm]

[Unit: mm]

## MR-J4W\_-B Connections with Peripheral Equipment (Note 1)

Peripheral equipment is connected to MR-J4W\_-B as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-J4W2-22B. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier. Refer to "MR-J4W\_-\_B Servo Amplifier Instruction Manual" for the actual connections of the multi-axis servo amplifier.

2. This picture shows when the display cover is open.

3. Connect the grounding terminal of the servo motor to (a) of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (a) located on the lower front of the servo amplifier to the cabinet protective earth (PE).

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# MR-J4W2-B (2-axis, SSCNET III/H Interface) Specifications

Servo a	mplifier model MR-J4W2-	22B	44B	77B	1010B	Ser
Jervo a	Rated voltage	220		170 V AC	10100	6
Output	Rated current (each axis) [A]	1.5	2.8	5.8	6.0	Amp
Main	Voltage/frequency (Note 1)		se or 1-phase 200 V AC to 2 50 Hz/60 Hz		3-phase 200 V AC to 240 V AC, 50Hz/60 Hz	Servo Amplifiers
circuit	Rated current (Note 15) [A]	2.9	5.2	7.5	9.8	
power supply	Permissible voltage fluctuation	3-pha	se or 1-phase 170 V AC to 2	264 V AC	3-phase 170 V AC to 264 V AC	Ro
input	Permissible frequency fluctuation		±5% m	aximum		Rotary Servo Motors
	Voltage/frequency		1-phase 200 V AC to 2	240 V AC, 50 Hz/60 Hz		PINO
Control	Rated current [A]		0	).4		Mo
circuit power	Permissible voltage fluctuation		1-phase 170 V	AC to 264 V AC		tors
supply input	Permissible frequency fluctuation		±5% m	aximum		Lir
	Power consumption [W]		5	55		lear
Interface po	ower supply	24 V DC ± 10	% (required current capacity	: 0.35 A (including CN8 c	onnector signals))	Se
Control met	thod		Sine-wave PWM contro	l/current control method		rvo
	Reusable regenerative energy (Note 5) [J]	17	21		44	Linear Servo Motors
Capacitor regeneration	Moment of inertia (J) equivalent to permissible charging amount (Note 6) [× 10 <sup>-4</sup> kg•m <sup>2</sup> ]	3.45	4.26	8	9.92	
regeneration	Mass equivalent LM-H3	3.8	4.7	(	9.8	Ct D
	to permissible charging amount (Note 7) [kg] LM-K2 LM-U2	8.5	10.5	2	2.0	Direct Drive Motors
	egenerative power of regenerative resistor [W]		20	1	00	
Dynamic br	ake		Built-i	n (Note 4)		Options/Periphera Equipment
SSCNET III/H c	command communication cycle (Note 13)		0.222 ms, 0.44	4 ms, 0.888 ms		ions/Periph Equipment
Communica	ation function	USB	Connect a personal compu	ter (MR Configurator2 co	mpatible)	/Pe
Encoder ou	Itput pulse		Compatible (A	/B-phase pulse)		riph Ient
Analog mor			No	one		era
Fully closed	d loop control (Note 11)		Availab	le (Note 12)		
Servo funct	ion	tough drive function, d	ppression control II, adaptive rive recorder function, tighter ring function, scale measure	ning & press-fit control, m	achine diagnosis function,	_
Load-side e	encoder interface (Note 9)		• •	d serial communication		_VS
Protective f	unctions	servo motor overheat protection, instantane	off, regenerative overvoltage protection, encoder error pro ous power failure protection tic pole detection protection.	otection, regenerative error, overspeed protection, e	protection, undervoltage rror excessive protection,	LVS/Wires

## MR-J4W2-B (2-axis, SSCNET III/H Interface) Specifications

Servo a	mplifier model MR-J4W2-	22B	44B	77B	1010B							
Functional s	•	STO (IEC/EN 61800-5-2) (Note 10)										
	Standards certified by CB	EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2										
	Response performance		8 ms or less (STO input	$OFF \rightarrow energy shut-off)$								
	Test pulse input (STO) (Note 8)	Test puls	e interval: 1 Hz to 25 Hz,	test pulse off time: 1 ms n	naximum							
	Mean time to dangerous failure (MTTFd)		100 years	or longer								
	tandards certified by CB       EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2         esponse performance       8 ms or less (STO input OFF → energy shut-off)         est pulse input (STO) (Note 8)       Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum         ean time to dangerous ilure (MTTFd)       100 years or longer         iagnostic coverage (DC)       Medium (90% to 99%)         robability of dangerous ailure per Hour (PFH)       1.68 × 10 <sup>-10</sup> [1/h]         o standards       Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.         nting)       Natural cooling, open (IP20)         Possible       Possible         mbient temperature       Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)         mbient humidity       Operation/storage: 90 %RH maximum (non-condensing)											
	Probability of dangerous Failure per Hour (PFH)		1.68 × 10 <sup>-10</sup> [1/h]									
Compliance	to standards	Refer to "Confor	mity with Global Standards	s and Regulations" on p. 5	57 in this catalog.							
Structure (II	⊃ rating)	0.1		Force cooling, open (IP20	)							
Close mour	iting		Pos	sible								
	Ambient temperature	Operation: 0 °	C to 55 °C (non-freezing),	storage: -20 °C to 65 °C	(non-freezing)							
	Ambient humidity	i)       100 years or longer         iverage (DC)       Medium (90% to 99%)         angerous ir (PFH)       1.68 × 10 <sup>-10</sup> [1/h]         Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.         Natural cooling, open (IP20)       Force cooling, open (IP20)         Possible         erature       Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)         dity       Operation/storage: 90 %RH maximum (non-condensing)										
Environment	Ambience	Indoors (no d	irect sunlight); no corrosiv	e gas, inflammable gas, c	vil mist or dust							
	Altitude		1000 m or less	above sea level								
Close mour Environment	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)										
Mass	[kg]	1.5	1.5	2.0	2.0							

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Notes: 1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo

amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.

2. Select the most suitable regenerative option for your system with our capacity selection software.

3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.

4. When using the built-in dynamic brake, refer to "MR-J4W\_-\_B Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.

5. Reusable regenerative energy is equivalent to the energy generated under the following conditions. For rotary servo motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.

For linear servo motor: the energy that is generated when the machine, whose mass is equivalent to the permissible charging amount, decelerates from the maximum speed to a stop.

For direct drive motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.

6. This value is the moment of inertia when the rotary servo motor decelerates from the rated speed to a stop. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the two axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis. The value also applies to the direct drive motor.

7. This value is the mass when the linear servo motor decelerates from maximum speed to a stop. Mass of primary side (coil) is included. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the two axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.

8. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.

9. Not compatible with pulse train interface (A/B/Z-phase differential output type).

10. STO is common for all axes.

11. The load-side encoder and the servo motor encoder are compatible only with two-wire type communication method.

12. Fully closed loop control is compatible with the servo amplifiers with software version A3 or later.

13. The command communication cycle depends on the controller specifications and the number of axes connected.

14. This function is available with the servo amplifiers with software version A8 or later.15. This value is applicable when a 3-phase power supply is used.

WB

# MR-J4W3-B (3-axis, SSCNET III/H Interface) Specifications

Servo a	amplifier model MR-J4W3-	222B	444B	erv
0	Rated voltage	3-phase	170 V AC	0 A
Output	Rated current (each axis) [A]	1.5	2.8	du
Main	Voltage/frequency (Note 1)	3-phase or 1-phase 2 50 Hz	00 V AC to 240 V AC, /60 Hz	Servo Amplifiers
circuit	Rated current (Note 12) [A]	4.3	7.8	
power supply	Permissible voltage fluctuation	3-phase or 1-phase 1	70 V AC to 264 V AC	Ro
input	Permissible frequency fluctuation	±5% m	aximum	Rotary Servo Motors
	Voltage/frequency	1-phase 200 V AC to 2	240 V AC, 50 Hz/60 Hz	ovie
Control	Rated current [A]	0	.4	Š
circuit power	Permissible voltage fluctuation	1-phase 170 V	AC to 264 V AC	otors
supply input	Permissible frequency fluctuation	±5% m	aximum	Ę.
	Power consumption [W]	5	5	lear
Interface po	ower supply	24 V DC ± 10% (required current capacity	: 0.45 A (including CN8 connector signals))	Se
Control me	thod	Sine-wave PWM contro	I/current control method	rvo
	Reusable regenerative energy (Note 5) [J]	21	30	Linear Servo Motors
Capacitor regeneration	Moment of inertia (J) equivalent to permissible charging amount <sup>(Note 6)</sup> [× 10 <sup>-4</sup> kg•m <sup>2</sup> ]	4.26	6.08	
regeneration	Mass equivalent LM-H3	4.7	6.7	et E
	to permissible charging amount (Note 7) [kg] LM-K2 LM-U2	10.5	15.0	Direct Drive Motors
	egenerative power of regenerative resistor [W]	з	0	
Dynamic br	rake	Built-in	1 (Note 4)	Opt
SSCNET II cycle <sup>(Note 10)</sup>	I/H command communication	0.222 ms <sup>(Note 11)</sup> , 0	.444 ms, 0.888 ms	Equipment
Communica	ation function	USB: Connect a personal comput	er (MR Configurator2 compatible)	mer
Encoder ou	itput pulse	Not cor	npatible	nera
Analog mor	nitor	Nc	ne	<u> </u>
Fully closed	d loop control	Not cor	npatible	1
Servo funct	tion	tough drive function, drive recorder function, tighter	e filter II, robust filter, auto tuning, one-touch tuning, ning & press-fit control, machine diagnosis function, on, J3 compatibility mode	LVS
Protective f	functions	servo motor overheat protection, encoder error pro protection, instantaneous power failure protection	shut-off, overload shut-off (electronic thermal), tection, regenerative error protection, undervoltage overspeed protection, error excessive protection, linear servo control fault protection	LVS/Wires

Cautions

### MR-J4W3-B (3-axis, SSCNET III/H Interface) Specifications

Servo ar	mplifier model MR-J4W3-	222B	444B						
Functional s	safety	STO (IEC/EN 61800-5-2) (Note 9)							
	Standards certified by CB	EN ISO 13849-1 Category 3 PL d, IEC 61508 \$	SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2						
	Response performance	8 ms or less (STO input	$OFF \rightarrow energy shut-off)$						
	Test pulse input (STO) (Note 8)	· · · · · ·							
Denominance	Mean time to dangerous failure (MTTFd)	100 years	or longer						
	Diagnostic coverage (DC)	Medium (90	0% to 99%)						
	Probability of dangerous Failure per Hour (PFH)	1.68 × 10 <sup>-10</sup> [1/h]							
Compliance	to standards	Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.							
Structure (IF	P rating)	Force cooling	PFF → energy shut-off) : 1 Hz to 25 Hz 1 ms maximum or longer % to 99%) $^{-10}$ [1/h] and Regulations" on p. 57 in this catalog. open (IP20) ole storage: -20 °C to 65 °C (non-freezing) maximum (non-condensing) gas, inflammable gas, oil mist or dust						
Close moun	iting	Pos	sible						
	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing),	STO (IEC/EN 61800-5-2) (Note 9) 0 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2 8 ms or less (STO input OFF $\rightarrow$ energy shut-off) Test pulse interval: 1 Hz to 25 Hz Test pulse off time: 1 ms maximum 100 years or longer Medium (90% to 99%) 1.68 × 10 <sup>-10</sup> [1/h]						
	Ambient humidity	Operation/storage: 90 %RH	maximum (non-condensing)						
Environment	Ambience	Indoors (no direct sunlight); no corrosiv	e gas, inflammable gas, oil mist or dust						
	Altitude	1000 m or less	above sea level						
	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (d	lirections of X, Y and Z axes)						
Mass	[kg]	1.9	1.9						

Notes:1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo

amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.

2. Select the most suitable regenerative option for your system with our capacity selection software.

3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.

4. When using the built-in dynamic brake, refer to "MR-J4W\_-\_B Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.

5. Reusable regenerative energy is equivalent to the energy generated under the following conditions.

For rotary servo motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.

For linear servo motor: the energy that is generated when the machine, whose mass is equivalent to the permissible charging amount, decelerates from the maximum speed to a stop.

For direct drive motor: the energy that is generated when the machine, whose moment of inertia is equivalent to the permissible charging amount, decelerates from the rated speed to a stop.

6. This value is the moment of inertia when the rotary servo motor decelerates from the rated speed to a stop. When three axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the three axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis. The value also applies to the direct drive motor.

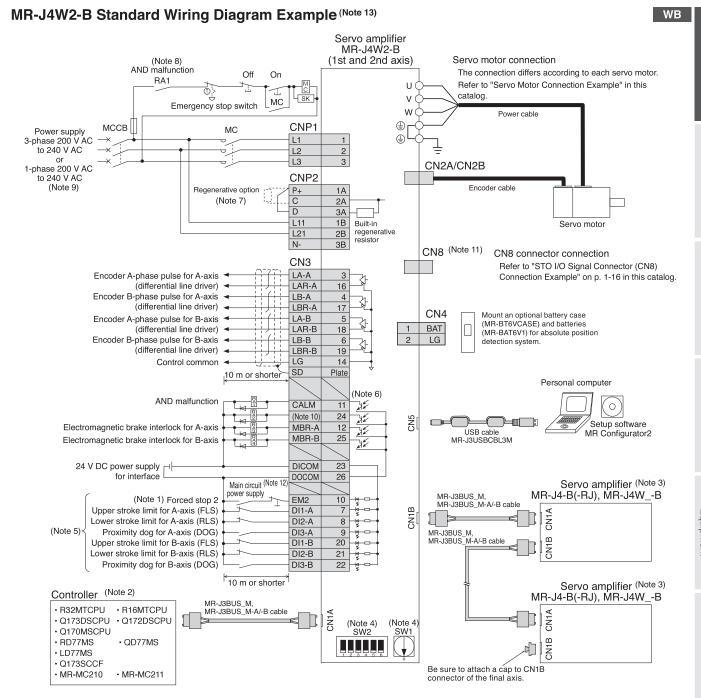
7. This value is the mass when the linear servo motor decelerates from maximum speed to a stop. Mass of primary side (coil) is included. When three axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the three axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.

8. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.

9. STO is common for all axes

10. The command communication cycle depends on the controller specifications and the number of axes connected.

 Servo amplifier with software version A3 or later is compatible with the command communication cycle of 0.222 ms. However, note that the following functions are not available when 0.222 ms is used: auto tuning (real time, one-touch, and vibration suppression control), adaptive filter II, vibration tough drive, and power monitoring.
 This value is applicable when a 3-phase power supply is used.



Notes: 1. The forced stop signal is issued for two axes of the servo amplifier. For overall system, apply the emergency stop on the controller side.

- 2. For details such as setting the controllers, refer to programming manual or user's manual for the controllers.
- 3. Connections for the third and following axes are omitted.
- 4. Up to 64 axes can be set by using a combination of an axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-5 and SW2-6). Note that the number of the connectable axes depends on the controller specifications.
- 5. Devices can be assigned for DI1-A/B, DI2-A/B and DI3-A/B with controller setting. Refer to the controller instruction manuals for details on setting.
- 6. This is for sink wiring. Source wiring is also possible.
- 7. When not using a regenerative option, connect a short-circuit bar between P+ and D to use the built-in regenerative resistor. When using a regenerative option, disconnect the short-circuit bar between P+ and D, and then connect the regenerative option to P+ and C.
- 8. Select either of the following functions for CALM (AND malfunction) with the controller.
- The contact opens when an alarm occurs on one of the axes.
   The contact opens when an alarm occurs on all axes.

<u>/!\</u>

9. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3 terminals. Do not connect anything to L2. The connections are different from MR-J3W-B series servo amplifiers. Be careful not to make a connection error when replacing MR-J3W-B with MR-J4W2-B. Refer to "MR-J4W2-B (2-axis, SSCNET III/H Interface) Specifications" in this catalog for power supply specifications.

- 10. CINP (AND in-position) is assigned to this pin as default. Device for this pin can be changed by [Pr. PD08].
- 11. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 12. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.
- 13. To control main circuit power supply on/off by DC power supply, refer to relevant Servo Amplifier Instruction Manual for details.

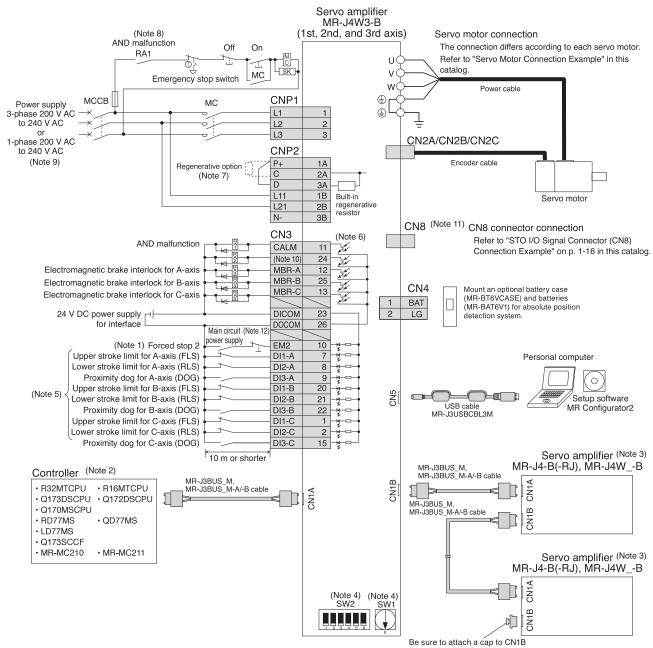
Servo Amplifiers

Rotary Servo Motors

LVS/Wires

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

### MR-J4W3-B Standard Wiring Diagram Example (Note 13)



connector of the final axis.

Notes: 1. The forced stop signal is issued for three axes of the servo amplifier. For overall system, apply the emergency stop on the controller side. 2. For details such as setting the controllers, refer to programming manual or user's manual for the controllers.

- 3. Connections for the fourth and following axes are omitted.
- 4. Up to 64 axes can be set by using a combination of an axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-5 and SW2-6). Note that the number of the connectable axes depends on the controller specifications.
- 5. Devices can be assigned for DI1-A/B/C, DI2-A/B/C and DI3-A/B/C with controller setting. Refer to the controller instruction manuals for details on setting.
- 6. This is for sink wiring. Source wiring is also possible.
- 7. When not using a regenerative option, connect a short-circuit bar between P+ and D to use the built-in regenerative resistor. When using a regenerative option, disconnect the short-circuit bar between P+ and D, and then connect the regenerative option to P+ and C.
- 8. Select either of the following functions for CALM (AND malfunction) with the controller.
- The contact opens when an alarm occurs on one of the axes.
   The contact opens when an alarm occurs on all axes.
- 9. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3 terminals. Do not connect anything to L2. Refer to "MR-J4W3-B (3-axis, SSCNET III/H Interface) Specifications" in this catalog for power supply specifications.
- 10. CINP (AND in-position) is assigned to this pin as default. Device for this pin can be changed by [Pr. PD08].
- 11. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 12. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.
- 13. To control main circuit power supply on/off by DC power supply, refer to relevant Servo Amplifier Instruction Manual for details.

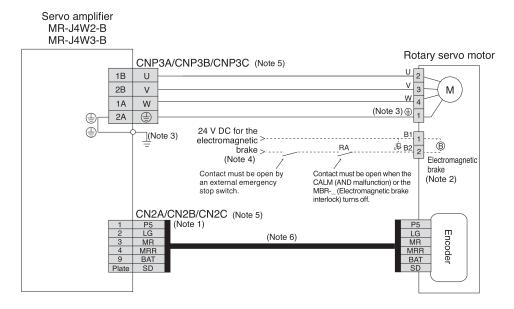
Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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### Servo Motor Connection Example

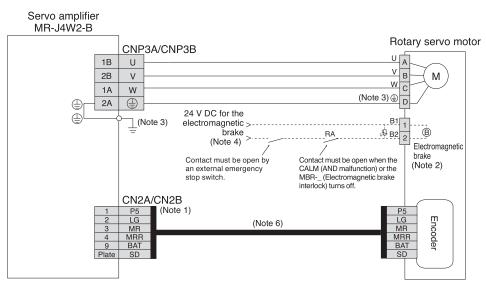
(Rotary Servo Motor, Semi-Closed Loop Control System)

• For HG-KR/HG-MR series



For HG-SR series

⚠



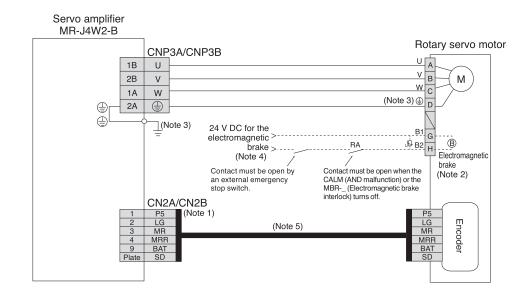
Notes: 1. The signals shown is applicable when using a two-wire type encoder cable. Four-wire type is also compatible.

- 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity. 3. Connect the grounding terminal of the servo motor to local of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal ( local on the lower front of the servo amplifier to the cabinet protective earth (PE).
  - 4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 5. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier.
- 6. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor, Semi-Closed Loop Control System)

•For HG-UR series



Notes: 1. The signals shown is applicable when using a two-wire type encoder cable. Four-wire type is also compatible.

2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

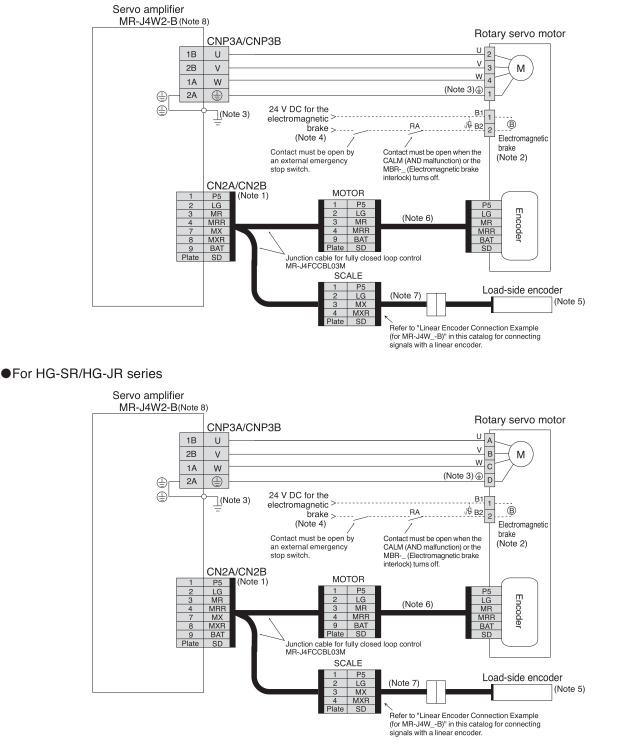
- 3. Connect the grounding terminal of the servo motor to ) of CNP3A and CNP3B. Connect the protective earth (PE) terminal ( ) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
- 4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 5. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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Servo Motor Connection Example (Rotary Servo Motor, Fully Closed Loop Control System)

### For HG-KR/HG-MR series



Notes: 1. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used. 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

- 3. Connect the grounding terminal of the servo motor to 🕒 of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal ( 🕁 ) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
- 4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 5. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to "MR-J4W\_-\_B Servo Amplifier Instruction Manual" for the fully closed loop control with rotary encoder.
- 6. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 7. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 8. MR-J4W3-B is not compatible with fully closed loop control.

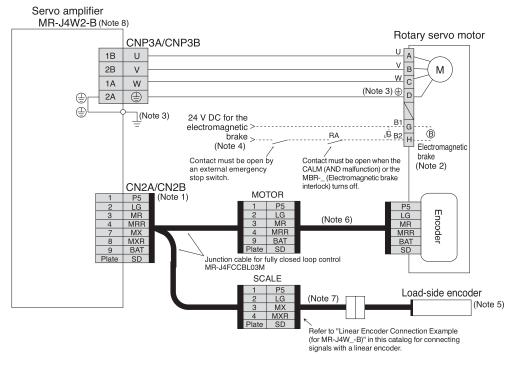
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Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Cautions

## Servo Motor Connection Example (Rotary Servo Motor, Fully Closed Loop Control System)

#### •For HG-UR series



Notes: 1. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used. 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.

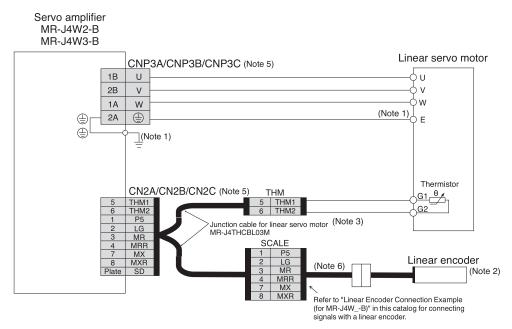
- 3. Connect the grounding terminal of the servo motor to 😓 of CNP3A and CNP3B. Connect the protective earth (PE) terminal ( 🖶 ) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
- 4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
- 5. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog. Refer to "MR-J4W\_-\_B Servo Amplifier Instruction Manual" for the fully closed loop control with rotary encoder.
- 6. Encoder cable is available as an option. Refer to "Servo Motor Instruction Manual (Vol. 3)" when fabricating the cables.
- 7. Necessary encoder cables vary depending on the load-side encoder. Refer to relevant Instruction Manual.
- 8. MR-J4W3-B is not compatible with fully closed loop control.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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### Servo Motor Connection Example (Linear Servo Motor)

For LM-H3/LM-K2/LM-U2 series



## Linear Encoder Connection Example (for MR-J4W\_-B)

LG

P5

MB

SD

the servo amplifier to the cabinet protective earth (PE).

4

Plate

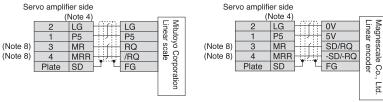
(Note 8)

(Note 8)

used

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3-pin: MX 4-pin: MXR



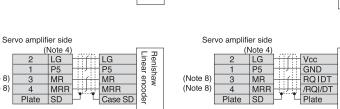
2. For linear encoders, refer to "List of Linear Encoders" under section 3 Linear Servo Motors in this catalog.

6. Necessary encoder cables vary depending on the linear encoder. Refer to relevant Instruction Manual.

4. For the number of the wire pairs for LG and P5, refer to "Linear Encoder Instruction Manual.

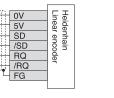
5. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier.

8. For the fully closed loop control, the signals of 3-pin and 4-pin are as follows:



3. MR-J4THCBL03M junction cable for linear servo motor is compatible with both two-wire and four-wire type linear encoders.

Ser	vo amplifi	er side			
	(Not	e 4, 7)			
	2	LG	HA	0V	Lin d
	1	P5		5V	Linear encoder
	7	MX	- f	SD	er
	8	MXR		/SD	
	3	MR	- r	RQ	de
	4	MRR		/RQ	7
	Plate	SD	卢ᆫ	FG	



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Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

7. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be

Notes: 1. Connect the grounding terminal of the servo motor to ) of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal ( ) located on the lower front of

Linear

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Nidec Sankyo Corporation

WB

Servo Amplifiers

Rotary Servo Motors

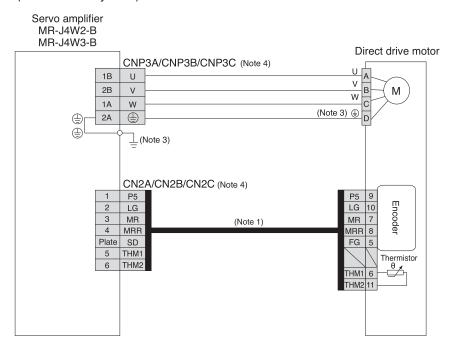
Linear Servo Motors

**Direct Drive Motors** 

Options/Peripheral Equipment

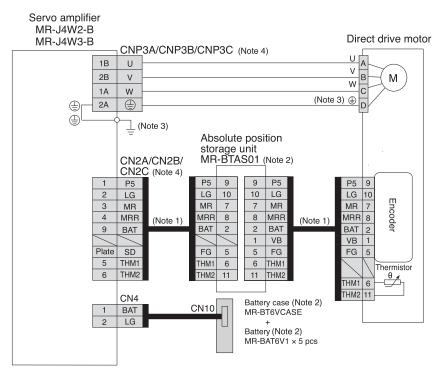
### Servo Motor Connection Example (Direct Drive Motor)

For TM-RFM series (incremental system)



WB

•For TM-RFM series (absolute position detection system)

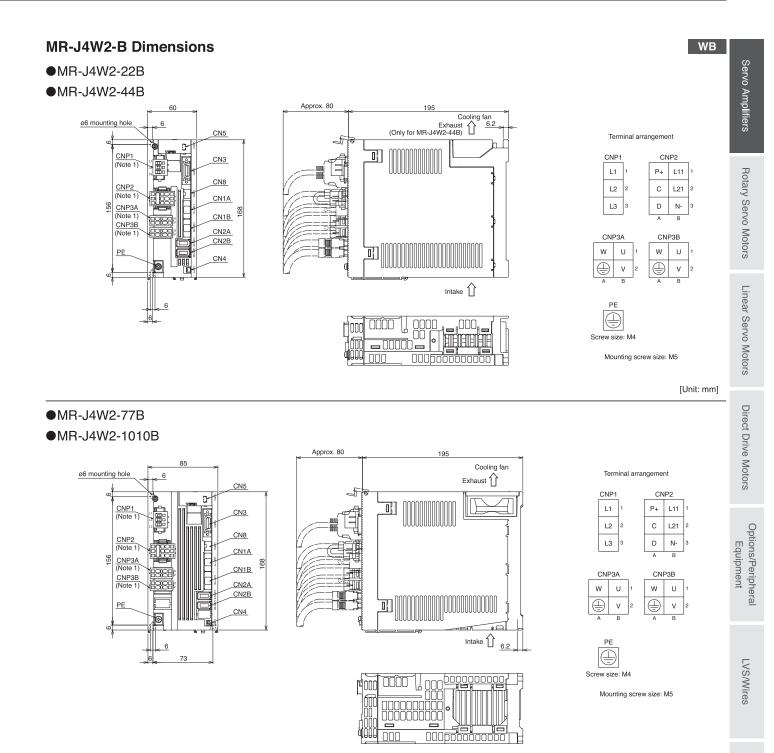


Notes: 1. Fabricate this encoder cable. Refer to "Direct Drive Motor Instruction Manual" for fabricating the encoder cable.

- 2. Optional MR-BTAS01 absolute position storage unit, MR-BT6VCASE battery case, and MR-BAT6V1 batteries are required for absolute position detection system. Refer to relevant Servo Amplifier Instruction Manual and "Direct Drive Motor Instruction Manual" for details.
- 3. Connect the grounding terminal of the servo motor to ) of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal () ) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
- 4. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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Notes: 1. CNP1, CNP2, CNP3A and CNP3B connectors (insertion type) are supplied with the servo amplifier.

[Unit: mm]

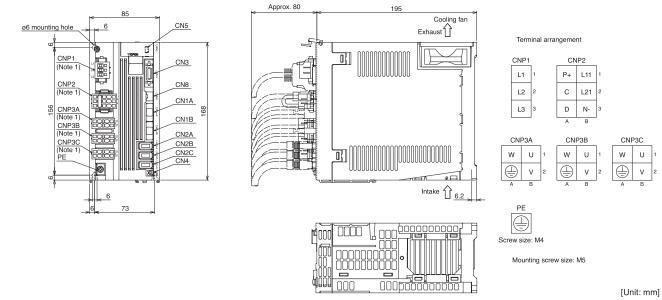
Product List

Cautions

### **MR-J4W3-B Dimensions**

### •MR-J4W3-222B

### •MR-J4W3-444B

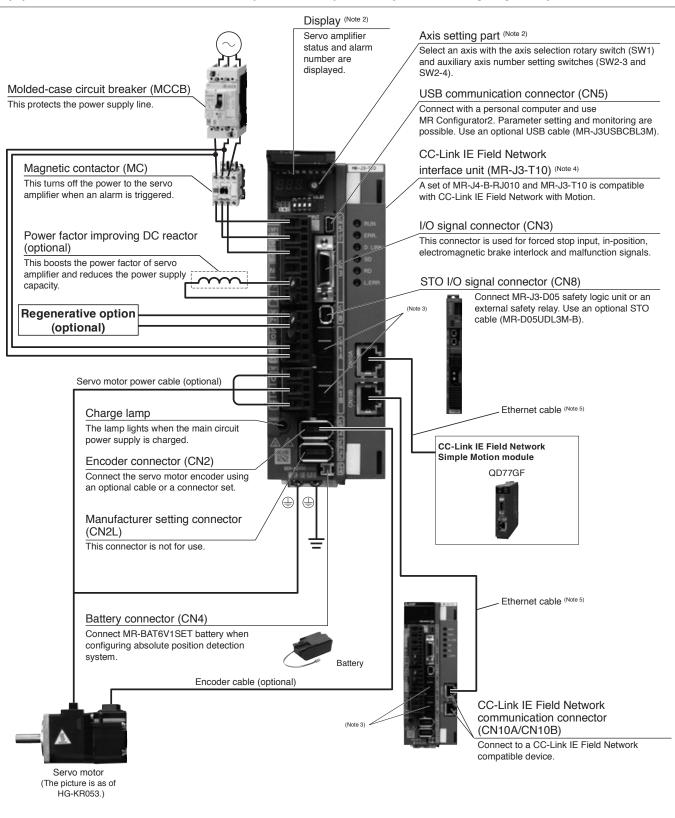


WB

Notes: 1. CNP1, CNP2, CNP3A, CNP3B and CNP3C connectors (insertion type) are supplied with the servo amplifier.

## MR-J4-B-RJ010 Connections with Peripheral Equipment (Note 1)

Peripheral equipment is connected to MR-J4-B-RJ010 as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-J4-350B-RJ010 or smaller servo amplifiers. Refer to "MR-J4-\_B\_-RJ010 MR-J3-T10 Servo Amplifier Instruction Manual" for the actual connections.

- 2. This picture shows when the display cover is open.
- 3. This connector is not for use. Be sure to attach a cap supplied with the servo amplifier.

4. Refer to "CC-Link IE Field Network Interface Unit" in this catalog for details on CC-Link IE Field Network Interface Unit (MR-J3-T10).

5. For specifications of the Ethernet cable, refer to "Ethernet cable specifications" on p. 5-31 in this catalog.

Servo Amplifiers

B-RJ010

# MR-J4-B-RJ010

# B-RJ010

# (CC-Link IE Field Network interface with Motion) Specifications (200 V AC)

									•							
Servo am	nplifier model MR-J4RJ010	10B	20B	40B	60B	70B	100B	200B	350B	500B	700B	11KB	15KB	22KB		
Output	Rated voltage			1					70 V AC	1	1		87.0			
Cuput	Rated current [A							6.0 11.0 17.0 28.0 37.0 68.						126.0		
Main	Voltage/frequency (Note 1)		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz         3-phase 200 V								V AC to 240 V AC, 50 Hz/60 Hz					
circuit	Rated current (Note 13) [A	] 0.9	1.5	2.6	3.2 (Note 8)	3.8	5.0	10.5	16.0	21.7	28.9	46.0	64.0	95.0		
power supply	Permissible voltage fluctuation	3-ph		1 <b>-</b> phase 264 V A	170 V A C	C to			3-pha	ase 170	V AC to	264 V A	С			
input	Permissible frequency fluctuation			-			±	5% max	kimum							
	Voltage/frequency				1	-phase	200 V A	C to 24		50 Hz/	60 Hz					
Control	Rated current [A	1	1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz           0.2         0.3													
circuit	Permissible voltage	1														
power	fluctuation		1-phase 170 V AC to 264 V AC													
supp <b>l</b> y input	Permissible frequency fluctuation						±	5% max	kimum							
	Power consumption [W	1			3	0						45				
Interface	power supply		24 V	' DC ± 1	0% (req	uired cu	irrent ca	apacity:	0.3 A (ir	ncluding	CN8 co	onnector	signals))			
Control m						ne-wave		<u> </u>	· · ·				<b>J</b>			
Tolerable	Built-in regenerative resistor (Note 2, 3) [W	] -	10	10	10	20	20	100	100	130	170	-	-	-		
regenerative power	External regenerative resistor (standard [W	] -	-	-	-	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)		
Dynamic	accessory) (Note 2, 3, 9, 10) brake	-	Built-in (Note 4) External option (Note											· ,		
•	ication function			USE	3: Conne	ect a per	sonal c	ompute	r (MR C	onfigura	ator2 co	mpatib <b>l</b> e)				
Encoder of	output pulse		Compatible (A/B/Z-phase pulse)													
Ana <b>l</b> og m		2 channels														
	ed loop control	Not compatible														
Servo fun	nction	Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function, power monitoring function														
Load-side	e encoder interface	J			,			lot com					<u> </u>			
Protective	e functions	mo	Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection													
Functiona	al safety						STO (	EC/EN	61800-	5 <b>-</b> 2)						
	Standards certified by CB	E	N ISO 1	3849 <b>-</b> 1	Categor	y 3 PL o	d, <b>I</b> EC 6	1508 S	L 2, EN	62061	SILCL	2, EN 618	800 <b>-</b> 5-2 S	IL 2		
	Response performance				8 r	ns or <b>l</b> es	ss (STC	input C	$DFF \rightarrow \epsilon$	energy s	shut-off)					
0.4.1	Test pulse input (STO) (Note 7)			Test	pu <b>l</b> se in	terval: 1	Hz to 2	25 Hz, te	est pu <b>l</b> se	e off tim	e: 1 ms	maximur	n			
Safety performance	Mean time to dangerous failure (MTTFd)						100	years of	or <b>l</b> onge	r						
	Diagnostic coverage (DC)						Medi	um (909	% to 999	%)						
	Probability of dangerous Failure per Hour (PFH)				_			68 × 10								
Comp <b>l</b> ian	ce to standards		Refe	r to "Coi	nformity	with Glo	bal Sta	ndards	and Re				s catalog.			
Structure	(IP rating)	Natura	al coolir	ig, open	( <b>I</b> P20)	Force	cooling	, open	( <b>I</b> P20)	Fo	orce coc	ling, ope	n (IP20) (†	vote 5)		
Close mo	ounting				Possib	e (Note 6)						Not poss	sible			
	Ambient temperature		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)													
	Ambient humidity		Operation/storage: 90 %RH maximum (non-condensing)													
Environment	Ambience		In	doors (r	no direct	sunligh	t); no co	prrosive	gas, inf	flammat	ole gas,	oil mist o	or dust			
	Altitude								bove se							
	Vibration resistance				1	<sup>2</sup> at 10 I		5 Hz (dir	1	1	and Z a	xes)	1			
Mass (Note	12) [kg	] 0.8	0.8	1.0	1.0	1.4	1.4	2.1	2.3	4.0	6.2	13.4	13.4	18.2		

## MR-J4-B-RJ010

### (CC-Link IE Field Network interface with Motion) Specifications (200 V AC)

Notes: 1. Rated output and speed of a rotary servo motor are applicable when the servo amplifier, combined with the rotary servo motor, is operated within the specified power supply voltage and frequency.

- 2. Select the most suitable regenerative option for your system with our capacity selection software.
- 3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
- 4. When using the built-in dynamic brake, refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio.
- 5. Terminal blocks are excluded.
- 6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use them with 75% or less of the effective load ratio.
- 7. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
- 8. The rated current is 2.9 A when the servo amplifier is used with UL or CSA compliant servo motor.
- 9. The value in brackets is applicable when cooling fans (2 units of 92 mm × 92 mm, minimum air flow: 1.0 m³/min) are installed, and then [Pr. PA02] is changed.
- 10. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details. 11. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
- 12. The value is applicable for the MR-J4-\_B-RJ010 servo amplifier only. 13. This value is applicable for 750 W or smaller servo amplifiers in 200 V class when a 3-phase power supply is used.

B-RJ010

# MR-J4-B4-RJ010



# (CC-Link IE Field Network interface with Motion) Specifications (400 V AC)

						•	,								
Servo am	plifier model MR-J4RJ010	60B4	100B4	200B4	350B4	500B4	700B4	11KB4	15KB4	22KB4					
Output	Rated voltage				3-р	hase 323 V	AC								
output	Rated current [A]	1.5	2.8	5.4	8.6	14.0	17.0	32.0	41.0	63.0					
Main	Voltage/frequency (Note 1)		1	· ·	ase 380 V A	C to 480 V	AC, 50 Hz/6	60 Hz	[						
circuit	Rated current [A]	1.4	2.5	5.1	7.9	10.8	14.4	23.1	31.8	47.6					
power	Permissible voltage	3-phase 323 V AC to 528 V AC													
supply	fluctuation Permissible frequency														
input	fluctuation				±	5% maximu	m								
	Voltage/frequency			1 <b>-</b> ph	ase 380 V A	C to 480 V	AC, 50 Hz/6	60 Hz							
Control	Rated current [A]		0.1				0.	.2							
circuit	Permissible voltage	1-phase 323 V AC to 528 V AC													
power	fluctuation	1-phase 323 V AC to 528 V AC													
supp <b>l</b> y input	Permissible frequency fluctuation		±5% maximum												
	Power consumption [W]	30 45													
Interface	power supply	2	24 V DC ± 10% (required current capacity: 0.3 A (including CN8 connector sigr												
Control m			r	Sine-v	vave PWM	control/curre	ent control m	nethod	r						
Tolerable	Built-in regenerative resistor (Note 2, 3) [W]	15	15	100	100	130 (Note 10)	170 (Note 10)	-	-	-					
regenerative power	External regenerative resistor (standard [W] accessory) <sup>(Note 2, 3, 7, 8)</sup>	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)					
Dynamic I			1	Exte	External option (Note 9)										
,	ication function		USE	: Connect a	personal c	omputer (M	R Configura								
Encoder o	output pulse		Compatible (A/B/Z-phase pulse)												
Analog m	onitor	2 channels													
Fully close	ed loop control	Not compatible													
Servo fun	iction	Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning tough drive function, drive recorder function, machine diagnosis function, power monitoring function													
Load-side	e encoder interface	Not compatible													
Protective	e functions	Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection													
Functiona	al safety				STO (	EC/EN 618	00-5-2)								
	Standards certified by CB	EN IS	O 13849 <b>-</b> 1	Category 3	PL d, IEC 6	1508 S <b>I</b> L 2,	EN 62061 S	SIL CL 2, El	V 61800-5-2	SIL 2					
	Response performance			8 ms c	or less (STO	input OFF	→ energy sł	nut <b>-</b> off)							
	Test pulse input (STO) (Note 6)		Test	pulse interv	al: 1 Hz to 2	5 Hz, test p	ulse off time	e: 1 ms max	imum						
Safety performance	Mean time to dangerous failure (MTTFd)				100	years or lo	nger								
	Diagnostic coverage (DC)				Medi	um (90% to	99%)								
	Probability of dangerous Failure per Hour (PFH)				1.0	58 × 10 <sup>-10</sup> [1	<i>l</i> h]								
Complian	ce to standards	R	efer to "Cor	nformity with	Global Sta	ndards and	Regulations	" on p. 57 i	n this cata <b>l</b> o	g.					
Structure	(IP rating)		oling, open 20)		oling, open 20)		Force cool	ling, open (l	P20) (Note 5)						
Close mo	unting			· · ·		Not possible	9								
	Ambient temperature		Operation	: 0 °C to 55	°C (non-free	ezing), stora	lge: -20 °C t	o 65 °C (no	n-freezing)						
	Ambient humidity		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing) Operation/storage: 90 %RH maximum (non-condensing)												
Environment	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust												
	Altitude				1000 m o	r less above	e sea level								
	Vibration resistance			5.9 m/s <sup>2</sup> at	10 Hz to 55	Hz (directio	ons of X, Y a	and Z axes)							
Mass (Note	<sup>11)</sup> [kg]	1.7	1.7	2.1	3.6	4.3	6.5	13.4	13.4	18.2					

# MR-J4-B4-RJ010

## (CC-Link IE Field Network interface with Motion) Specifications (400 V AC)

Notes: 1. Rated output and speed of a rotary servo motor are applicable when the servo amplifier, combined with the rotary servo motor, is operated within the specified power supply voltage and frequency.

- 2. Select the most suitable regenerative option for your system with our capacity selection software.
- 3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
- 4. When using the built-in dynamic brake, refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
- 5. Terminal blocks are excluded.
- 6. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
- 7. The value in brackets is applicable when cooling fans (2 units of 92 mm × 92 mm, minimum air flow: 1.0 m³/min) are installed, and then [Pr. PA02] is changed.
- 8. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details.
- Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
   The servo amplifier built-in regenerative resistor is compatible with the maximum torque deceleration when the servo motor is used within the rated speed and the
- recommended load to motor inertia ratio. Contact your local sales with and the operating motor speed or the load to motor inertia ratio exceeds the rated speed or the recommended ratio.
- 11. The value is applicable for the MR-J4-\_B4-RJ010 servo amplifier only.

B-RJ010

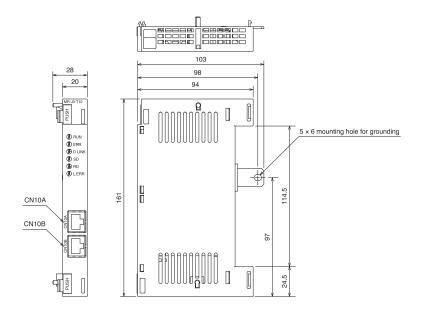
# CC-Link IE Field Network Interface Unit (MR-J3-T10)



Specifications

	Item	Description						
Model		MR-J3-T10						
		5 V DC						
Control circuit	Voltage	(Control circuit power for the CC-Link IE Field Network interface unit is supplied from the servo						
power supply		amplifier.)						
	Rated current [A]	0.8						
Input/output int	terface	CC-Link IE Field Network						
Number of con	nmunication ports	2 ports (CN10A and CN10B connectors)						
Structure (IP ra	ating)	Natural cooling, open (IP00)						
	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)						
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)						
Environment	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Altitude	1000 m or less above sea level						
	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)						
Mass	[g]	150						

#### Dimensions



[Unit: mm]

# MR-J4-B-RJ010 Standard Wiring Diagram Example (Note 7)

Main/control circuit power supply

The connection differs according to the power

Refer to "Main/Control Circuit Power Supply

Connection Example" on pp. 1-17, 1-18 in

24 V DC power supply for interface

Analog monitor output

(Note 2)

/!\

Output voltage: ±10 V Maximum output current: 1 mA

Encoder Z-phase pulse

(differential line driver)

Encoder A-phase pulse

(differential line driver)

Encoder B-phase pulse

(differential line driver)

Output voltage: ±10 V Maximum output current: 1 mA

Upper stroke limit (FLS)

Lower stroke limit (RLS)

Proximity dog (DOG)

Control common

Forced stop 2

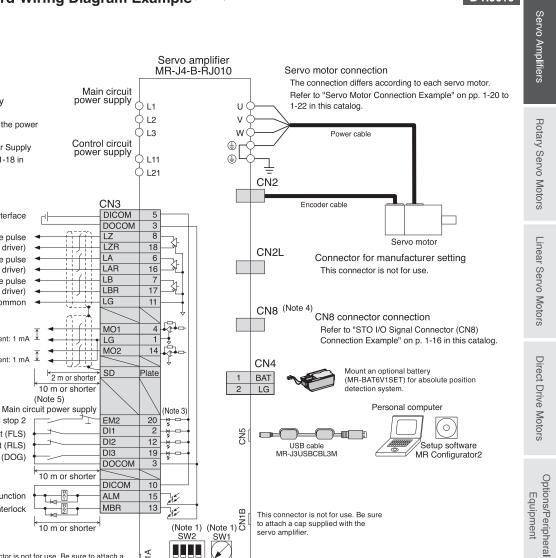
(Note 5)

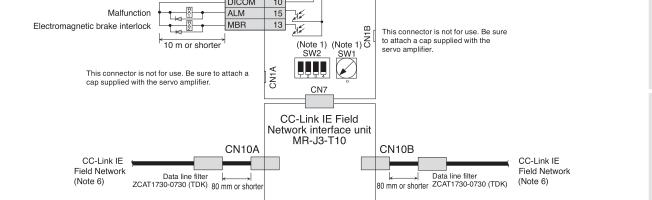
connection

this catalog

voltage

### B-RJ010





Notes: 1. Up to 63 stations are set by using a combination of a station selection rotary switch (SW1) and auxiliary station number setting switches (SW2-3 and SW2-4). Note that the

- number of the connectable stations depends on the controller specifications. 2. Devices can be assigned for DI1, DI2 and DI3 with controller setting. Refer to the controller instruction manuals for details on setting.
- 3. This is for sink wiring. Source wiring is also possible.
- 4. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 5. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.
- 6. When branching off CC-Link IE Field Network with a switching HUB, use DT135TX (Mitsubishi Electric System & Service Co., Ltd.).
- 7. This standard wiring diagram is common for 200 V AC, 100 V AC and 400 V AC type servo amplifiers.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

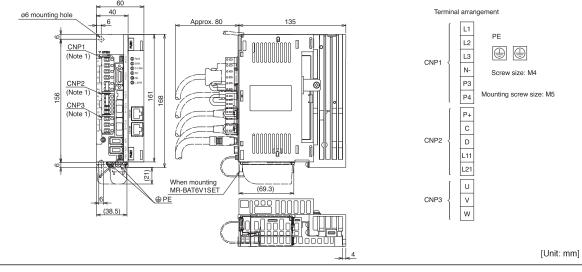
Product List

LVS/Wires

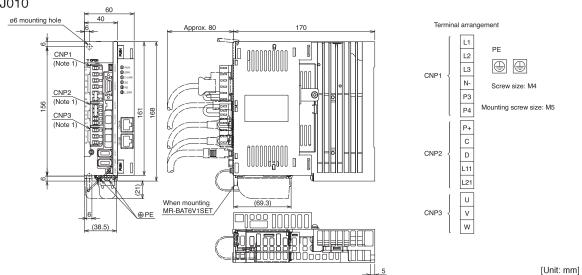
### MR-J4-B-RJ010 Dimensions (Note 2)

B-RJ010

- •MR-J4-10B-RJ010
- •MR-J4-20B-RJ010

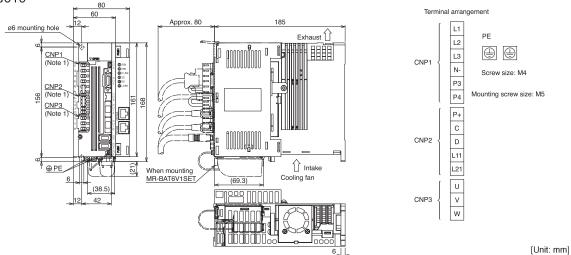


- •MR-J4-40B-RJ010
- •MR-J4-60B-RJ010



### •MR-J4-70B-RJ010

•MR-J4-100B-RJ010



Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. The dimensions are applicable when MR-J4-B-RJ010 and MR-J3-T10 are combined. Refer to "MR-J4-B/MR-J4-B-RJ Dimensions" in this catalog for the dimensions of 1-65 MR-J4-B-RJ010 servo amplifiers alone.

B-RJ010

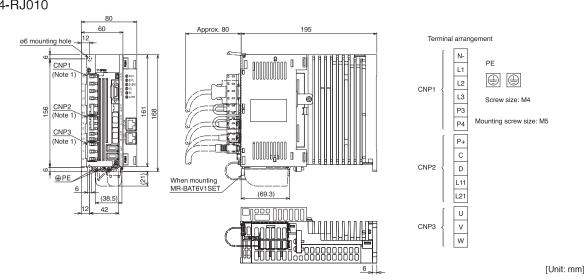
Servo Amplifiers

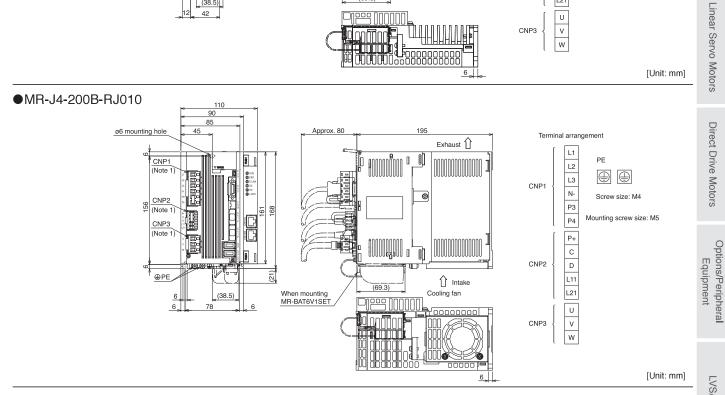
Rotary Servo Motors

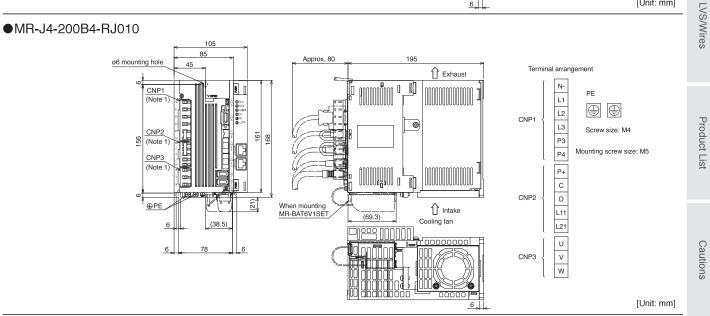


•MR-J4-60B4-RJ010

•MR-J4-100B4-RJ010





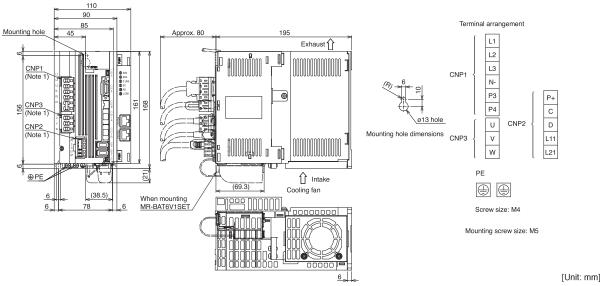


Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier.

 The dimensions are applicable when MR-J4-B-RJ010 and MR-J3-T10 are combined. Refer to "MR-J4-B/MR-J4-B-RJ Dimensions" in this catalog for the dimensions of MR-J4-B-RJ010 servo amplifiers alone.

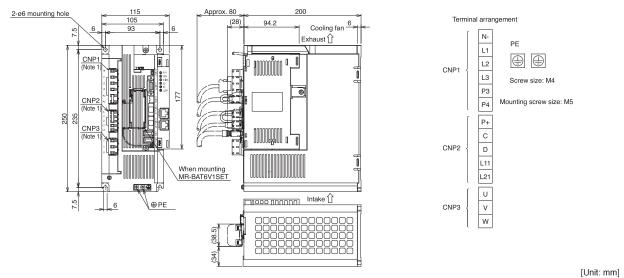
### MR-J4-B-RJ010 Dimensions (Note 2)

### •MR-J4-350B-RJ010

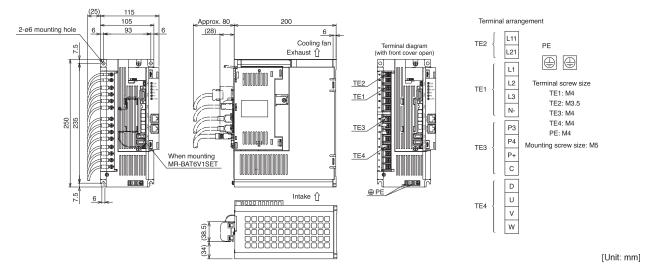


B-RJ010

#### •MR-J4-350B4-RJ010



#### •MR-J4-500B-RJ010

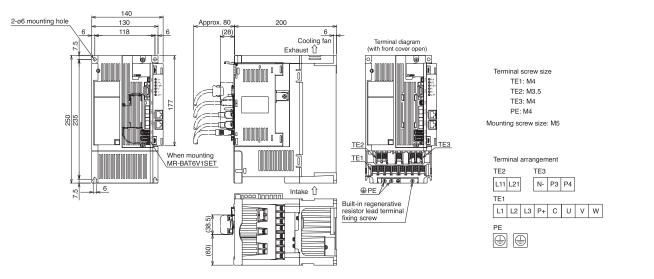


Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier.

 The dimensions are applicable when MR-J4-B-RJ010 and MR-J3-T10 are combined. Refer to "MR-J4-B/MR-J4-B-RJ Dimensions" in this catalog for the dimensions of MR-J4-B-RJ010 servo amplifiers alone.

### MR-J4-B-RJ010 Dimensions (Note 1)

### •MR-J4-500B4-RJ010



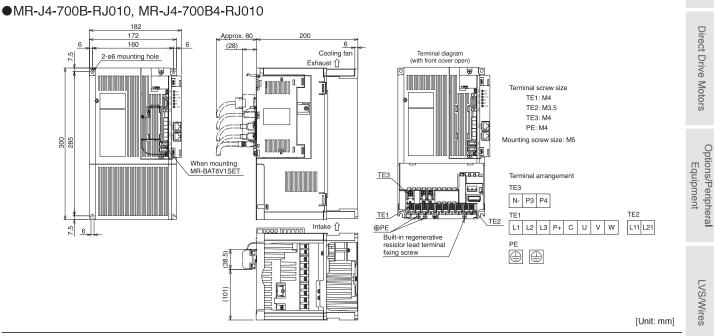
[Unit: mm]

B-RJ010

Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

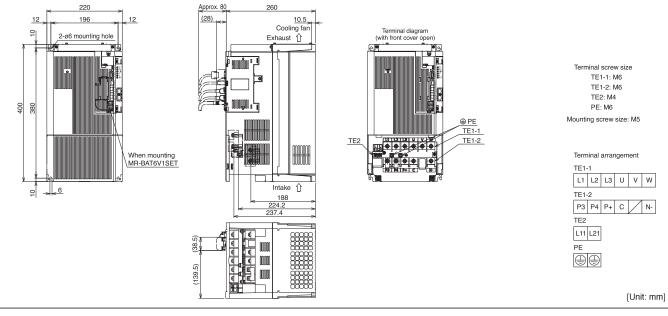


Notes: 1. The dimensions are applicable when MR-J4-B-RJ010 and MR-J3-T10 are combined. Refer to "MR-J4-B/MR-J4-B-RJ Dimensions" in this catalog for the dimensions of MR-J4-B-RJ010 servo amplifiers alone.

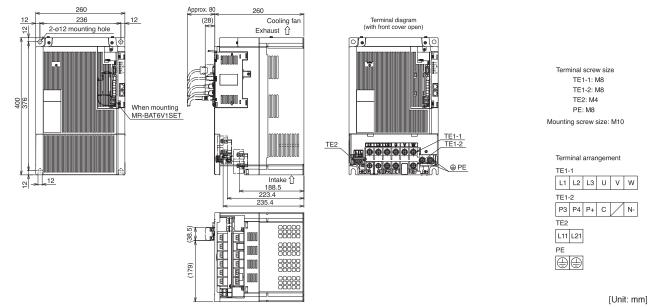
### MR-J4-B-RJ010 Dimensions (Note 1)

•MR-J4-11KB-RJ010, MR-J4-11KB4-RJ010

•MR-J4-15KB-RJ010, MR-J4-15KB4-RJ010



•MR-J4-22KB-RJ010, MR-J4-22KB4-RJ010

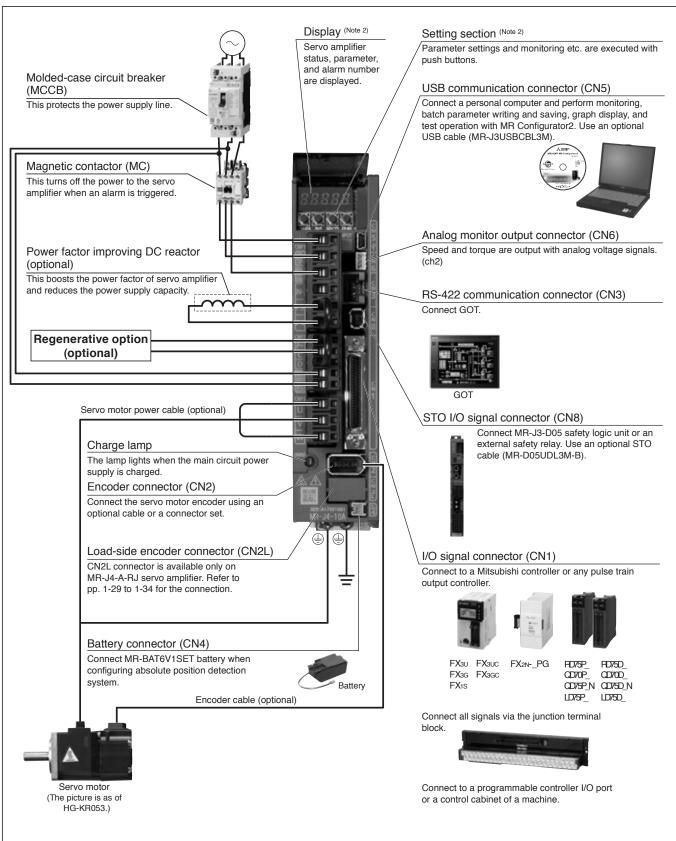


Notes: 1. The dimensions are applicable when MR-J4-B-RJ010 and MR-J3-T10 are combined. Refer to "MR-J4-B/MR-J4-B-RJ Dimensions" in this catalog for the dimensions of MR-J4-B-RJ010 servo amplifiers alone.

B-RJ010

## MR-J4-A/MR-J4-A-RJ Connections with Peripheral Equipment (Note 1)

Peripheral equipment is connected to MR-J4-A/MR-J4-A-RJ as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-J4-350A/MR-J4-350A-RJ or smaller servo amplifiers. Refer to "MR-J4-\_A\_(-RJ) Servo Amplifier Instruction Manual" for the actual connections. 2. This picture shows when the display cover is open.

clure shows when the display cover is open.

A-RJ

# MR-J4-A(1)/MR-J4-A(1)-RJ (General-purpose Interface) Specifications (200 V/100 V)

Servo am	plifier model		RJ)	10A	20A	40A	60A	70A	100A					11KA	15KA	22KA	10A1	20A1	40A1
Output	Rated voltag	-	[ ] ]	1.1	3-phase 170 V AC           1.5         2.8         3.2         5.8         6.0         11.0         17.0         28.0         37.0         68.0         87.0         126.0         1											1.1	1.5	2.8	
	naleu currei	III	[A]				1		0.0	11.0	17.0	20.0	37.0	00.0	07.0	120.0		se 100	
Main	Voltage/freq	uency (Note 1)	)		0 V 0		40 V A(		3 <b>-</b> µ	bhase 2	200 V /	AC to 2	240 V A	AC, 50	Hz/60	Hz	to	120 V / Hz/60	AC,
circuit power	Rated curre		[A]	0.9	1.5	2.6	3.2 (Note 8)	3.8	5.0	10.5	16.0	21.7	28.9	46.0	64.0	95.0	3.0	5.0	9.0
supply input	Permissible fluctuation			3-pha		-phase 64 V A	e 170 V .C	AC to		3-	phase	170 V	AC to 2	264 V .	AC			ase 85 132 V	
	Permissible fluctuation	frequency								±	:5% m	aximur	n						
Control	Voltage/freq	uency					1-pha	se 200	V AC	to 240	V AC,	50 Hz	/60 Hz				1-phase 100 V AC to 120 V AC, 50 Hz/60 Hz		
circuit	Rated curre	nt	[A]				0.	.2		-				0.3				0.4	
power supp <b>l</b> y	Permissible fluctuation							1-pha	se 170	V AC	to 264	V AC						ase 85 132 V	
input	Permissible fluctuation									±	₌5% m	aximur	n						
	Power cons	umption	[W]					0						45				30	
	ower supply				24	V DC	± 10%									nector	signa	s))	
Control me	ethod Built-in rege	nerative						SING	:-wave	PWM	contro	u/curre	nt cont	irol me	unod				
Tolerable	resistor (Note 2 External reger	2, 3)	[W]	-	10										-	10	10		
power	resistor (stand accessory) (No	ard	[W]	-	<u>500</u> 850 850 (800) (1300) (1300)									-	-	-			
Dynamic b	rake							Built-ir	1 <sup>(Note 4)</sup>					Exte	ernal o		Bu	ilt-in <sup>(N</sup>	ote 4)
Communic	ation function	n		USB: Connect a personal computer (MR Configurator2 compatible) RS-422: 1 : n communication (up to 32 axes) (Note 10)															
Encoder o	utput pulse									mpatib									
Analog mo	nitor										2 cha	Innels							
	Maximum in frequency	put pulse		4 Mpulses/s (when using differential receiver), 200 kpulses/s (when using open collector) Encoder resolution: 22 bits															
	Positioning f									Encod	er reso	dution:	22 bits	5					
Position control	Command p factor				Ele	ectroni	c gear	A/B mu	ultiple,	A: 1 to	16777	7215, E	3: 1 to	167772	215, 1/	′10 < A	A/B < 4000		
mode	Positioning of setting		idth					0 pu	lse to	±6553	•		nmand	pulse	unit)				
	Error excess	sive			0	- <b>t</b> .				-		ations	DO to	. 10.1/					
	Torque limit Speed contr	ol range			50		aramet Ana <b>l</b> og											ie)	
Speed	Analog spee		d		(		to ±10											.)	
control mode	Speed fluctu	ation rate		±0.			6 maxii n (amb												and
	Torque limit				Se	et by p	aramet	ers or	extern	al anal	og inp	ut (0 V	DC to	+10 V	DC/m	aximur	n torqu	ie)	
Torque control	Ana <b>l</b> og torqu input	le comman	d			0 V	/ DC to	±8 V [	⊃C/ma	ximum	torque	e (inpu	t impe	dance:	10 kΩ	to 12	kΩ)		
mode	Speed limit					Set by	param				-						speed)		
Positioning							Poin			d, prog	-					ethod			
Fully close control	Fully closed loop MR-J4-A(1) control MR-J4-A(1)-F									e type o									
Servo func	)-HJ				n supp on, driv su	ressio ve reco	n contr order fi		daptive , mach	e fi <b>l</b> ter nine dia	II, robu agnosi:	ist fi <b>l</b> te s funct	r, auto ion, pc	wer m			•		
Load-side	encoder	)							hi high				•						
interface		MR-J4-A(1)		Mitsubishi high-speed serial communication, A/B/Z-phase differential input signal Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage															
Protective	TUNCTIONS			prote	ection,		itaneou agnetic			•			• •					protec	tion,

# MR-J4-A(1)/MR-J4-A(1)-RJ (General-purpose Interface) Specifications (200 V/100 V)

0.000		100 004	40.4	004	70.4	1004	000 4	0504	500A	7004	4412.4	ALIZA		1011	00.4.1	40.4.1
	nplifier model MR-J4(-RJ)	10A 20A	40A	60A	70A						11KA	15KA	22KA	10A1	20A1	40A1
Functional	safety	STO (IEC/EN 61800-5-2)														
	Standards certified by CB	EN ISO	EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2													2
	Response performance8 ms or less (STO input OFF $\rightarrow$ energy shut-off)															
Test pulse input (STO) (Note 7) Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum																
Safety performance	100 years or langer															
Diagnostic coverage (DC) Medium (90% to 99%)																
Probability of dangerous Failure per Hour (PFH)																
Complianc	ce to standards	Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.														
Structure (	(IP rating)	Natural co (IP	0,	open	Foi	ce coo (IP:	-	oen	For	ce coo	(Note 5)	en (IP2	20)		ral coo en (IP2	0,
Close mou	unting			Possib	e (Note	5)				No	t possil	ole		Pos	sib <b>l</b> e <sup>(N</sup>	ote 6)
	Ambient temperature	(	Operat	tion: 0	°C to 5	5 °C (r	on-fre	ezing)	, storaç	ge: <b>-</b> 20	°C to 6	65 °C (r	non-fre	ezing	)	
	Ambient humidity			0	peratic	n/stora	ge: 90	%RH	maxim	num (no	on-con	densing	g)			
Environment	Ambience		Indoor	s (no c	lirect s	unlight	; no c	orrosiv	e gas,	inflam	mable	gas, oil	mist o	or dust		
Altitude         1000 m or less above sea level																
	Environment         Ambience         Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust           Altitude         1000 m or less above sea level           Vibration resistance         5.9 m/s² at 10 Hz to 55 Hz (directions of X, Y and Z axes)															
Vibration resistance         5.9 m/s² at 10 Hz to 55 Hz (           Mass         [kg]         0.8         0.8         1.0         1.4         1.4         2.1         2.3										6.2	13.4	13.4	18.2	0.8	0.8	1.0

Notes: 1. Rated output and speed of a rotary servo motor and a direct drive motor; and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.

2. Select the most suitable regenerative option for your system with our capacity selection software.

3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.

4. When using the built-in dynamic brake, refer to "MR-J4-\_A\_(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.

5. Terminal blocks are excluded.

6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use them with 75% or less of the effective load ratio.

7. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.

8. The rated current is 2.9 A when the servo amplifier is used with UL or CSA compliant servo motor.

9. Fully closed loop control is compatible with the servo amplifiers with software version A5 or later.

10. RS-422 communication is compatible with the servo amplifiers with software version A3 or later.

11. The value in brackets is applicable when cooling fans (2 units of 92 mm × 92 mm, minimum air flow: 1.0 m³/min) are installed, and then [Pr. PA02] is changed.

12. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details.

 Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.
 This value is applicable for 750 W or smaller servo amplifiers in 200 V class when a 3-phase power supply is used.

15. This function is available with the servo amplifiers with software version B4 or later.

A-RJ

LVS/Wires

1-72

Cautions

## MR-J4-DU\_A/MR-J4-DU\_A-RJ (General-purpose Interface) Specifications (200 V)

A A-RJ

Drive	unit model	MR <b>-</b> J4(-RJ)	DU30KA	DU37KA
Compatib	le converte	r unit mode <b>l</b>	MR-CR5	5K (Note 4)
Output	Rated vol	tage	3-phase 1	70 V AC
Output	Rated cur	rent [A]	174	204
Main circu	uit power su	ipply input	Main circuit power is supplied from the	e converter unit to the drive unit (Note 4)
	Voltage/fr	equency	1-phase 200 V AC to 2-	40 V AC, 50 Hz/60 Hz
Control	Rated cur	rent [A]	0.:	3
circuit power	Permissib fluctuatior	1	1-phase 170 V A	AC to 264 V AC
supp <b>l</b> y input	Permissib fluctuatior	le frequency າ	±5% ma	ximum
	Power co	nsumption [W]	45	5
Interface	power supp	ly	24 V DC ± 10% (required current capacity:	0.5 A (including CN8 connector signals))
Control m	ethod		Sine-wave PWM control	
Dynamic	brake		External or	
Communi	cation funct	tion	USB: Connect a personal compute	
Commun			RS-422: 1 : n communi	
	output pulse	e	Compatible (A/B	
Analog m			2 char	nnels
	Maximum frequency	input pu <b>l</b> se	4 Mpulses/s (when using differential receiver)	, 200 kpulses/s (when using open collector)
		g feedback pulse	Encoder resol	ution: 22 bits
Position Co control fa mode Po se	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 16777	215, B: 1 to 16777215, 1/10 < A/B < 4000
	Positioning complete width setting		0 pulse to $\pm 65535$ pulses	s (command pulse unit)
	Error exce	essive	±3 rota	ations
	Torque lin	nit	Set by parameters or external analog inpu	t (0 V DC to +10 V DC/maximum torque)
	-	ntrol range	Analog speed command 1:2000,	internal speed command 1:5000
Speed control	Analog sp input	eed command	0 V DC to ±10 V DC/rated speed (Speed	
mode	Speed flue	ctuation rate	±0.01% maximum (load fluctuation 0% to ±0.2% maximum (ambient temperature: 25 °C ±	
	Torque lim	nit	Set by parameters or external analog inpu	t (0 V DC to +10 V DC/maximum torque)
Torque control	Analog to input	rque command	0 V DC to ±8 V DC/maximum torque	(input impedance: 10 k $\Omega$ to 12 k $\Omega)$
mode	Speed lim	iit	Set by parameters or external analog in	put (0 V DC to ± 10 V DC/rated speed)
Positionin	g mode		Point table method, program m	ethod, indexer (turret) method
Fully close	ed loop	MR-J4-DU_A	Two-wire type comr	nunication method
control		MR-J4-DU_A-RJ	Two-wire/four-wire type	communication method
Servo fun	ction		Advanced vibration suppression control II, adaptive tough drive function, drive recorder function, machi super trace control, lost	ine diagnosis function, power monitoring function,
Load-side	encoder	MR-J4-DU_A	Mitsubishi high-speed	serial communication
interface		MR-J4-DU_A-RJ	Mitsubishi high-speed serial communicat	ion, A/B/Z-phase differential input signal
Protective	e functions		Overcurrent shut-off, overload shut-off (electronic th error protection, undervoltage protection, instantane error excessiv	ous power failure protection, overspeed protection,

STO (IEC/EN 61800-5-2) EN ISO 13849-1 Category 3 PL d, IEC 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2

DU37KA

## MR-J4-DU\_A/MR-J4-DU\_A-RJ (General-purpose Interface) Specifications (200 V)

DU30KA

A-RJ

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Servo Amp

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#### Response performance 8 ms or less (STO input OFF → energy shut-off) Test pulse input (STO) (Note 2) Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum Safety Mean time to dangerous 100 years or longer performance failure (MTTFd) Diagnostic coverage (DC) Medium (90% to 99%) Probability of dangerous 1.68 × 10<sup>-10</sup> [1/h] Failure per Hour (PFH) Compliance to standards Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog. Structure (IP rating) Force cooling open (IP20) (Note 1)

Structure (	ir raung)	Force cooling, open (IF20) (100 f)
Close mou	Inting	Not possible
	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)
	Ambient humidity	Operation/storage: 90 %RH maximum (non-condensing)
Environment	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust
	Altitude	1000 m or less above sea level
	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)
Mass	[kg]	21

Notes: 1. Terminal blocks are excluded.

Drive unit model MR-J4-\_(-RJ)

Standards certified by CB

Functional safety

2. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the drive unit instantaneously at regular intervals.

3. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.

4. One unit of converter unit is required for each drive unit. Refer to "MR-CR Converter Unit Specifications (200 V/400 V)" on p. 1-14 in this catalog for the specifications of the converter unit.

## MR-J4-A4/MR-J4-A4-RJ (General-purpose Interface) Specifications (400 V)

A A-RJ

			•	•		<i>·</i> ·		. ,				
Servo ar	- T	el MR-J4(-RJ)	60A4	100A4	200A4	350A4	500A4	700A4	11KA4	15KA4	22KA4	
Output	Rated volta					-	hase 323 V					
	Rated curr		1.5	2.8	5.4	8.6	14.0	17.0	32.0	41.0	63.0	
Main		quency (Note 1)			1	I.		AC, 50 Hz/6				
circuit	Rated curre		1.4	2.5	5.1	7.9	10.8	14.4	23.1	31.8	47.6	
power supp <b>l</b> y	Permissible fluctuation					3-phase 3	323 V AC to	528 V AC				
input	Permissible fluctuation	e frequency				±	5% maximu	m				
	Voltage/fre	quency			1-ph	ase 380 V A	C to 480 V	AC, 50 Hz/6	60 Hz			
Control	Rated curre	ent [A]		0.1				0.	.2			
circuit power	Permissible fluctuation	e voltage				1-phase 3	323 V AC to	528 V AC				
supp <b>l</b> y input	Permissible fluctuation	e frequency				±	5% maximu	m				
	Power con	sumption [W]		30				4	5			
Interface p	power supply	y	2	4 V DC ± 1	0% (require	d current ca	pacity: 0.5	A (including	CN8 conne	ctor signals	))	
Control m								ent control m				
	Built-in reg	enerative	45	15	100	100	130 (Note 10)	170 (Note 10)				
Tolerable regenerative	resistor (Note External re		15	15	100	100	130 (1000 10)	170 (Note 10)	-	-	-	
power	resistor (sta accessory)	andard [W]	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)	
Dynamic I					Built-ii	n <sup>(Note 4)</sup>			Exte	rnal option	(Note 9)	
				USE	: Connect a	personal c	omputer (M	R Configura				
Communi	cation function	on		USB: Connect a personal computer (MR Configurator2 compatible) RS-422: 1 : n communication (up to 32 axes)								
Encoder c	output pulse		Compatible (A/B/Z-phase pulse)									
Analog m	<u> </u>		2 channels									
Maximum input pulse frequency			4 Mpulses/s (when using differential receiver), 200 kpulses/s (when using open collector)									
	<u> </u>	feedback pulse	Encoder resolution: 22 bits									
Position control		pulse multiplying	Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000									
mode		complete width	0 pulse to $\pm 65535$ pulses (command pulse unit)									
	Error exces	ssive	±3 rotations									
	Torque limi		Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)									
	Speed con				alog speed o						/	
Speed	· · ·	eed command			±10 V DC/ra							
control mode		tuation rate	+0.2%		aximum (loa			<i>,,</i>		,	mmand	
	Torque limi	t		$\pm$ 0.2% maximum (ambient temperature: 25 °C $\pm$ 10 °C) only when using analog speed command Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)								
Torque control	-	que command			C to ±8 V DC		• • •				,	
mode	Speed limit	t		Set by par	rameters or	external an	alog input ((	V DC to ±	10 V DC/rat	ted speed)		
Positionin	g mode			P	oint table m	ethod, prog	ram method	l, indexer (tu	urret) metho	od		
Fully close	ed loop	MR-J4-A4			T	wo-wire typ	e communic	ation metho	bd			
control		MR-J4-A4-RJ			Two-w	/ire/four-wire	e type comn	nunication m	nethod			
Servo fun	ction			ve function,	uppression of drive record	der function,	machine di		ction, powe	r monitoring		
Load-side	encoder	MR-J4-A4						l communica				
interface	encoder	MR-J4-A4-RJ		Miteuhiehi I	high-speed		•			innut signal		
	functions		servo mot	urrent shut- or overheat n, instantan	off, regener protection, eous power etic pole det	ative overve encoder err failure prote	oltage shut- or protection ection, over	off, overload n, regenerat speed prote	I shut-off (e ive error protion, error	lectronic the otection, un excessive p	ermal), dervoltage	

## MR-J4-A4/MR-J4-A4-RJ (General-purpose Interface) Specifications (400 V)

Servo amp	olifier model MR-J4(-RJ)	60A4	100A4	200A4	350A4	500A4	700A4	11KA4	15KA4	22KA4				
Functional s	safety		STO (IEC/EN 61800-5-2)											
S	Standards certified by CB	EN IS	O 13849 <b>-</b> 1	Category 3	PL d, IEC 6	1508 S <b>I</b> L 2,	EN 62061 \$	SIL CL 2, EI	N 61800-5-2	SIL 2				
F	Response performance			8 ms o	r <b>l</b> ess (STO	input OFF -	→ energy s	hut-off)						
Т	Test pulse input (STO) (Note 6)		Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum											
	Mean time to dangerous failure (MTTFd)		100 years or longer											
C	Diagnostic coverage (DC)		Medium (90% to 99%)											
	Probability of dangerous Failure per Hour (PFH)		$1.68  imes 10^{-10}  [1/h]$											
Compliance	to standards	Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.												
Structure (IF	⊃ rating)	Natural cooling, open (IP20)         Force cooling, open (IP20)         Force cooling, open (IP20)												
Close moun	iting	Not possible												
A	Ambient temperature		Operation:	0 °C to 55	°C (non-free	ezing), stora	ge: <b>-</b> 20 °C 1	to 65 °C (no	n-freezing)					
A	Ambient humidity			Operation/	storage: 90	%RH maxin	num (non <b>-</b> c	ondensing)						
Environment	Ambience		Indoors (n	o direct sun	light); no co	prrosive gas,	, inflammab	le gas, oil n	nist or dust					
A	Altitude				1000 m oi	r <b>l</b> ess above	sea level							
V	Vibration resistance			5.9 m/s <sup>2</sup> at	10 Hz to 55	Hz (directio	ons of X, Y a	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)						

Notes: 1. Rated output and speed of a rotary servo motor, and continuous thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.

2. Select the most suitable regenerative option for your system with our capacity selection software.

3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.

4. When using the built-in dynamic brake, refer to "MR-J4-\_A\_(-RJ) Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.

5. Terminal blocks are excluded.

6. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.

7. The value in brackets is applicable when cooling fans (2 units of 92 mm × 92 mm, minimum air flow: 1.0 m<sup>3</sup>/min) are installed, and then [Pr. PA02] is changed.

8. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "1-Axis Servo Amplifier Model Designation" in this catalog for details.

9. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.

10. The servo amplifier built-in regenerative resistor is compatible with the maximum torque deceleration when the servo motor is used within the rated speed and the recommended load to motor inertia ratio. Contact your local sales office if the operating motor speed or the load to motor inertia ratio exceeds the rated speed or the recommended ratio.

11. This function is available with the servo amplifiers with software version B4 or later.

A-RJ

Servo Amplifiers

Rotary Servo Motors Linear Servo Motors

## MR-J4-DU\_A4/MR-J4-DU\_A4-RJ (General-purpose Interface) Specifications (400 V)



Drive	unit mode	MR-J4(-RJ)	DU30KA4	DU37KA4	DU45KA4	DU55KA4				
		er unit model			55K4 <sup>(Note 4)</sup>					
	Rated vo			3-phase	323 V AC					
Output	Rated cu		87	102	131	143				
Main circu	_	upply input								
		requency								
Control	Rated cu			•						
circuit power		ble voltage								
supp <b>l</b> y input		ble frequency		±5% r	naximum					
	Power co	onsumption [W]		Main circuit power is supplied from the converter unit to the drive unit <sup>(Note 4)</sup> 1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz 0.2 1-phase 323 V AC to 528 V AC ±5% maximum 45 24 V DC ± 10% (required current capacity: 0.5 A (including CN8 connector signals) Sine-wave PWM control/current control method External option <sup>(Note 3)</sup> USB: Connect a personal computer (MR Configurator2 compatible) RS-422: 1 : n communication (up to 32 axes) Compatible (A/B/Z-phase pulse) 2 channels						
Interface	power sup	ply	24 V DC ± 10%	(required current capaci	ty: 0.5 A (including CN8 con	nector signals))				
Control m	ethod			Sine-wave PWM contr	ol/current control method					
Dynamic	brake			External	option (Note 3)					
			USB: C		· · · · · · · · · · · · · · · · · · ·	patible)				
Communi	cation fund	ction				,				
Encoder of	output puls	e								
Analog m					<u> </u>					
<u> </u>		n input pu <b>l</b> se v	4 Mpulses/s (whe	4 Mpulses/s (when using differential receiver), 200 kpulses/s (when using open collector)						
		ng feedback pulse		Encoder res	olution: 22 bits					
Position C control fa mode P		nd pulse multiplying	Electronic gear	A/B multiple, A: 1 to 1677	7215, B: 1 to 16777215, 1/	10 < A/B < 4000				
	Positioning complete width setting			0 pulse to ±65535 puls	ses (command pulse unit)					
	Error exc	essive		±3 rc	otations					
	Torque li	mit	Set by parame	ters or external analog in	put (0 V DC to +10 V DC/ma	aximum torque)				
	Speed co	ontrol range	Analog	g speed command 1:2000	), internal speed command	1:5000				
Speed	Analog s input	peed command	0 V DC to ±10	V DC/rated speed (Spee	ed at 10 V is changeable wi	th [Pr. PC12].)				
control mode	Speed flu	uctuation rate								
	Torque li	mit	Set by parame	ters or external analog in	put (0 V DC to +10 V DC/ma	aximum torque)				
Torque control	Analog to	orque command	0 V DC to	9 ±8 V DC/maximum torq	ue (input impedance: 10 k $\Omega$	to 12 kΩ)				
mode	Speed lin	nit	Set by paran	neters or external analog	input (0 V DC to $\pm$ 10 V DC	/rated speed)				
Positionin	ig mode		Poir	nt table method, program	method, indexer (turret) me	thod				
Fully close	ed loop	MR-J4-DU_A4		Two-wire type cor	mmunication method					
control	·	MR-J4-DU_A4-RJ		Two-wire/four-wire typ	e communication method					
Servo fun	ction			ve recorder function, mad		0.				
Load-side	encoder	MR-J4-DU_A4		Mitsubishi high-spee	d serial communication					
interface		MR-J4-DU_A4-RJ	Mitsubishi hig	h-speed serial communic	ation, A/B/Z-phase different	ial input signal				
Protective	e functions		· · · · ·	Itage protection, instantar	thermal), servo motor over neous power failure protecti sive protection,					

## MR-J4-DU\_A4/MR-J4-DU\_A4-RJ (General-purpose Interface) Specifications (400 V)

		· ·	. , .	•		S		
Drive	unit model MR-J4(-RJ)	DU30KA4	DU37KA4	DU45KA4	DU55KA4	iervo		
Functional	safety		STO (IEC/EN 61800-5-2)					
	Standards certified by CB	EN ISO 13849-1 Cat	tegory 3 PL d, IEC 61508 \$	SIL 2, EN 62061 SIL CL 2,	EN 61800-5-2 SIL 2	Amplifiers		
	Response performance		8 ms or less (STO input	OFF $\rightarrow$ energy shut-off)		fier		
	Test pulse input (STO) (Note 2)	Test puls	se interval: 1 Hz to 25 Hz,	test pulse off time: 1 ms m	naximum	0,		
Safety performance	Mean time to dangerous failure (MTTFd)		100 years	or longer				
	Diagnostic coverage (DC)		Medium (90	0% to 99%)		Rotary		
	Probability of dangerous Failure per Hour (PFH)	1.68 × 10 <sup>-10</sup> [1/h]						
Complianc	e to standards	Refer to "Confor	Refer to "Conformity with Global Standards and Regulations" on p. 57 in this catalog.					
Structure (	(IP rating)			Motors				
Close mou	Inting		Not possible					
	Ambient temperature	Operation: 0 °	°C to 55 °C (non-freezing),	storage: -20 °C to 65 °C (	(non-freezing)			
	Ambient humidity	Ol	peration/storage: 90 %RH	maximum (non-condensin	ig)	Ę.		
Environment	Ambience	Indoors (no c	lirect sunlight); no corrosiv	e gas, inflammable gas, o	il mist or dust	Linear		
	Altitude		1000 m or less above sea level					
	Vibration resistance	5.9	9 m/s² at 10 Hz to 55 Hz (d	lirections of X, Y and Z axe	es)	Servo		
Mass	[kg]	1	6	1	9	Mot		

Notes: 1. Terminal blocks are excluded.

2. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the drive unit instantaneously at regular intervals.

3. Use an optional external dynamic brake with the servo amplifier. Without the external dynamic brake, a servo motor does not stop immediately at emergency stop and falls in free-run status, causing an accident such as machine collision, etc. Take measures to ensure safety on the entire system when not using the dynamic brake.

4. One unit of converter unit is required for each drive unit. Refer to "MR-CR Converter Unit Specifications (200 V/400 V)" on p. 1-14 in this catalog for the specifications of the converter unit.

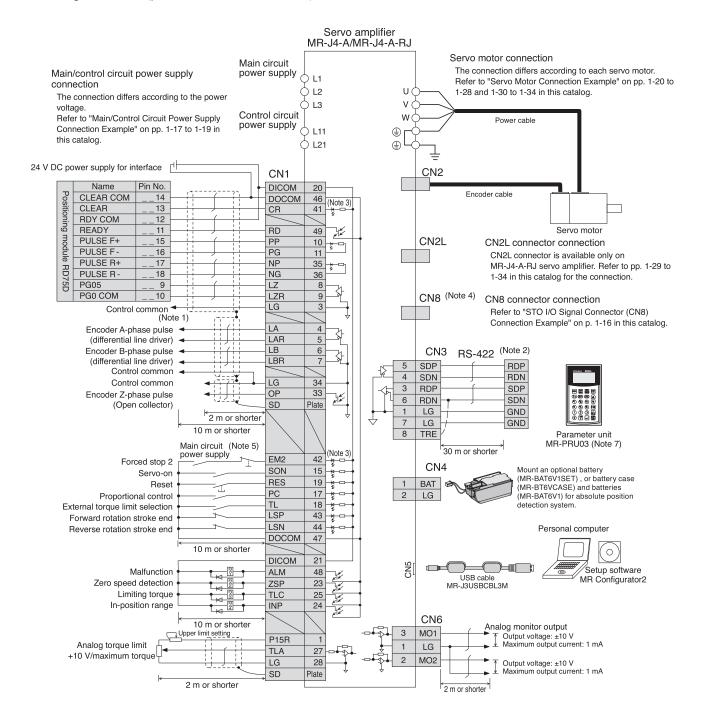
A-RJ

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#### MR-J4-A/MR-J4-A-RJ Standard Wiring Diagram Example: Position Control Operation (Note 6)

A A-RJ

Connecting to RD75D (position servo, incremental)



Notes: 1. This connection is not necessary for RD75D Positioning module. Note that the connection between LG and control common terminal is recommended for some Positioning modules to improve noise tolerance.

It is also possible to connect a personal computer to CN3 connector with an RS-422/RS-232C conversion cable. However, USB interface (CN5 connector) and RS-422 interface (CN3 connector) are mutually exclusive. Do not use them at the same time. Refer to "Products on the Market for Servo Amplifiers" in this catalog for the RS-422/RS-232C conversion cable.

3. This is for sink wiring. Source wiring is also possible.

4. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.

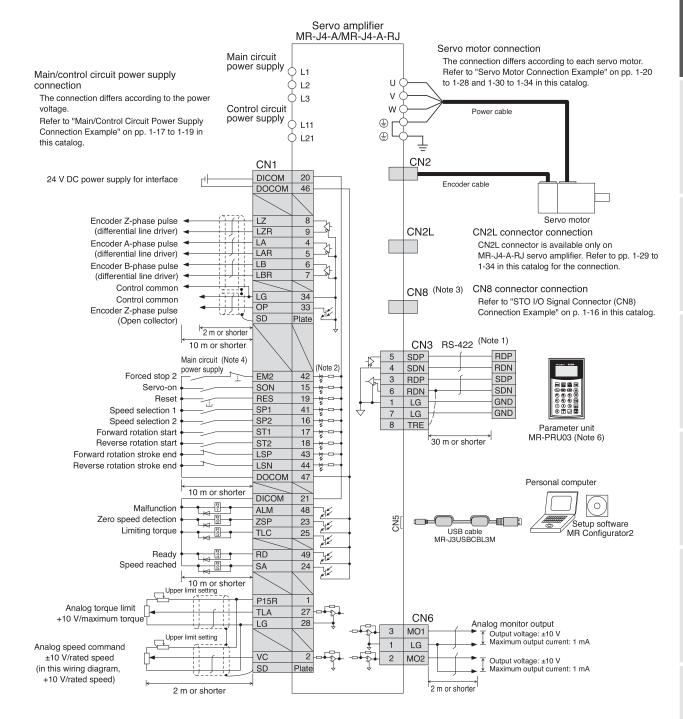
5. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.

- 6. This standard wiring diagram is common for 200 V AC, 100 V AC and 400 V AC type servo amplifiers.
- 7. Use a commercial LAN cable (EIA568 compliant), and keep the wiring length to 10 m or less

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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## MR-J4-A/MR-J4-A-RJ Standard Wiring Diagram Example: Speed Control Operation (Note 5)



Notes: 1. It is also possible to connect a personal computer to CN3 connector with an RS-422/RS-232C conversion cable. However, USB interface (CN5 connector) and RS-422 interface (CN3 connector) are mutually exclusive. Do not use them at the same time. Refer to "Products on the Market for Servo Amplifiers" in this catalog for the RS-422/ RS-232C conversion cable.

2. This is for sink wiring. Source wiring is also possible.

/!\

3. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.

4. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.

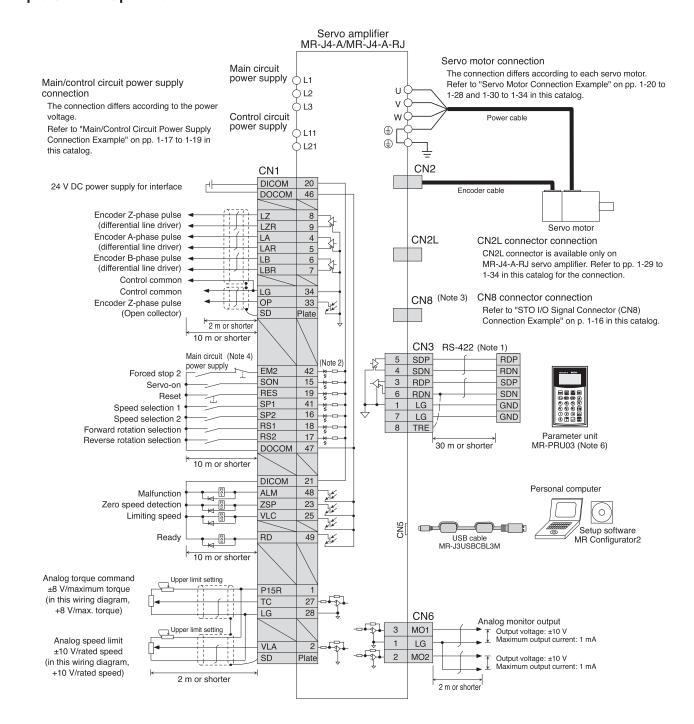
- 5. This standard wiring diagram is common for 200 V AC, 100 V AC and 400 V AC type servo amplifiers.
- 6. Use a commercial LAN cable (EIA568 compliant), and keep the wiring length to 10 m or less.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

A-RJ

#### MR-J4-A/MR-J4-A-RJ Standard Wiring Diagram Example: Torque Control Operation (Note 5)





Notes: 1. It is also possible to connect a personal computer to CN3 connector with an RS-422/RS-232C conversion cable. However, USB interface (CN5 connector) and RS-422 interface (CN3 connector) are mutually exclusive. Do not use them at the same time. Refer to "Products on the Market for Servo Amplifiers" in this catalog for the RS-422/RS-232C conversion cable.

2. This is for sink wiring. Source wiring is also possible.

3. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.

4. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.

- 5. This standard wiring diagram is common for 200 V AC, 100 V AC and 400 V AC type servo amplifiers.
- 6. Use a commercial LAN cable (EIA568 compliant), and keep the wiring length to 10 m or less.

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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Servo Amplifiers

## MR-J4-A-RJ Positioning Function: Point Table Method

Positioning operation is executed by selecting the point table No. with a command interface signal according to the position and speed data set in the point table.

	Item		Description	
	Command	l interface	DIO (input: 11 points (excluding forced stop input (EM2)), and output: 8 points), RS-422	
	Operating	specification	Positioning by specifying the point table No. (255 points)	
	Position command input	Absolute value command method	Set in the point table. Setting range of feed length per point: -999999 to 9999999 [×10 <sup>STM</sup> μm], -99.9999 to 99.9999 [×10 <sup>STM</sup> inch], -999999 to 9999999 [pulse], Setting range of rotation angle: -360.000 to 360.000 [degree] Set in the point table.	
Command metho	d (Note 1)	Incremental value command method	Setting range of feed length per point: 0 to 999999 [×10 <sup>s™</sup> µm], 0 to 99.9999 [×10 <sup>s™</sup> inch], 0 to 999999 [pulse], Setting range of rotation angle: 0 to 999.999 [degree]	
		nmand input	Set the acceleration/deceleration time constants in the point table. Set the S-pattern acceleration/deceleration time constants with [Pr. PC03].	,
	System		Signed absolute value command method, incremental value command method	i
	Analog ov		0 V DC to ±10 V DC/0% to 200%	
	Torque lim	iit	Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)	
Automa	n – .	tioning operation	Point table No. input, position data input method Each positioning operation is executed based on the position/speed commands.	
mode	Automatic	continuous g operation	Varying-speed operation (2 to 255 speeds), automatic continuous positioning operation (2 to 255 points)	
Manual	JOG opera		Inching operation is executed with DI or RS-422 communication function according to the speed command set with a parameter.	
mode	" Manual pu operation	lse generator	Manual feeding is executed with a manual pulse generator. Command pulse multiplication: select from ×1, ×10, and ×100 with a parameter.	
[	Dog type		Returns to home position upon Z-phase pulse after passing through proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
	Count type	9	Returns to home position upon the encoder pulse count after touching proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
	Data set ty	vpe	Returns to home position without dog. Any position settable as a home position using manual operation, etc. Home position address settable	Equipment
	Stopper ty	ре	Returns to home position upon hitting the stroke end. Home position return direction selectable, home position address settable	ment
Operation		ition ignorance position as home	Sets a home position where SON (Servo-on) signal turns on. Home position address settable	
node Home positior	Dog type r	ear end	Returns to home position with reference to the rear end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
mode	Count type reference	e front end	Returns to home position with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
	Dog cradle	e type	Returns to home position upon the first Z-phase pulse with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
	Dog type a reference	adjacent Z-phase	Returns to home position upon the last Z-phase pulse with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
	Dog type f reference	ront end	Returns to home position to the front end of dog with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function	
	(Note 2)	-phase reference	Returns to home position to Z-phase pulse with reference to the first Z-phase pulse. Home position return direction settable, home position shift distance settable, home position address settable	
	atic positionin n function	g to home	High-speed automatic positioning to a defined home position	
Other functions			Absolute position detection system, backlash compensation, overtravel prevention with external limit switches (LSP/LSN), teaching function, roll feed display function, software stroke limit, mark detection (current position latch) function, analog override function	

Notes: 1. STM is the ratio to the setting value of the position data. STM can be changed with [Pr. PT03]. 2. Home position return modes of dog type adjacent Z-phase reference and dogless Z-phase reference are not available when the direct drive motor or incremental type linear encoder is used.

## MR-J4-A-RJ Positioning Function: Point Table Method

Absolute value command method: travels to a specified address (absolute value) with reference to the home

#### position

Item	Setting range	Description
Point table No.	1 to 255	Specify a point table in which a target position, servo motor speed, acceleration/deceleration time constants, dwell, and sub function will be set.
Target position <sup>(Note 1, 3)</sup> (position data)	-999999 to 999999 [×10 <sup>s™</sup> μm] -99.9999 to 99.9999 [×10 <sup>s™</sup> inch] -360.000 to 360.000 [degree] -999999 to 999999 [pulse]	<ul> <li>Set a travel distance.</li> <li>(1) When using as absolute value command method Set a target address (absolute value).</li> <li>(2) When using as incremental value command method Set a travel distance. Reverse rotation command is applied with a minus sign.</li> </ul>
Servo motor speed (Note 2)	0 to permissible speed [r/min] [mm/s]	Set a command speed for the servo motor in positioning.
Acceleration time constant	0 to 20000 [ms]	Set a time period for the servo motor to reach the rated speed.
Deceleration time constant	0 to 20000 [ms]	Set a time period for the servo motor to decelerate from the rated speed to a stop.
Dwell	0 to 20000 [ms]	Set dwell. When the dwell is set, the position command for the next point table will be started after the position command for the selected point table is completed and the set dwell is passed. The dwell is disabled when 0 or 2 is set for the sub function. Varying-speed operation is enabled when 1, 3, 8, 9, 10, or 11 is set for the sub function and when 0 is set for the dwell.
Sub function	0 to 3, and 8 to 11	<ul> <li>Set sub function.</li> <li>(1) When using as absolute value command method <ul> <li>Executes automatic operation for a selected point table.</li> <li>1: Executes automatic continuous operation without stopping for the next point table.</li> <li>8: Executes automatic continuous operation without stopping for the point table selected at the start.</li> <li>9: Executes automatic continuous operation without stopping for the point table No. 1.</li> </ul> </li> <li>(2) When using as incremental value command method <ul> <li>2: Executes automatic continuous operation without stopping for the next point table.</li> <li>3: Executes automatic continuous operation without stopping for the next point table.</li> <li>10: Executes automatic continuous operation without stopping for the point table selected at the start.</li> <li>11: Executes automatic continuous operation without stopping for the point table selected at the start.</li> </ul> </li> </ul>
M code	0 to 99	Set a code to be outputted when the positioning completes.

Notes: 1. Change the unit to  $\mu$ m/inch/degree/pulse with [Pr. PT01].

2. The speed unit is r/min for the rotary servo motors and the direct drive motors, and mm/s for the linear servo motors.

3. STM is the ratio to the setting value of the position data. STM can be changed with [Pr. PT03].

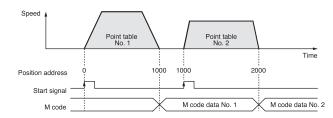
#### Example of setting point table data

Point table No.	Target position (position data) [× 10 <sup>STM</sup> μm] (Note 1)	Servo motor speed [r/min]	Acceleration time constant [ms]	Deceleration time constant [ms]	Dwell [ms]	Sub function	M code
1	1000	2000	200	200	0	*	1
2	2000	1600	100	100	0	0	2
:	:	:	:	:	:	:	:
255	3000	3000	100	100	0	2	99

#### \* The operation of the next point table is set with the sub function.

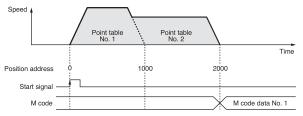
#### • When the sub function is set to 0:

Start signal is required for each point table.



#### • When the sub function is set to 1:

Automatic continuous operation is executed based on the point table.



Notes: 1. STM is the ratio to the setting value of the position data. STM can be changed with [Pr. PT03]. 1-83

## MR-J4-A-RJ Positioning Function: Point Table Method

Incremental value command method: travels from a current position according to the set position data

lte	Catting way in	Description
Item	Setting range	Description
	1 to 255	Specify a point table in which a target position, servo motor speed, acceleration/deceleration time constants, dwell, and sub function will be set.
Target position (Note 1, 3) (position data)	0 to 999999 [×10 <sup>s™</sup> μm] 0 to 99.9999 [×10 <sup>s™</sup> inch] 0 to 999.999 [degree] 0 to 999999 [pulse]	Set a travel distance. Operation starts with ST1 (Forward rotation start) or ST2 (Reverse rotation start).
Servo motor speed (Note 2)	0 to permissible speed [r/min] [mm/s]	Set a command speed for the servo motor in positioning.
Acceleration time constant	0 to 20000 [ms]	Set a time period for the servo motor to reach the rated speed.
Deceleration time constant	0 to 20000 [ms]	Set a time period for the servo motor to decelerate from the rated speed to a stop.
Dwell	0 to 20000 [ms]	Set a dwell. When the dwell is set, the position command for the next point table will be started after the position command for the selected point table is completed and the set dwell is passed. The dwell is disabled when 0 is set for the sub function. Varying-speed operation is enabled when 1, 8, or 9 is set for the sub function and when 0 is set for the dwell.
Sub function	0, 1, 8, and 9	<ul> <li>Set sub function.</li> <li>0: Executes automatic operation for the selected point table.</li> <li>1: Executes automatic continuous operation without stopping for the next point table.</li> <li>8: Executes automatic continuous operation without stopping for the point table selected at the start.</li> <li>9: Executes automatic continuous operation without stopping for the point table No. 1.</li> </ul>
M code	0 to 99	Set a code to be outputted when the positioning completes.

Notes: 1. Change the unit to µm/inch/degree/pulse with [Pr. PT01].

2. The speed unit is r/min for the rotary servo motors and the direct drive motors, and mm/s for the linear servo motors.

3. STM is the ratio to the setting value of the position data. STM can be changed with [Pr. PT03].

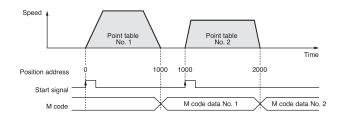
#### Example of setting point table data

Point table No.	Target position (position data) [× 10 <sup>STM</sup> μm] (Note 1)	Servo motor speed [r/min]	Acceleration time constant [ms]	Deceleration time constant [ms]	Dwell [ms]	Sub function	M code	Equipme
1	1000	2000	200	200	0	*	1	nt
2	1000	1600	100	100	0	0	2	-
:	:	:	:	:	:	:	:	
255	3000	3000	100	100	0	0	99	]

\* The operation of the next point table is set with the sub function.

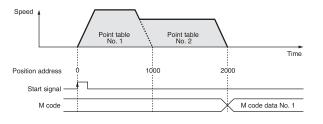
#### • When the sub function is set to 0:

Start signal is required for each point table.



#### • When the sub function is set to 1:

Automatic continuous operation is executed based on the point table.



Notes: 1. STM is the ratio to the setting value of the position data. STM can be changed with [Pr. PT03].

# Cautions

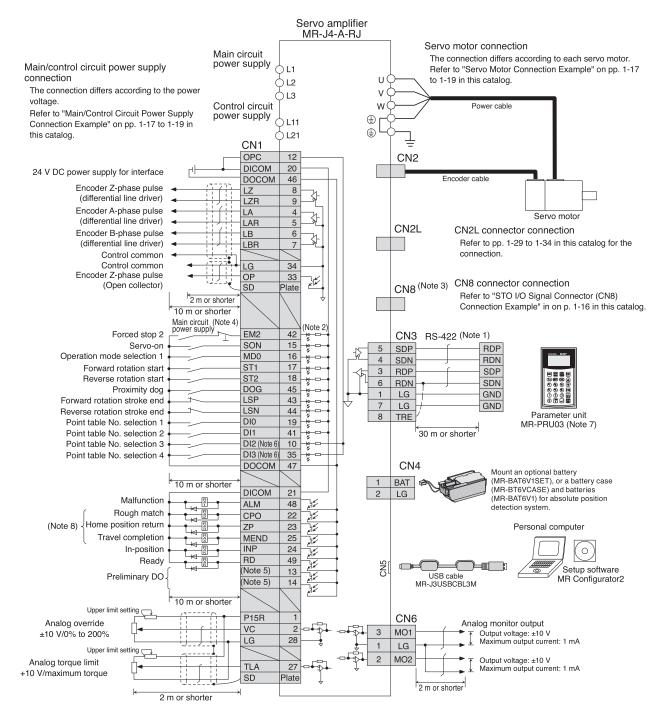
Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

Direct Drive Motors

#### MR-J4-A-RJ Standard Wiring Diagram Example: Point Table Method



Notes: 1. It is also possible to connect a personal computer to CN3 connector with an RS-422/RS-232C conversion cable. However, USB interface (CN5 connector) and RS-422 interface (CN3 connector) are mutually exclusive. Do not use them at the same time. Refer to "Products on the Market for Servo Amplifiers" in this catalog for the RS-422/RS-232C conversion cable.

- This is for sink wiring. Source wiring is also possible. However, when input devices are assigned to CN1-10 pin and CN1-35 pin, be sure to use sink wiring. Source wiring is not possible in this case. In the positioning mode, input devices are assigned in the initial setting. Refer to "MR-J4-\_A\_-RJ Servo Amplifier Instruction Manual (Positioning Mode)" for details.
- 3. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 4. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.
- 5. No output device is assigned in the initial setting. Assign an output device with [Pr. PD47] as necessary.
- 6. DI2 and DI3 are assigned to CN1-10 pin and CN1-35 pin respectively in the initial setting. Change them with [Pr. PD44] and [Pr. PD46] when using a manual pulse generator.
- 7. Use a commercial LAN cable (EIA568 compliant), and keep the wiring distance within 10 m when using MR-PRU03 parameter unit.
- 8. Assign the output devices mentioned to CN1-22 pin, CN1-23 pin, and CN1-25 pin with [Pr. PD23], [Pr. PD24] and [Pr. PD26].

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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## MR-J4-A-RJ Positioning Function: Program Method

Positioning operation is executed by selecting programs with command signals. The programs including position data, servo motor speed, acceleration/deceleration time constants and others need to be created beforehand. The program method enables more complex positioning operation than the point table method. MR Configurator2 is required to create programs.

		Item		Description
Command method		Command interface		DIO (input: 11 points (excluding forced stop input (EM2)), and output: 8 points), RS-422
		Operating specification		Program language (program with MR Configurator2) Program capacity: 640 steps (256 programs)
		Position command input (Note 1)	Absolute value command method	Set with program language. Setting range of feed length: -9999999 to 9999999 [×10 <sup>s™</sup> μm], -99.9999 to 99.99999 [×10 <sup>s™</sup> inch], -999999 to 9999999 [pulse], Setting range of rotation angle: -360.000 to 360.000 [degree]
			Incremental value command method	Set with program language. Setting range of feed length: -999999 to 9999999 [×10 <sup>s™</sup> μm], -99.9999 to 99.9999 [×10 <sup>s™</sup> inch], -999999 to 9999999 [pulse], Setting range of rotation angle: -999.999 to 999.999 [degree]
		Speed command input		Set servo motor speed, acceleration/deceleration time constants, S-pattern acceleration/ deceleration time constants with program language. S-pattern acceleration/deceleration time constants are also settable with [Pr. PC03].
		System		Signed absolute value command method/signed incremental value command method
		Analog override		0 V DC to ±10 V DC/0% to 200%
		Torque limit		Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)
	Automatic operation mode			Depends on the setting of the program language
	Manual operation mode	JOG operation		Inching operation is executed with DI or RS-422 communication function according to the speed command set with a parameter.
		Manual pulse generator operation		Manual feeding is executed with a manual pulse generator. Command pulse multiplication: select from ×1, ×10, and ×100 with a parameter.
	Home position return mode	Dog type		Returns to home position upon Z-phase pulse after passing through proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Count type		Returns to home position upon the encoder pulse count after touching proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Data set type		Returns to home position without dog. Any position settable as a home position using manual operation, etc. Home position address settable
		Stopper type		Returns to home position upon hitting the stroke end. Home position return direction selectable, home position address settable
		Home position ignorance (servo-on position as home position)		Sets a home position where SON (Servo-on) signal turns on. Home position address settable
Operation mode		Dog type reference		Returns to home position with reference to the rear end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Count type reference	front end	Returns to home position with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Dog cradle type		Returns to home position upon the first Z-phase pulse with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Dog type adjacent Z-phase reference (Note 2)		Returns to home position upon the last Z-phase pulse with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Dog type front end reference		Returns to home position to the front end of dog with reference to the front end of proximity dog. Home position return direction selectable, home position shift distance settable, home position address settable, automatic retract on dog back to home position, automatic stroke retract function
		Dogless Z-phase reference		Returns to home position to Z-phase pulse with reference to the first Z-phase pulse. Home position return direction settable, home position shift distance settable, home position address settable
	Automatic positioning to home position function		g to home	High-speed automatic positioning to a defined home position
Other functions				Absolute position detection system, backlash compensation, overtravel prevention with external limit switches (LSP/LSN), roll feed display function, software stroke limit, mark detection (current position latch) function, analog override function

2. Home position return modes of dog type adjacent Z-phase reference and dogless Z-phase reference are not available when the direct drive motor or

Cautions

LVS/Wires

## **MR-J4-A-RJ Positioning Function: Program Method**

#### **Command List**

Command	Name	Setting range	Description
SPN(setting value) (Note 2)	Servo motor speed	0 to instantaneous permissible speed [r/min] [mm/s]	Set a command speed for the servo motor in positioning. Do not set a value exceeding the instantaneous permissible speed of the servo motor.
STA(setting value)	Acceleration time constant	0 to 20000 [ms]	Set acceleration time constant. The setting value is a time period that the servo motor reaches the rated speed from a stop.
STB(setting value)	Deceleration time constant	0 to 20000 [ms]	Set deceleration time constant. The setting value is a time period that the servo motor stops from the rated speed.
STC(setting value)	Acceleration/ deceleration time constants	0 to 20000 [ms]	Set acceleration and deceleration time constants. The setting value is a time period that the servo motor reaches the rated speed from a stop and stops from the rated speed.
STD(setting value)	S-pattern acceleration/ deceleration time constants	0 to 1000 [ms]	Set S-pattern acceleration/deceleration time constants.
MOV(setting value) (Note 4, 5)	Absolute value travel command	-9999999 to 9999999 [×10 <sup>STM</sup> μm]	Travels according to the value set as an absolute value.
MOVA(setting value) (Note 4, 5)	Absolute value continuous travel command	-99.9999 to 99.9999 [×10 <sup>STM</sup> inch] -360.000 to 360.000 [degree] -999999 to 999999 [pulse]	Travels continuously according to the value set as an absolute value. Be sure to write this command after [MOV] command.
MOVI(setting value) (Note 4, 5)	Incremental value travel command	-999999 to 999999 [×10 <sup>STM</sup> μm]	Travels according to the value set as an incremental value.
MOVIA(setting value) (Note 4, 5)	Incremental value continuous travel command	-99.9999 to 99.9999 [×10 <sup>S™</sup> inch] -999999 to 999999 [degree] -999999 to 999999 [pulse]	Travels continuously according to the value set as an incremental value. Be sure to write this command after [MOVI] command.
SYNC(setting value) (Note 1)	Waiting for external signal to switch on	1 to 3	Stops the next step until PI1 (Program input 1) to PI3 (Program input 3) turn on after SOUT (SYNC synchronous output) is outputted.
OUTON(setting value) (Note 1)	External signal on output	1 to 3	Turns on OUT1 (Program output 1) to OUT3 (Program output 3).
OUTOF(setting value) (Note 1)	External signal off output	1 to 3	Turns off OUT1 (Program output 1) to OUT3 (Program output 3) which were turned on with [OUTON] command.
TRIP(setting value) (Note 1, 4, 5)	Absolute value trip point specification	-999999 to 999999 [×10 <sup>STM</sup> μm] -99.9999 to 99.9999 [×10 <sup>STM</sup> inch] -360.000 to 360.000 [degree] -999999 to 999999 [pulse]	Executes the next step after [MOV] or [MOVA] commands are started and then the servo motor moves for the travel amount set in [TRIP] command. Be sure to write this command after [MOV] or [MOVA] command.
TRIPI(setting value) (Note 1, 4, 5)	Incremental value trip point specification	-999999 to 999999 [×10 <sup>s™</sup> μm] -99.9999 to 99.9999 [×10 <sup>s™</sup> inch] -999999 to 999999 [degree]	Executes the next step after [MOVI] or [MOVIA] commands are started and then the servo motor moves for the travel amount set in [TRIPI] command. Be sure to write this command after [MOVI] or [MOVIA] command.
ITP(setting value) (Note 1, 3, 4, 5)	Interrupt positioning	-9999999 to 9999999 [pulse]	Stops the operation after the servo motor moves for the trave amount set when the interrupt signal is inputted. Be sure to write this command after [SYNC] command.
COUNT(setting value)	External pulse count	-999999 to 999999 [pulse]	Executes the next step when the value of the pulse counter exceeds the count value set in [COUNT] command. [COUNT (0)] clears the pulse counter to zero.
FOR(setting value) NEXT	Step repeat command	0, and 1 to 10000 [number of times]	Repeats the steps between [FOR (setting value)] and [NEXT] commands for the number of times set. Repeats endlessly with [FOR (0) NEXT].
LPOS (Note 1)	Current position latch	-	Latches the current position with the rising edge of the LPS signal. The latched current position data can be read with the communication command.
TIM(setting value)	Dwell	1 to 20000 [ms]	Waits for the next step until the set time passes.
ZRT	Home position return	-	Executes a manual home position return.
TIMES(setting value)	Program count command	0, and 1 to 10000 [number of times]	Set the number of program execution by writing [TIMES (setting value)] command in the first line of the program. The setting is not required for executing once. Repeats endlessly with [TIMES (0)].
STOP	Program stop	-	Stops the program in execution. Be sure to write this command in the final line.

Notes: 1. [SYNC], [OUTON], [OUTOF], [TRIP], [TRIP], [ITP], [COUNT], and [LPOS] commands are valid while the commands are outputted. 2. [SPN] command is valid while [MOV], [MOVA], [MOVI], or [MOVIA] command is in execution. [STA], [STB], [STC], and [STD] commands are valid while [MOV] or [MOVI]

command is in execution. 3. [ITP] command will be skipped to the next step when the remaining distance equals to or less than the setting value, when the servo motor is not running, or when the servo motor is decelerating.
4. Change the unit to μm/inch/degree/pulse with [Pr. PT01].
5. STM is the ratio to the setting value of the position data. STM can be changed with [Pr. PT03].

## MR-J4-A-RJ Positioning Function: Program Method

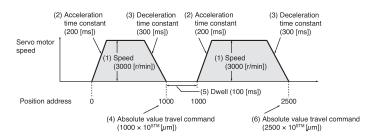
#### Command list

			T
Command	Name	Setting range	Description
I P(cotting value)	Forward rotation torque limit	0, and 1 to 1000 [0.1%]	Limits the torque generated by the servo motor driving in CCW and regenerating in CW, as the maximum torque is 100%. The setting remains valid until the program is stopped. [TLP (0)] enables the setting of [Pr. PA11].
I I N(setting value)	Reverse rotation torque limit	0, and 1 to 1000 [0.1%]	Limits the torque generated by the servo motor driving in CW and regenerating in CCW, as the maximum torque is 100%. The setting remains valid until the program is stopped. [TLN (0)] enables the setting of [Pr. PA12].
TQL(setting value)	Torque limit	0, and 1 to 1000 [0.1%]	Limits the torque generated by the servo motor, as the maximum torque is 100%. The setting remains valid until the program is stopped. [TQL (0)] enables the settings of [Pr. PA11] and [Pr. PA12].

#### Program example 1

The following is an example of executing two types of operations with the same servo motor speed and acceleration/deceleration time constants but the different travel commands.

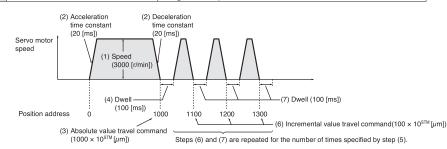
Step	Program (Note 1)	Description
(1)	SPN(3000)	Servo motor speed: 3000 [r/min]
(2)	STA(200)	Acceleration time constant: 200 [ms]
(3)	STB(300)	Deceleration time constant: 300 [ms]
(4)	MOV(1000)	Absolute value travel command: 1000 [×10 <sup>s™</sup> µm]
(5)	TIM(100)	Dwell: 100 [ms]
(6)	MOV(2500)	Absolute value travel command: 2500 [×10 <sup>s™</sup> µm]
(7)	STOP	Program stop



#### Program example 2

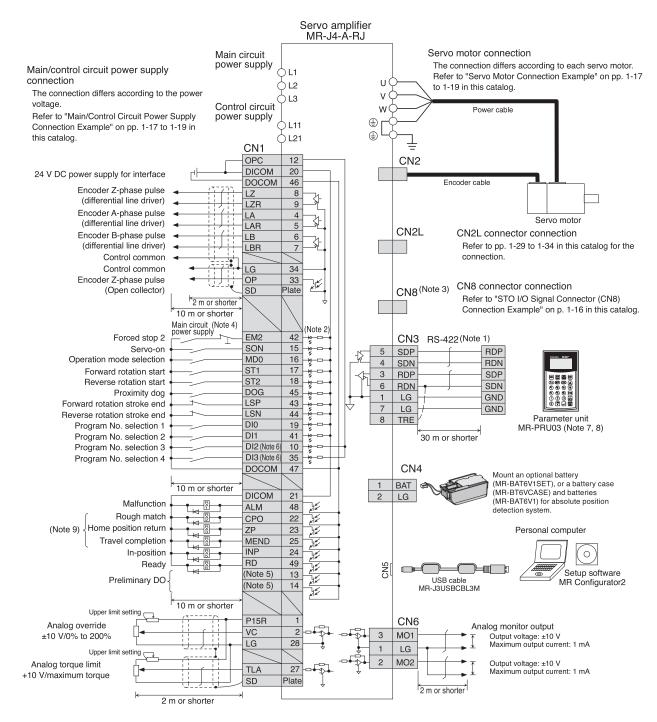
The following is an example of repeating the steps between [FOR (setting value)] and [NEXT] commands for the number of times set.

Step	Program (Note 1)	Description
(1)	SPN(3000)	Servo motor speed: 3000 [r/min]
(2)	STC(20)	Acceleration/deceleration time constants: 20 [ms]
(3)	MOV(1000)	Absolute value travel command: 1000 [×10 <sup>s™</sup> µm]
(4)	TIM(100)	Dwell: 100 [ms]
(5)	FOR(3)	Starting the step repeat command: 3 [number of times]
(6)	MOVI(100)	Incremental value travel command: 100 [×10 <sup>s™</sup> µm]
(7)	TIM(100)	Dwell: 100 [ms]
(8)	NEXT	Ending the step repeat command
(9)	STOP	Program stop



Notes: 1. The values in [SPN], [STA], [STB], and [STC] commands remains valid until they are reset. The values will not be initialized at the start of the program. The settings are also valid in other programs.

#### MR-J4-A-RJ Standard Wiring Diagram Example: Program Method



Notes: 1. It is also possible to connect a personal computer to CN3 connector with an RS-422/RS-232C conversion cable. However, USB interface (CN5 connector) and RS-422 interface (CN3 connector) are mutually exclusive. Do not use them at the same time. Refer to "Products on the Market for Servo Amplifiers" in this catalog for the RS-422/RS-232C conversion cable.

- 2. This is for sink wiring. Source wiring is also possible. However, when input devices are assigned to CN1-10 pin and CN1-35 pin, be sure to use sink wiring. Source wiring is not possible in this case. In the positioning mode, input devices are assigned in the initial setting. Refer to "MR-J4-\_A\_-RJ Servo Amplifier Instruction Manual (Positioning Mode)" for details.
- 3. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 4. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.
- 5. No output device is assigned in the initial setting. Assign an output device with [Pr. PD47] as necessary.
- 6. DI2 and DI3 are assigned to CN1-10 pin and CN1-35 pin respectively in the initial setting. Change them with [Pr. PD44] and [Pr. PD46] when using a manual pulse generator.
- 7. Use a commercial LAN cable (EIA568 compliant), and keep the wiring distance within 10 m when using MR-PRU03 parameter unit.
- 8. Programs cannot be edited with the parameter unit.
- 9. Assign the output devices mentioned to CN1-22 pin, CN1-23 pin, and CN1-25 pin with [Pr. PD23], [Pr. PD24] and [Pr. PD26].

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

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## MR-J4-A-RJ Positioning Function: Indexer (Turret) Method

Positioning is executed by specifying stations (maximum of 255 stations). Travel distance is automatically calculated with parameters by setting the numbers of stations.

lkom			Description
Item			Description
Command method		Command interface	DIO (input: 11 points (excluding forced stop input (EM2)), and output: 8 points), RS-422
		Operating	Positioning by specifying the station position
		specification	The maximum number of divisions: 255
		Speed command input	Selects the rotation speed and acceleration/deceleration time
		System	Rotation direction specifying indexer, shortest rotating indexer
		Digital override	Selects the override multiplying factor by DI
		Torque limit	Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)
	Automatic	Rotation direction	Positions to the specified station.
		specifying indexer	Rotation direction settable
	operation mode	Shortest rotating	Positions to the specified station.
	mode	indexer	Rotates in the shorter direction from the current position.
	Manual	JOG operation	Decelerates to a stop regardless of the station
	operation	Station JOG operation	Rotates in a direction specified by the rotation direction decision when the start signal turns on.
Operation	mode		Positions to the nearest station where the servo motor can decelerate to a stop when the start
mode			signal turns off.
	Home position return mode	Torque limit changing dog type	Returns to home position upon Z-phase pulse after passing through the front
			end of proximity dog.
			Home position return direction selectable, home position shift distance settable,
			home position address settable, torque limit automatic switching function
		Torque limit changing data set type	Returns to home position without dog.
			Any position settable as home position, home position address settable, torque limit automatic
			switching function
Other functions			Absolute position detection system, backlash compensation, overtravel
			prevention with external limit switches (LSP/LSN), digital override function

Linear Servo Motors

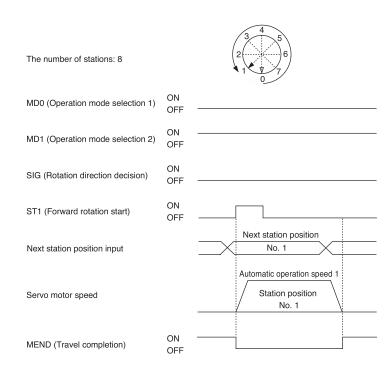
## MR-J4-A-RJ Positioning Function: Indexer (Turret) Method

#### Rotation direction specifying indexer

In the rotation direction specifying indexer, the servo motor always rotates in a definite direction.

Turn off MD0 (Operation mode selection 1), and turn on MD1 (Operation mode selection 2). The servo motor moves in the station No. decreasing direction with SIG (Rotation direction decision) off, and in the increasing direction with SIG on. When ST1 (Forward rotation direction) turns on, the travel amount will be calculated from the current position and the next station position, and then the positioning will be executed to the direction specified by the rotation direction decision.

The following timing chart is an example of the operation executed from the station No. 0 where the servo motor is stopped at servo-on.

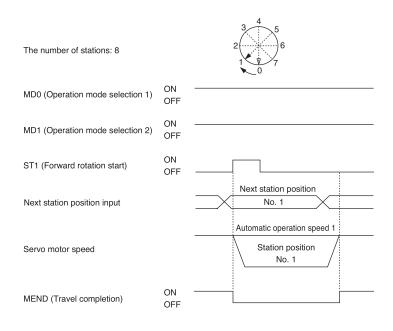


#### Shortest rotating indexer

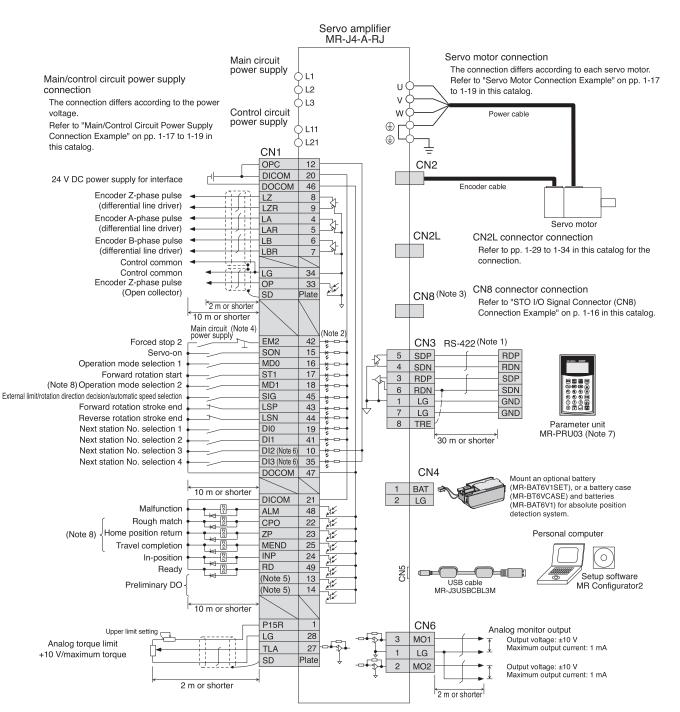
In the shortest rotating indexer, the servo motor automatically rotates in the shorter direction.

Turn on both MD0 (Operation mode selection 1) and MD1 (Operation mode selection 2). When ST1 (Forward rotation direction) turns on, the travel amount will be calculated from the current position and the next station position, and then the positioning will be executed in the shorter direction.

The following timing chart is an example of the operation executed from the station No. 0 where the servo motor is stopped at servo-on.



## MR-J4-A-RJ Standard Wiring Diagram Example: Indexer (Turret) Method



Notes: 1. It is also possible to connect a personal computer to CN3 connector with an RS-422/RS-232C conversion cable. However, USB interface (CN5 connector) and RS-422 interface (CN3 connector) are mutually exclusive. Do not use them at the same time. Refer to "Products on the Market for Servo Amplifiers" in this catalog for the RS-422/ RS-232C conversion cable.

2. This is for sink wiring. Source wiring is also possible. However, when input devices are assigned to CN1-10 pin and CN1-35 pin, be sure to use sink wiring. Source wiring is not possible in this case. In the positioning mode, input devices are assigned in the initial setting. Refer to "MR-J4-\_A\_-RJ Servo Amplifier Instruction Manual (Positioning Mode)" for details.

3. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.

4. Create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.

5. No output device is assigned in the initial setting. Assign an output device with [Pr. PD47] as necessary.

<u>/!</u>\

- 6. DI2 and DI3 are assigned to CN1-10 pin and CN1-35 pin respectively in the initial setting. Change them with [Pr. PD44] and [Pr. PD46] when using a manual pulse
- generator. 7. Use a commercial LAN cable (EIA568 compliant), and keep the wiring distance within 10 m when using MR-PRU03 parameter unit.

A sosign the output devices mentioned to CN1-18, CN1-22 pin, CN1-23 pin, and CN1-25 pin, with [Pr. PD10], [Pr. PD23], [Pr. PD24] and [Pr. PD26].

CN1-23 pin, and CN1-25 pin with [Pr. PD10], [Pr. PD23], [Pr. PD24] and [Pr. PD26].

Servo Amplifiers R

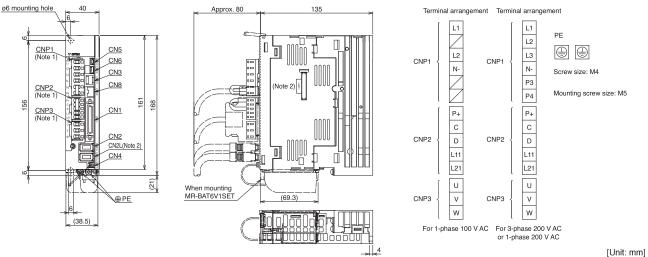
Cautions

Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

#### MR-J4-A/MR-J4-A-RJ Dimensions

•MR-J4-10A, MR-J4-10A-RJ, MR-J4-10A1, MR-J4-10A1-RJ

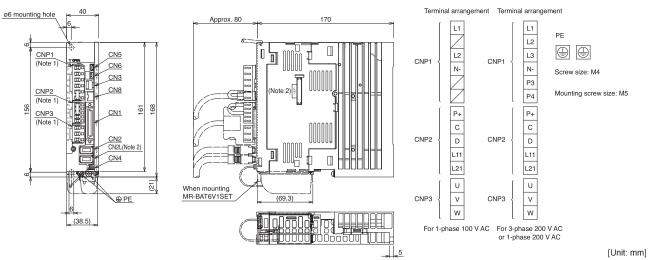
•MR-J4-20A, MR-J4-20A-RJ, MR-J4-20A1, MR-J4-20A1-RJ



A-RJ

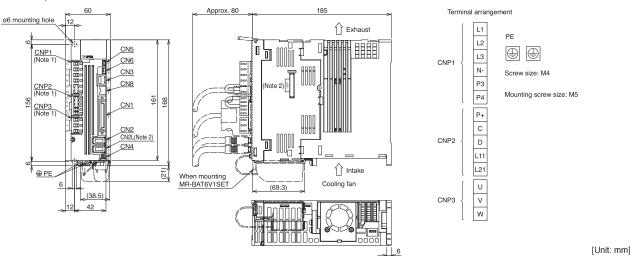
•MR-J4-40A, MR-J4-40A-RJ, MR-J4-40A1, MR-J4-40A1-RJ

•MR-J4-60A, MR-J4-60A-RJ

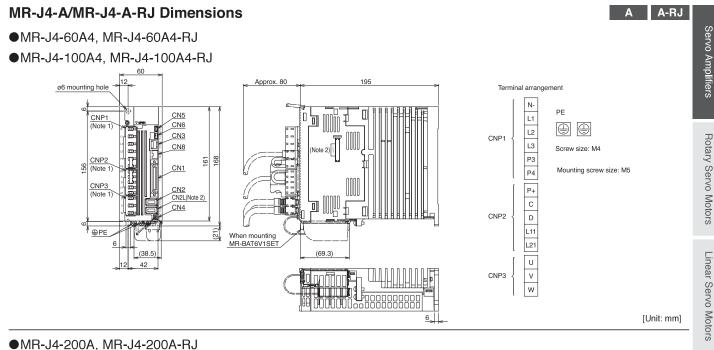


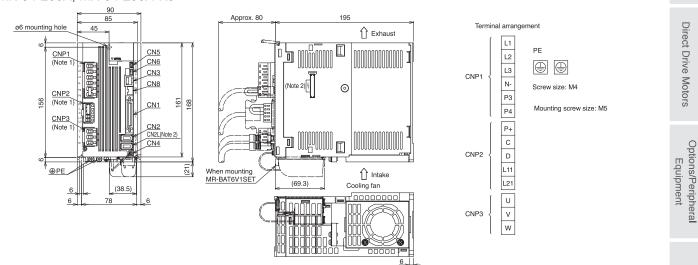
•MR-J4-70A, MR-J4-70A-RJ

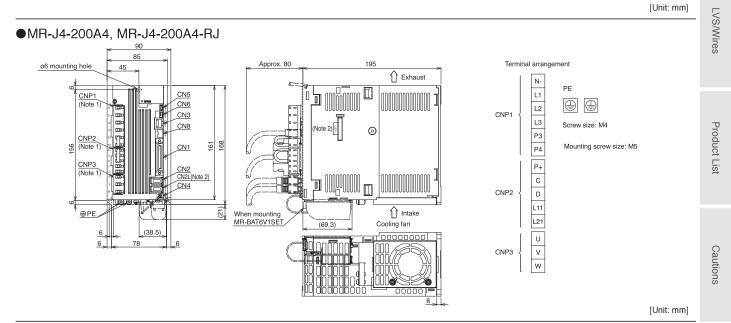
•MR-J4-100A, MR-J4-100A-RJ



Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. CN2L and CN7 connectors are not available for MR-J4-A servo amplifier.





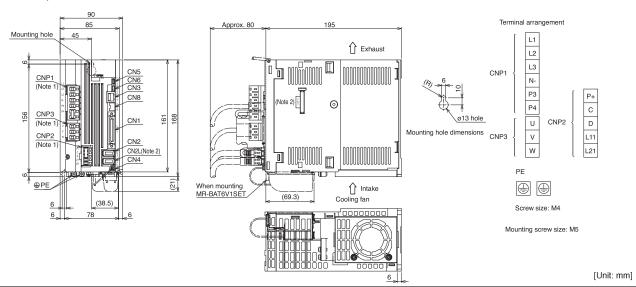


Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. CN2L and CN7 connectors are not available for MR-J4-A servo amplifier.

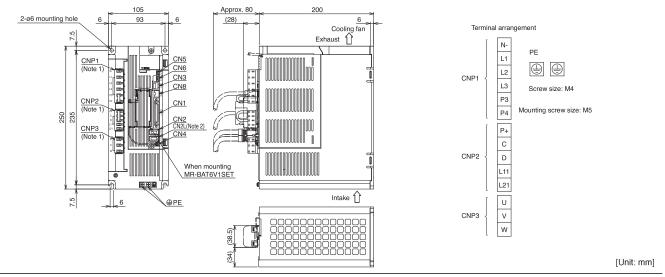
#### MR-J4-A/MR-J4-A-RJ Dimensions

A A-RJ

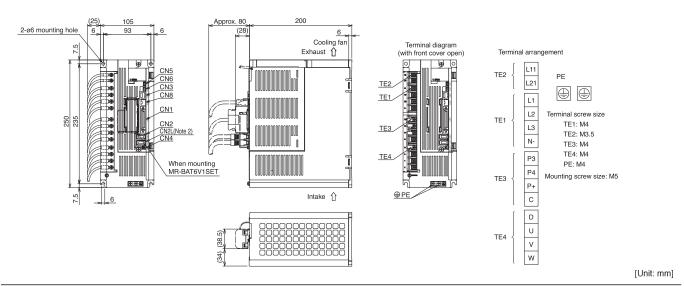
#### •MR-J4-350A, MR-J4-350A-RJ



MR-J4-350A4, MR-J4-350A4-RJ



#### •MR-J4-500A, MR-J4-500A-RJ



Notes: 1. CNP1, CNP2 and CNP3 connectors (insertion type) are supplied with the servo amplifier. 2. CN2L and CN7 connectors are not available for MR-J4-A servo amplifier.

A A-RJ

Servo Amplifiers

Rotary Servo Motors

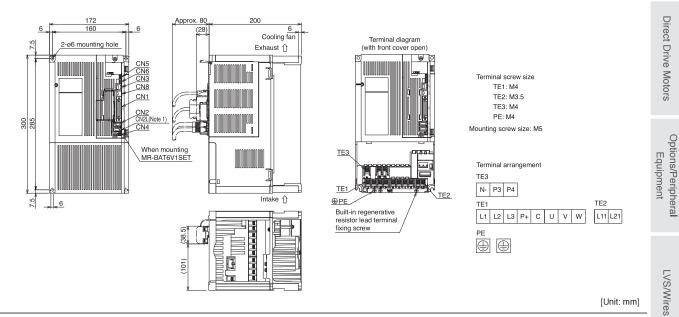
Linear Servo Motors

**Direct Drive Motors** 

## MR-J4-A/MR-J4-A-RJ Dimensions

#### •MR-J4-500A4, MR-J4-500A4-RJ Approx. 80 200 2-ø6 mounting hole (28) 6 Cooling fan Exhaust ☆ Terminal diagram (with front cover open) Terminal screw size 0 6 TE1: M4 Ĩ TE2: M3.5 CN3 CN8 TE3: M4 CN1 PE: M4 Mounting screw size: M5 250 235 CN2 CN2L(Note 1) CN4 TE2 TE3 Terminal arrangement TE1 When mounting MR-BAT6V1SET A TE2 TE3 N- P3 P4 L11 L21 ⊕ PE 7.5 Intake 🟠 TE1 Built-in regenerative L1 L2 L3 P+ C U V W resistor lead terminal fixing screw I المالمالمالمالمال ΡE $\oplus$ $\oplus$ (09 [Unit: mm]

#### •MR-J4-700A, MR-J4-700A-RJ, MR-J4-700A4, MR-J4-700A4-RJ

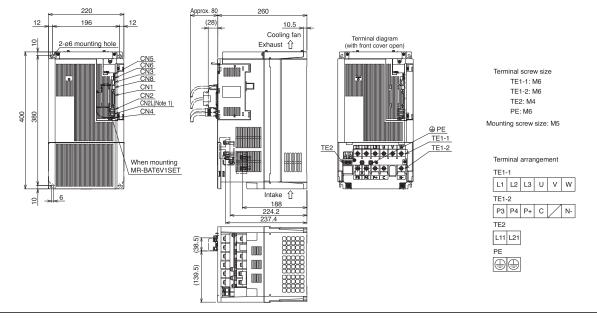


Notes: 1. CN2L and CN7 connectors are not available for MR-J4-A servo amplifier.

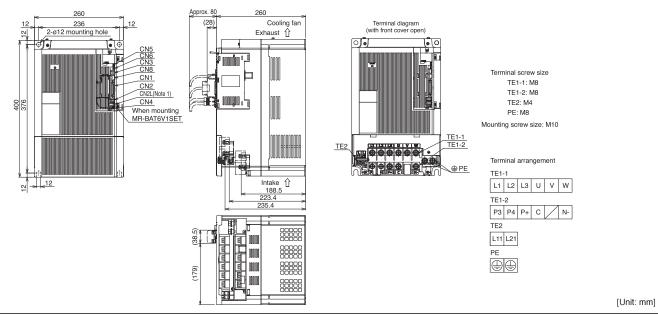
LVS/Wires

#### MR-J4-A/MR-J4-A-RJ Dimensions

MR-J4-11KA, MR-J4-11KA-RJ, MR-J4-11KA4, MR-J4-11KA4-RJ
 MR-J4-15KA, MR-J4-15KA-RJ, MR-J4-15KA4, MR-J4-15KA4-RJ



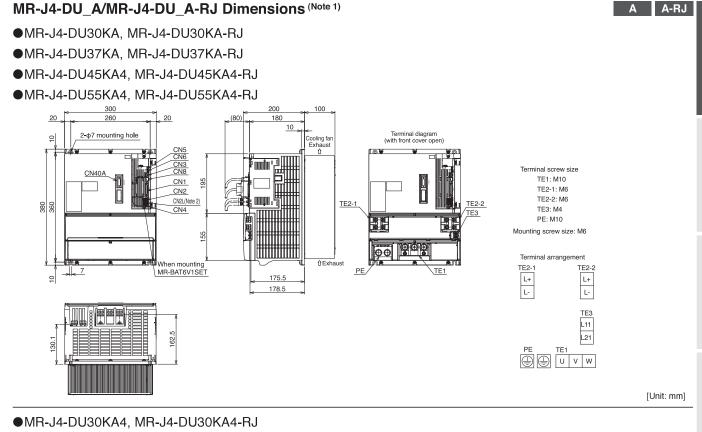
•MR-J4-22KA, MR-J4-22KA-RJ, MR-J4-22KA4, MR-J4-22KA4-RJ



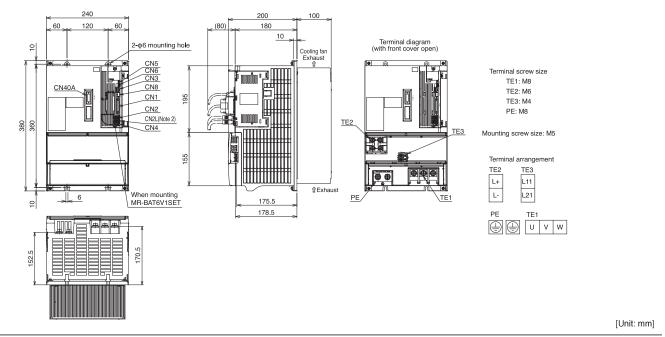
Notes: 1. CN2L and CN7 connectors are not available for MR-J4-A servo amplifier.

A A-RJ

[Unit: mm]



## •MR-J4-DU37KA4, MR-J4-DU37KA4-RJ



Notes: 1. For the panel cut dimensions, refer to "Panel Cut Dimensions for Converter Unit and Drive Unit" in this catalog. 2. CN2L and CN7 connectors are not available for MR-J4-DU\_A\_ drive unit. Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

**Direct Drive Motors** 

Options/Peripheral Equipment

LVS/Wires

Product List