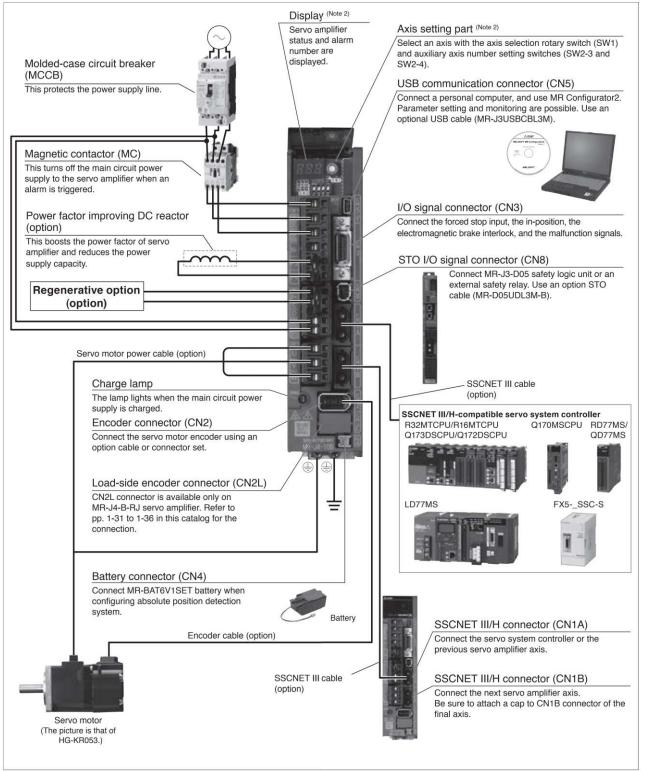
## MR-J4-B/MR-J4-B-RJ Connections with Peripheral Equipment (Note 1)

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	implifier mod	el MR-J4(-	HJ)	10B	20B	40B	60B	70B	100B	200B	350B	500B	700B	11KB	15KB	22KB	10B1	20B1	40B1	
Output	Rated volta	ge						10:		3-1	ohase	170 V	AC			10		7000 7000	38 35	
Juipui	Rated curre	nt	[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/ frequency	AC input		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz				1-ph 200 V 240 V 50 Hz				200 V AC to 240 V AC, 50 Hz/60 Hz			AC,	1-phase 100 V AC to 120 V AC, 50 Hz/60 H				
Main		DC input	Note 19)					2	83 V D	C to 3	40 V D	С					-			
circuit	Rated curre	mt (Note 15)	FA1	0.0	4.5	0.6	3.2	2.0	F 0	10 F	16.0	01.7	20.0	46.0	64.0	05.0	3.0	5.0	9.0	
oower supply nput	Permissible voltage fluctuation		[A]	A] 0.9   1.5   2.6   (Note 8)   3.8   5.0   10.5   16.0   21.7   28.9   46.0   64.0   95.0   3-phase or 1-phase 170 V AC to 264 V AC   170 V AC to 264 V AC (Note 17)   3-phase 170 V AC (Note 17								1-ph	ase 85 132 V	V AC						
		DC input	Note 19)		241 V DC to 374 V DC -															
	Permissible fluctuation				±5% maximum															
	Voltage/ frequency	AC input			1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz 1-phase 100 V AC to 120 V AC, 50 Hz/60 Hz															
Control		DC input			283 V DC to 340 V DC											-				
circuit	Rated curre		[A]		0.2 0.3 0.4 1-phase 85 V AC															
supply nput	Permissible voltage	AC Input	V. V		1-phase 170 V AC to 264 V AC 241 V DC to 374 V DC								1.5	ase 85 132 V						
	fluctuation	DC input	Note 19)					2	241 V D	C to 3	74 V D	С						15		
	Permissible fluctuation	trequency								4	5% m	aximur	n							
	Power cons	[W]					80						45				30			
Interface power supply					24	V DC		0.00	ired cu	rrent ca	apacity	: 0.3 A	(inclu	-96.70	N8 cor	nector	siana	X1550710X		
Control n		<u>′</u>				<u> </u>			e-wave								3	- / /		
ermissible		Built-in regenerative resistor (Note 2, 3) [W]		-	10	10	10	20	20	100	100	130	170	-	-	848	-	10	10	
egenerative	resistor (sta accessory)	ndard	[W]	·	-	-	-	-	-		-	0.70	=	500 (800)	850 (1300)	850 (1300)	-			
Dynamic	brake (Note 4)				Built-in External option (Note 13) Built-in															
	III/H comma								0.	222 ms	s, 0.44	4 ms, (	1 888.C	ns			ı			
	ication function	T					Con	nect a	persor	nal com	puter	(MR C	onfigu	ator2	compa	tible)				
Encoder	output pulse	***							Co	mpatib	le (A/E	3/Z-pha	ase pul	se)						
Analog m	onitor										2 cha	ınnels								
Fully clos	ed loop	MR-J4-B(1)	Note 9)						Two-v	vire typ	e com	munic	ation m	ethod						
control		MR-J4-B(1)-	RJ					Two	o-wire/f	our-wir	e type	comm	unicati	on me	thod					
		MR-J4-B(1)						Hereign below	bishi El	500 000	0 1	00 7=		STORE HER	10/10/17/200	1,1111		(0), (18),		
nterface		MR-J4-B(1)-	RJ		555,000,000,000,000				speed s					•						
Servo fur		fun fur	ction, d nction, i	rive red master	corder for slave o	unction peratio er trace	ontrol II, , tighten in function control ative ov	ning & p on <sup>(Note 1</sup> I <sup>(Note 16)</sup> ,	ress-fit <sup>4)</sup> , scale lost mo	control measo otion co	, machi uremen mpensa	ne diag t function ation fu	nosis f on <sup>(Note 1</sup> nction <sup>()</sup>	unction  4), J3 co	, power ompatib	monito	oring ode,			
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															

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

B B-RJ

Servo ar	mplifier model MR-J4(-RJ)	10B	20B	40B	60B	70B	100B	200B	350B	500B	700B	11KB	15KB	22KB	10B1	20B1	40B1
Functiona	l safety		200		100			STO (	IEC/EI	N 6180	0-5-2)						
	Standards certified by CB		ENI	SO 13	849-1	Catego	ory 3 P	Le, IE	C 6150	08 SIL	3, EN	62061	SIL CI	_3, EN	61800	)-5-2	
	Response performance					8 ms	or les	s (STC	) input	OFF -	→ ener	gy shu	t-off)				
Cofoty	Test pulse input (STO) (Note 7)			Т	est pul	se inte	rval: 1	Hz to 2	25 Hz,	test pu	lse off	time:	1 ms n	naximu	m		
Safety performance	Mean time to dangerous failure (MTTFd)		MTTFd ≥ 100 [years] (314a)														
		DC = Medium, 97.6 [%]															
	Probability of dangerous Failure per Hour (PFH)		$PFH = 6.4 \times 10^{-9} [1/h]$														
Complian	ce with global standards	Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.															
Structure	(IP rating)	Natural cooling, open (IP20)				Force cooling, open (IP20)				Force cooling, open (IP20) (Note 5)				1		ral cod en (IP2	•
Close	3-phase power input				Possib	le (Note 3)				Not possible						-	
mounting	1-phase power input		Pos	sible (	Note 6)	Not possible				- Possib					sible (	Note 6)	
	Ambient temperature			Operat	tion: 0	°C to 5	5 °C (r	on-fre	ezing)	stora	ge: -20	°C to	65 °C	(non-fr	eezing	)	
	Ambient humidity				С	peration	n/stora	age: 5 °	%RH t	o 90 %	RH (n	on-con	densin	ıg)			
Environment	Ambience		- 1	Indoor	s (no d	direct s	unlight	); no c	orrosiv	e gas,	inflam	mable	gas, o	il mist	or dust		
	Altitude	2000 m or less above sea level (Note 18)															
	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y, and Z axes)															
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

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 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 permissible regenerative power [W] when a regenerative option is used.
- 4. When using the 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
- 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 the servo amplifiers at 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 supported by the servo amplifiers with software version A3 or later.
- 10. The command communication cycle depends on the servo system controller specifications and the number of axes connected.
- 11. The value in brackets is applicable when cooling fans (two units of 92 mm x 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 "Model Designation for 1-Axis Servo Amplifier" in this catalog for details
- 13. Use an external dynamic brake (option) 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 supported by the servo amplifiers with software version A8 or later.
- 15. This value is applicable when a 3-phase power supply is used.

- 16. This function is supported by the servo amplifiers with software version B4 or later.

  17. When a 1-phase 200 V AC to 240 V AC power supply is used, use the servo amplifiers at 75% or less of the effective load ratio.

  18. Refer to "MR-J4-B\_(-RJ) Servo Amplifier Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above
- 19. DC power input is supported by MR-J4-\_B-RJ with software version C2 or later and MR-J4-\_B-EG. For a connection example of power supply circuit with DC input, refer
- to "MR-J4-B\_(-RJ) Servo Amplifier Instruction Manual".

  20. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for details.

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

В	B-F
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Rotary Servo Motors

Linear Servo Motors

Direct Drive Motors

Options/Peripheral Equipment

**Product List** 

		I MR-J4(-RJ)	DU900B	DU11KB	DU15KB	DU22KB	DU30KB	DU37KB				
Compatib		er unit model		MR	-CV_	11.00.000	MR-CV_/I	MR-CR55K				
Output	Rated vol					170 V AC	T					
	Rated cur	rent [A]	54	68	87	126	174	204				
Main circu		upply input	N	resistance	e regeneration co	ne power regener nverter unit to the	drive unit.	nit/				
	Voltage/fr	Salare victor		1-ph	ase 200 V AC to	240 V AC, 50 Hz/6	60 Hz					
Control	Rated cur	- No. 4			0	.3						
circuit power	fluctuation	905 (200)	1-phase 170 V AC to 264 V AC									
supply input	fluctuation		±5% maximum									
		nsumption [W]		45								
	power sup	ply	24 V D			/: 0.3 A (including	and and the later of the later	ignals))				
Control m	CONTRACTOR OF THE PARTY OF THE			Sine-v		l/current control r	nethod					
	brake (Note 7				External c	ption (Note 4)						
communic	III/H comn cation cycl	e (Note 3)			0.222 ms, 0.44	4 ms, 0.888 ms						
Communi	ication fund	tion USB		Connect a pe	ersonal computer	(MR Configurator	2 compatible)					
Encoder of	output puls	е			Compatible (A/E	3/Z-phase pulse)						
Analog m	onitor		2 channels									
Fully closed loop MR-J4-DU_B			Two-wire type communication method									
control		MR-J4-DU_B-RJ		Two-v	vire/four-wire type	communication r	nethod					
Load-side encoder MR-J4-DU_B		MR-J4-DU_B	Mitsubishi Electric high-speed serial communication									
interface		MR-J4-DU_B-RJ	Mitsubish	ni Electric high-spe	eed serial commu	nication, A/B/Z-ph	nase differential ir	nput signal				
Servo fun	nctions		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, scale measurement function, J3 compatibility mode, super trace control, lost motion compensation function									
Protective	e functions		Overcurrent shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder 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 61800-5-2)						
	Standards (Note 6)	s certified by CB	EN ISO	13849-1 Category	y 3 PL e, IEC 615	08 SIL 3, EN 6206	61 SIL CL 3, EN 6	31800-5-2				
	Response	performance		8 ms c	or less (STO input	OFF → energy s	hut-off)					
Safaty	Test pulse	e input (STO) (Note 2)		Test pulse interv	al: 1 Hz to 25 Hz,	test pulse off time	e: 1 ms maximum	<u>,</u>				
Safety performance	Mean time failure (M	e to dangerous TTFd)			MTTFd ≥ 100	[years] (314a)						
	Diagnosti	c coverage (DC)			DC = Media	um, 97.6 [%]						
		of dangerous Hour (PFH)			PFH = 6.4	× 10 <sup>-9</sup> [1/h]						
Complian		bal standards	Refer to	"Compliance with	h Global Standard	ds and Regulation	s" on p. 55 in this	catalog.				
	(IP rating)			•	200	pen (IP20) (Note 1)						
		emperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)									
	Ambient h					o 90 %RH (non-c						
Environment Ambience				Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude					ove sea level (Note	Company of the Company of the Company	10-40-10-00-00-00-00-00-00-00-00-00-00-00-00				
		resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y, and Z axes)									
Mass [kg			9.9	9.9	15.2	15.2	21	21				

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. The command communication cycle depends on the servo system controller specifications and the number of axes connected.
- 4. Use an external dynamic brake (option) with the drive unit. 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. Refer to relevant "MR-CV\_MR-CR55K\_MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
- 6. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to "MR-J4-\_B\_(-RJ) Servo Amplifier Instruction Manual" for details
- 7. When using the dynamic brake, refer to "MR-CV\_MR-CR55K\_MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.

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

B B-RJ

Servo at	mnlifier mode	el MR-J4(-RJ)	60B4	100B4	200B4	350B4	500B4	700B4	11KB4	15KB4	22KB4				
012	Rated voltage		0004	10004	20004		hase 323 V		TIND4	TORDA	ZZINDT				
Output	Rated curre		1.5	2.8	5.4	8.6	14.0	17.0	32.0	41.0	63.0				
	Voltage/freq	-				1000000	100,000,000	AC, 50 Hz/6	5555-5555	0.000					
Main	Rated curre		1.4	2.5	5.1	7.9	10.8	14.4	23.1	31.8	47.6				
circuit power	Permissible						323 V AC to								
supply input	fluctuation Permissible	frequency				144 1 *10.000 Augist Ca	Antonia Antonia del								
input	fluctuation				10 mag		5% maximu		NAME OF THE OWNER OWNER OWNER OWNER OWNER OWNER OWNER OWNER						
	Voltage/freq			2000110	1-ph	ase 380 V A	AC to 480 V	AC, 50 Hz/6							
Control	Rated curre	1000 <b>1</b> 000	\]	0.1				0.	.2						
circuit power	Permissible fluctuation	voltage				1-phase	323 V AC to	528 V AC							
supply input	Permissible fluctuation	frequency				±	5% maximu	m							
	Power cons	umption [W	/]	30 45											
Interface	power supply	,		24 V DC ± 1	0% (require	d current ca	apacity: 0.3	A (including	CN8 conne	ector signals	())				
Control m	ethod				Sine-v	wave PWM	control/curre	ent control m	nethod						
Permissible	Built-in rege	IVA	/] 15	15	100	100	130 (Note 11)	170 (Note 11)	-	-	_				
The second second	External reg	enerative ndard [W	<b>/</b> ] -	-	*	-	-	-	500 (800)	850 (1300)	850 (1300)				
Dynamic I	accessory) (Note 2, 3, 8, 9) vnamic brake (Note 4)		-		Bu	ilt-in			Exte	rnal option	(Note 10)				
SSCNET III/H command					Du				LAIC	mai option	10 50				
communication cycle (Note 7)				0.222 ms, 0.444 ms, 0.888 ms											
Communication function USB				Connect a personal computer (MR Configurator2 compatible)											
Encoder output pulse						Compatib	le (A/B/Z-ph	ase pulse)							
Analog m	onitor						2 channels								
Fully closed loop MR-J4-B4					Т	wo-wire typ	e communic	cation metho	od						
control MR-J4-B4-RJ					Two-v	vire/four-wire	e type comr	nunication m	nethod						
Load-side	encoder	MR-J4-B4		Mitsubishi Electric high-speed serial communication											
interface		MR-J4-B4-RJ	Mit	subishi Elec	tric high-sp	eed serial co	ommunicatio	on, A/B/Z-ph	ase differer	ntial input si	gnal				
Servo fun	ctions		tough driv	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 function (Note 13)											
Protective	functions		motor	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	l safety			STO (IEC/EN 61800-5-2)											
	Standards c	ertified by CB	E	N ISO 13849	-1 Category	/ 3 PL e, IE	C 61508 SIL	3, EN 6206	1 SIL CL 3	, EN 61800-	-5-2				
	Response p	ACC 44 TO 10		97 to 20	1-211 02100000		Maria and the second and the	→ energy sl		**************************************					
Safety		iput (STO) (Note 6)		Test	pulse interv	al: 1 Hz to 2	25 Hz, test p	ulse off time	: 1 ms max	kimum					
performance	Mean time to failure (MTT	o dangerous Fd)				MTTFd	≥ 100 [years	s] (314a)							
	Diagnostic o	overage (DC)				DC =	Medium, 97	7.6 [%]							
	Probability of	o o				PFH	= 6.4 × 10	<sup>9</sup> [1/h]							
Complian	Failure per Hour (PFH)  Compliance with global standards			efer to "Con	npliance wit	h Global Sta	andards and	Regulation	s" on p. 55	in this catal	og.				
	(IP rating)		Natural co	Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.  Natural cooling, open   Force cooling, open   Force cooling, open (IP20) (Note 5)											
Close mo	Close mounting			(IP20) (IP20) Not possible											
21008 1110	Ambient ten	perature	-	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)											
	Ambient hur		Operation/storage: 5 %RH to 90 %RH (non-condensing)												
Environment	Ambience	y		Indoors (r				, inflammab		100					
- IIVII OI III I I III	Altitude			1110015 (1				ea level (Note 1		or or dust					
	Vibration res	sistance			200 10 10 10 10 10		010.000 90.000 0.000	ons of X, Y, a	TOTAL STREET	<b>)</b>					
Mass	· ibradion red	[kg	1.7	1.7	2.1	3.6	4.3	6.5	13.4	13.4	18.2				
		ľνέ	1.7	1.7		5.0	7.0	0.0	10.7	10.7	10.2				

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



B B-RJ

- 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 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 permissible regenerative power [W] when a regenerative option is used.
  - 4. When using the 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
  - 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 servo system controller specifications and the number of axes connected.
  - 8. The value in brackets is applicable when cooling fans (two units of 92 mm x 92 mm, minimum air flow: 1.0 m³/min) are installed, and then [Pr. PA02] is changed.
  - 9. Servo amplifiers without an enclosed regenerative resistor are also available. Refer to "Model Designation for 1-Axis Servo Amplifier" in this catalog for details
  - 10. Use an external dynamic brake (option) 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.
  - 12. This function is supported by the servo amplifiers with software version A8 or later.
  - 13. This function is supported by the servo amplifiers with software version B4 or later.
  - 14. Refer to "MR-J4\_B\_(-RJ) Servo Amplifier Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea
  - 15. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to "MR-J4-B\_(-RJ) Servo Amplifier Instruction Manual" for details.

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

B B-RJ

	A CONTRACTOR OF THE PARTY OF TH	MR-J4(-RJ)	DU900B4	DU11KB4	DU15KB4	DU22KB4	DU30KB4	DU37KB4	DU45KB4	DU55KB4				
Compatib	Transaction of the second	er unit model		MR-	CV_4	0.1	000 1/ 40	MR-CV_4/N	MR-CR55K4					
Output	Rated vol		05	00			323 V AC	400	404	110				
	Rated cui	rrent [A]	25	32 Main circu	41	63	87	102 eneration cor	131	143				
Main circ	1	upply input			esistance reg	eneration cor	nverter unit to	the drive un						
	Voltage/fr				1-phase 3	380 V AC to 4		Hz/60 Hz						
Control	Rated cui	2000 (2012 <b>1</b> 00 (				0	.2							
circuit power	Permissib fluctuation	ole voltage n			1-	ohase 323 V	AC to 528 V	AC						
supply nput	Permissib fluctuation	ole frequency n				±5% m	aximum							
	Power co	nsumption [W]				4	5							
Interface	power sup	ply	24	V DC ± 10%	(required cu	rrent capacity	r: 0.3 A (inclu	ding CN8 cor	nector signa	ls))				
Control method					Sine-wave	PWM contro	l/current con	trol method						
Dynamic brake (Note 7)						External o	ption (Note 4)							
	III/H comn				0.	222 ms, 0.44	4 ms, 0.888 ı	ms						
	ication fund			Con	nect a persor	al computer	(MR Configu	rator2 compa	tible)					
101	output puls					mpatible (A/E								
Analog m		<del></del>				2 cha								
Fully closed loop MR-J4-DU_B4		MR-J4-DU B4		Two-wire type communication method										
control MR-J4-DU B4-RJ				Two-wire/four-wire type communication method										
_oad-side encoder MR-J4-DU_B4				0.0000000000000000000000000000000000000			mmunication							
interface			Mitsu	bishi Electric	high-speed s	serial commu	nication, A/B/	Z-phase diffe	rential input	signal				
Servo fun	nctions		tough driv	e function, dri ver monitoring	ve recorder fu function, mas	nction, tighter ster-slave ope	ning & press-feration function	st filter, auto t fit control, mad n, scale meas on compensa	chine diagnos surement func	is function,				
Protective	e functions		Overcurrent shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encode 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/EN 61800-5-2)											
		s certified by CB	EN I	SO 13849-1	Category 3 P			62061 SIL CI	_3, EN 61800	0-5-2				
		e performance			8 ms or les	s (STO input	OFF → ener	av shut-off)						
		e input (STO) (Note 2)		Test pul	10 10 10 10 10 10		A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	time: 1 ms n	naximum					
Safety performance	Moon tim	e to dangerous		To constraint Posterior	2.00-0-2-0-0	/ITTFd ≥ 100	1.0 See Sec. 78.0 Sec. Sec. Sec. Sec. Sec. Sec. Sec. Sec.							
		c coverage (DC)				DC = Mediu	ım, 97.6 [%]							
	Probability	of dangerous					× 10 <sup>-9</sup> [1/h]							
Compliance with global standards			Ref	er to "Compli	ance with Glo	bal Standard	ls and Regula	ations" on p. :	55 in this cata	alog.				
Structure (IP rating)						rce cooling, c	ALCOHOLOGIC CONTRACTOR AND DESCRIPTION OF THE PERSON OF TH			<u> </u>				
	1	emperature		Operation: 0		-		°C to 65 °C	(non-freezing	)				
	Ambient I			- 5				on-condensin		,				
Environmen	t Ambience					0	the property of the second	mable gas, o	07	t				
	Altitude					m or less ab				X-1				
	E0000000000000000000000000000000000000	resistance		5.9				· ζ, Υ, and Z ax	es)					
Mass		[kg]	9.9	9.9	15.2	15.2	16	16	21	21				

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. The command communication cycle depends on the servo system controller specifications and the number of axes connected.
- 4. Use an external dynamic brake (option) with the drive unit. 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. Refer to "MR-CR55K\_ MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
- 6. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output.
- Refer to "MR-J4-B\_(-RJ) Servo Amplifier Instruction Manual" for details.

  7. When using the dynamic brake, refer to "MR-CV\_MR-CR55K\_MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.

## MR-J4-DU\_B4-RJ100 (SSCNET III/H Interface) Specifications (400 V)

Rot
tary Se
rvo Mot

Linear Servo Motors

Direct Drive Motors

Options/Peripheral Equipment

Dri	ive unit model MR-J4	DU45KB4-RJ100	DU55KB4-RJ100						
	e power regeneration	MR-CV5	5K4 (Note 5)						
converter u									
Output	Rated voltage	3-phase 3							
	Rated current [A]	131	143						
Main circui	it power supply input	Main circuit power is supplied from the power							
	Voltage/frequency	1-phase 380 V AC to 4							
Control	Rated current [A]	0.	2						
circuit power	Permissible voltage fluctuation	1-phase 323 V /	AC to 528 V AC						
supply input	Permissible frequency fluctuation	±5% ma	±5% maximum						
	Power consumption [W]	4.	5						
Interface p	ower supply	24 V DC ± 10% (required current capacity	: 0.3 A (including CN8 connector signals))						
Control me	ethod	Sine-wave PWM control	/current control method						
Dynamic B	Brake (Note 7)	External o	ption (Note 4)						
	II/H command ation cycle (Note 3)	0.222 ms, 0.444	4 ms, 0.888 ms						
	cation function USB	Connect a personal computer (MR Configurator2 compatible)							
Encoder or	utput pulse	Compatible (A/B	State of the Control						
Analog mo		2 cha	CONTRACTOR OF THE CONTRACTOR O						
	ed loop control	Not con	Minute Carl						
Servo func	·	Robust filter, auto tuning, drive recorder function, function, master-slave operation function, su	tightening & press-fit control, machine diagnosis						
Protective	functions	Overcurrent shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection							
Functional	safety	STO (IEC/EN 61800-5-2)							
	Standards certified by CB	EN ISO 13849-1 Category 3 PL e, IEC 6150	08 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2						
	Response performance	8 ms or less (STO input	OFF → energy shut-off)						
0-1-1-	Test pulse input (STO) (Note 2)	Test pulse interval: 1 Hz to 25 Hz,	test pulse off time: 1 ms maximum						
Safety performance	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100	#####################################						
	Diagnostic coverage (DC)	DC = Mediu	m, 97.6 [%]						
	Probability of dangerous Failure per Hour (PFH)	PFH = 6.4							
Complianc	e with global standards	Refer to "Compliance with Global Standard	s and Regulations" on p. 55 in this catalog.						
Structure (		Force cooling, o							
(	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing),	ACCOUNT AND CONTRACT NO.						
	Ambient humidity	Operation/storage: 5 %RH to							
Environment		Indoors (no direct sunlight); no corrosive							
	Altitude	2000 m or less above sea level (Note 8)							
	DO THE PROPERTY OF THE PROPERT	7000 W W 10 10 000000 15 00000 1000 1000	29 P29 V2000 200 V2000 V000 V000 V000 V000 V						
	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (d	Iractions of X Y and / avael						

Notes: 1. Terminal blocks are excluded.

- 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.
   The command communication cycle depends on the servo system controller specifications and the number of axes connected.
- 4. Use one external dynamic brake (option) per drive unit. 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 power regeneration converter unit is required for each drive unit.
- 6. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to "MR-CV\_MR-CR55K\_MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for details.

  7. When using the dynamic brake, refer to "MR-J4-DU\_B4-RJ100 Drive Unit Instruction Manual" for the permissible load to motor inertia ratio
- 8. Refer to "MR-CR55K\_ MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

#### **Compatible Controllers**

Motion controller model	Operation system	Note
Q172DSCPU	SW8DNC-SV22S87QL	Special OS (Note 1)
Q173DSCPU	SW8DNC-SV22S87QJ	Special OS (Note 1)

Notes: 1. Special motion operating system is required. Ultra-large capacity servo motors cannot be driven with standard motion operating system. Contact your local sales office for more details.

## MR-CV Power Regeneration Converter Unit Specifications (200 V)

B B-RJ

Power reger	neration converter unit model M	R-CV_	11K	18K	30K	37K	45K	55K				
Outout	Rated voltage				270 V DC 1	o 324 V DC						
Output	Rated current	[A]	41	76	144	164	198	238				
	Voltage/frequency (Note 1)			3-ph	ase 200 V AC to	240 V AC, 50 Hz	/60 Hz					
Main circuit	Rated current	[A]	35	65	107	121	148	200				
power supply	Permissible voltage fluctuation			3-phase 170 V AC to 264 V AC								
input	Permissible frequency fluctuation				±3% m	aximum						
	Voltage/frequency			1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz								
Control	Rated current	[A]			0	.2						
circuit power supply input	Permissible voltage fluctuation			1-phase 170 V AC to 264 V AC								
	Permissible frequency fluctuation			±3% maximum								
	Power consumption	[W]		30								
Interface	power supply			24 V D	C ± 10% (required	current capacity	y: 0.35 A)					
Capacity		[kW]	11	18	30	37	45	55				
Protective	e functions	,	MC drive circ	cuit error protecti	on, open-phase d erheat error prote	etection, inrush o	nerative overvoltag current suppression error protection,	n circuit error				
Continuo	us rating	[kW]	7.5	11	20	22	22	37				
	eous maximum rating	[kW]	39	60	92	101	125	175				
	nce with global standards			"Compliance wit	h Global Standard	ds and Regulatio	ns" on p. 55 in this	-50/8/2/95/00				
	(IP rating)	<u> </u>				open (IP20) (Note 2)		<u> </u>				
	Ambient temperature		Oper	ation: 0 °C to 55	°C (non-freezing)	, storage: -20 °C	to 65 °C (non-free	ezing)				
	Ambient humidity				/storage: 5 %RH t			- 0/				
Environment	Ambience		Indo	ors (no direct sui	nlight); no corrosiv	ve gas, inflamma	ble gas, oil mist or	dust				
CONTRACTOR OF THE PARTY OF THE	Altitude				2000 m or less ab							
			5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)									
	Vibration resistance			5.9 m/s <sup>2</sup> at	10 Hz to 55 Hz (d	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 power regeneration converter unit is operated within the specified power supply voltage and frequency.

2. Terminal blocks are excluded.

3. Refer to "MR-CV\_ MR-CR55K\_ MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the restrictions when using the power regeneration converter units at altitude exceeding 1000 m and up to 2000 m above sea level.

B B-RJ B-RJ100

Servo Amplifiers

# MR-CV Power Regeneration Converter Unit Specifications (400 V)

Power rege	neration converter unit model MR	-CV_	11K4	18K4	30K4	37K4	45K4	55K4	75K4			
Output	Rated voltage				513	3 V DC to 648 V	DC					
Output	Rated current	[A]	21	38	72	82	99	119	150			
	Voltage/frequency (Note 1)				3-phase 380 V	AC to 480 V A	C, 50 Hz/60 Hz	2				
Main circuit	Rated current	[A]	18	35	61	70	85	106	130			
power supply	Permissible voltage fluctuation				3-phase	e 323 V AC to 5	28 V AC					
input	Permissible frequency fluctuation					±3% maximum						
	Voltage/frequency				1-phase 380 V	AC to 480 V A	C, 50 Hz/60 Hz	2				
Control	Rated current	[A]	0.1									
supply input	Permissible voltage fluctuation			1-phase 323 V AC to 528 V AC								
	Permissible frequency fluctuation		±3% maximum									
	Power consumption	[W]	30									
Interface	Interface power supply			24	V DC ± 10% (	required curren	t capacity: 0.35	5 A)				
Capacity	]	kW]	11	18	30	37	45	55	75			
Protective	e functions		MC drive	circuit error pro	otection, open- ce overheat err	re error protection chase detection or protection, co electronic therm	, inrush curren poling fan error	t suppression o	ircuit error			
Continuo	us rating [	kW]	7.5	11	20	25	25	55	55			
Instantan	eous maximum rating [	kW]	39	60	92	101	125	175	180			
Complian	nce with global standards		Refer	to "Complianc	e with Global S	Standards and F	Regulations" on	p. 55 in this ca	atalog.			
Structure	(IP rating)				Force co	ooling, open (IP	20) (Note 2)					
	Ambient temperature		O	peration: 0 °C t	o 55 °C (non-fr	eezing), storag	e: -20 °C to 65	°C (non-freezi	ng)			
	Ambient humidity			Opera	ation/storage: 5	%RH to 90 %F	RH (non-conde	nsing)				
Environmen	Ambience		In	doors (no direc	ct sunlight); no	corrosive gas, i	nflammable ga	ıs, oil mist or dı	ıst			
	Altitude				2000 m or	less above sea	a level (Note 3)					
	Vibration resistance	5.9 m/s <sup>2</sup> at 10 Hz to 55 Hz (directions of X, Y and Z axes)										
	Mass [kg]											

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 power regeneration converter unit is operated within the specified power supply voltage and frequency.

2. Terminal blocks are excluded.

Refer to "MR-CV\_MR-CR55K\_MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the restrictions when using the power regeneration converter units at altitude exceeding 1000 m and up to 2000 m above sea level.

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

B B-RJ A A-RJ

Resistance re	egeneration converter unit model MF	R-CR_	55K	55K4						
0.44	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 supply	Permissible voltage fluctuation		3-phase 170 V AC to 264 V AC	3-phase 323 V AC to 528 V AC						
input	Permissible frequency fluctuation		±5% ma	aximum						
	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						
circuit power	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC	1-phase 323 V AC to 528 V AC						
input f	Permissible frequency fluctuation		±5% ma	aximum						
	Power consumption	[W]	4:	5						
Interface	power supply		24 V DC ± 10% (required	current capacity: 0.15 A)						
Capacity		[kW]	55	5						
	itive power egenerative option is use	d)	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	700	Regenerative overvoltage shut-off, overload shut-of undervoltage protection, instanta	, , , , , , , , , , , , , , , , , , , ,						
Continuo	us rating	[kW]	5.	5						
Complian	ce with global standards		Refer to "Compliance with Global Standard	s and Regulations" on p. 55 in this catalog.						
Structure	(IP rating)		Force cooling, or	pen (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: 5 %RH to	o 90 %RH (non-condensing)						
Environment	Environment Ambience		Indoors (no direct sunlight); no corrosive	e gas, inflammable gas, oil mist or dust						
	Altitude		2000 m or less above sea level (Note 3)							
	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	22						

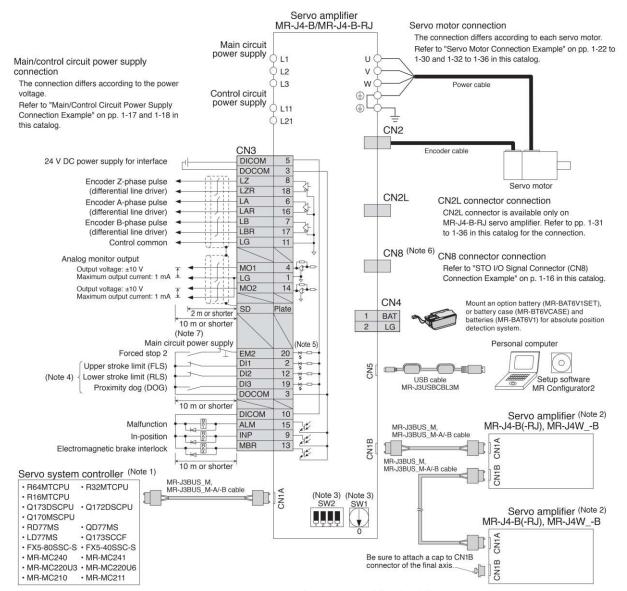
Notes: 1. Rated output and speed of a rotary servo motor are applicable when the resistance regeneration converter unit is operated within the specified power supply voltage and

<sup>2.</sup> Terminal blocks are excluded.

3. Refer to "MR-CR55K\_ MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for the restrictions when using the resistance regeneration converter unit at altitude exceeding 1000 m and up to 2000 m above sea level.

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

B B-RJ



Notes: 1. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller.

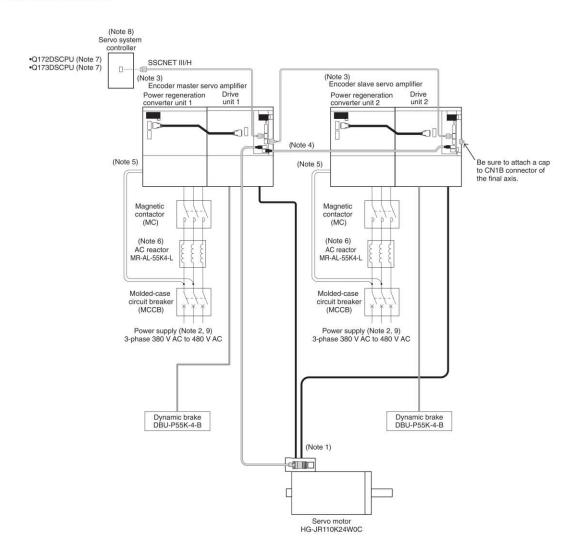
- 2. Connections for the second and following axes are omitted.
- 3. Up to 64 axes are set with a combination of an axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-3 and SW2-4). Note that the number of the connectable axes depends on the servo system controller specifications
- 4. Devices can be assigned for DI1, DI2 and DI3 with servo system 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. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off. 8. This standard wiring diagram is common for 200 V AC, 100 V AC and 400 V AC type servo amplifiers.



## MR-J4-DU\_B4-RJ100 System Configurations

B-RJ100

#### ●For HG-JR110K24W0C



- Notes: 1. Connect the grounding wire of the servo motor only to the first drive unit. If the grounding wire is connected to two drive units, circulating current may flow to the grounding wire, depending on the wiring situation. However, if the grounding wire has to be connected to the two drive units for safety reasons, be sure to twist the U, V and W wires of each drive unit.
  - 2. For power supply, a molded-case circuit breaker, an AC reactor (MR-AL-55K4-L), and a magnetic contactor are required per power regeneration converter unit.
  - 3. For SSCNET III/H connection, connect the encoder master servo amplifier closest to the Motion controller and then the encoder slave servo amplifier. Connect the encoder master servo amplifier and encoder slave servo amplifier in series on the same SSCNET III/H system.
  - 4. Keep the encoder cable length between two drive units within 5 m.  $\,$
  - 5. Simultaneously turn on the control circuit power supplies of all the servo amplifiers (power regeneration converter units and drive units).
  - 6. The AC reactor may be installed between the power regeneration converter unit and the magnetic contactor.
  - 7. Special motion operating system is required. Refer to "Compatible Controllers" on p. 1-50 in this catalog. Contact your local sales office for more details.
  - 8. Create a sequence that stops the servo motor with the controller forced stop when an alarm occurs.
  - 9. All the servo amplifiers (power regeneration converter units and drive units) must be powered from a single power source. If power is supplied from different power sources, the output may be different between the encoder master servo amplifier and the encoder slave servo amplifier, causing the servo motor to be driven improperly.

Rotary Servo Motors

Linear Servo Motors

**Direct Drive Motors** 

Options/Peripheral

LVS/Wires

**Product List** 

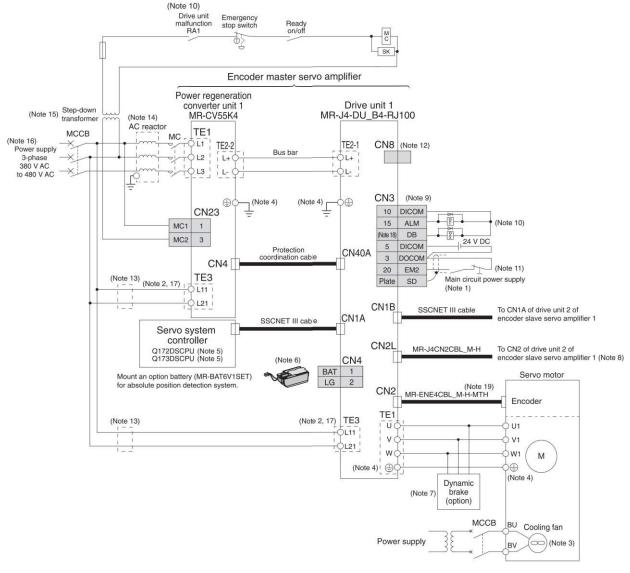
Cautions

- Notes: 1. Connect the grounding wire of the servo motor only to the first drive unit. If the grounding wire is connected to two or more drive units, circulating current may flow to the grounding wire, depending on the wiring situation. However, if the grounding wire has to be connected to the two or more drive units for safety reasons, be sure to twist the U, V and W wires of each drive unit.
  - 2. For power supply, a molded-case circuit breaker, an AC reactor (MR-AL-55K4-L), and a magnetic contactor are required per power regeneration converter unit.
  - 3. For SSCNET III/H connection, connect the encoder master servo amplifier closest to the Motion controller and then the encoder slave servo amplifiers. Connect the encoder master servo amplifier and encoder slave servo amplifiers in series on the same SSCNET III/H system.
  - Keep the encoder cable length between two drive units within 5 m.
  - 5. Simultaneously turn on the control circuit power supplies of all the servo amplifiers (power regeneration converter units and drive units).
  - 6. The AC reactor may be installed between the power regeneration converter unit and the magnetic contactor.
  - 7. Special motion operating system is required. Refer to "Compatible Controllers" on p. 1-50 in this catalog. Contact your local sales office for more details
  - 8. Create a sequence that stops the servo motor with the controller forced stop when an alarm occurs.
  - 9. All the servo amplifiers (power regeneration converter units and drive units) must be powered from a single power source. If power is supplied from different power sources, the output may be different between the encoder master servo amplifier and the encoder slave servo amplifiers, causing the servo motor to be driven improperly.

#### MR-J4-DU\_B4-RJ100 Standard Wiring Diagram Example

B-RJ100

Connection example for encoder master servo amplifier

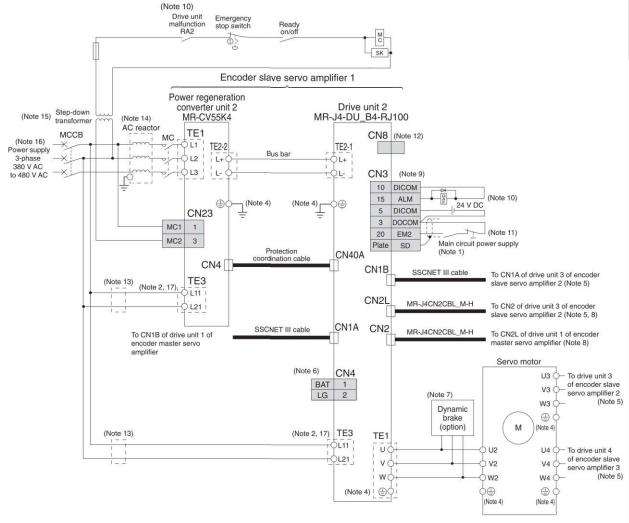


- Notes: 1. To prevent an unexpected restart of the drive unit, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
  - 2. The phases of the power supply connected to L11 and L21 on the power regeneration converter unit and the drive unit must always match the phases connected to L1 and L2. An incorrect connection may damage the drive unit and the power regeneration converter unit.
  - 3. Be sure to supply power to the cooling fan terminals. For specifications of the cooling fan power supply and how to detect a failure, refer to "Servo Motor Instruction Manual (Vol. 3)".
  - 4. Connect the grounding wire of the servo motor to the drive unit protective earth (PE) terminal. Put the grounding wires of the drive unit and the power regeneration converter unit together into one on the cabinet protective earth (PE) terminal, and then connect to ground. Connect the grounding wire of the servo motor only to the drive unit of the encoder master servo amplifier. If the grounding wire is connected to two or more drive units, circulating current may flow to the grounding wire, depending on the wiring situation. However, if the grounding wire has to be connected to the two or more drive units for safety reasons, be sure to twist the U, V and W wires of each drive unit.
  - 5. Special motion operating system is required. Refer to "Compatible Controllers" on p. 1-50 in this catalog. Contact your local sales office for more details
  - 6. For absolute position detection system, connect an option battery only to the drive unit of the encoder master servo amplifier. Do not connect the battery to the drive units of the encoder slave servo amplifiers.
  - 7. Use an external dynamic brake (option) with the drive unit. 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 "MR-J4-DU\_B4-RJ100 Drive Unit Instruction Manual" when wiring the dynamic brake.
  - 8. Encoder signals are distributed to all the drive units in the system via each drive unit.
  - 9. This is for sink wiring. Source wiring is also possible.
  - 10. Create a sequence that shuts off the main circuit power when an alarm occurs.
  - 11. Create a circuit to turn on or off EM2 (Forced stop 2) of the drive units of the encoder master servo amplifier and encoder slave servo amplifiers simultaneously.
  - 12. Be sure to attach a short-circuit connector supplied with the drive unit when the STO function is not used.
  - 13. Install an overcurrent protection device (molded-case circuit breaker, fuse, etc.) to protect the branch circuit. Refer to "MR-CV\_ MR-CR55K\_ MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for details.
  - 14. The AC reactor may be installed between the power regeneration converter unit and the magnetic contactor.
  - 15. A step-down transformer is required if coil voltage of the magnetic contactor is in 200 V class.
  - 16. All the servo amplifiers (power regeneration converter units and drive units) must be powered from a single power source. If power is supplied from different power sources, the output may be different between the encoder master servo amplifier and the encoder slave servo amplifiers, causing the servo motor to be driven improperly.
  - 17. Simultaneously turn on the control circuit power supplies of all the servo amplifiers (power regeneration converter units and drive units).
  - 18. The dynamic brake must be controlled by the drive unit of the encoder master servo amplifier. Assign DB (Dynamic brake interlock) with [Pr. PD07] to [Pr. PD09].
  - 19. The encoder cable has thermistor signal wires. No additional wiring is required for the thermistor signal.

B-RJ100

## MR-J4-DU\_B4-RJ100 Standard Wiring Diagram Example

● Connection example for encoder slave servo amplifier (Note 3)



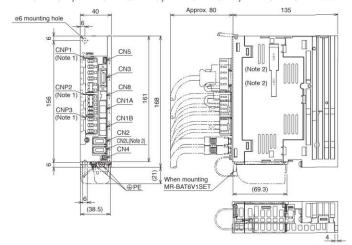
Notes: 1. To prevent an unexpected restart of the drive unit, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.

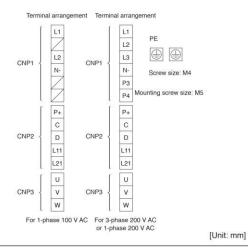
- 2. The phases of the power supply connected to L11 and L21 on the power regeneration converter unit and the drive unit must always match the phases connected to L1 and L2. An incorrect connection may damage the drive unit and the power regeneration converter unit.
- 3. This connection is an example for the encoder slave servo amplifier 1.
- 4. Connect the grounding wire of the servo motor to the drive unit protective earth (PE) terminal. Put the grounding wires of the drive unit and the power regeneration converter unit together into one on the cabinet protective earth (PE) terminal, and then connect to ground. Connect the grounding wire of the servo motor only to the drive unit of the encoder master servo amplifier. If the grounding wire is connected to two or more drive units, circulating current may flow to the grounding wire, depending on the wiring situation. However, if the grounding wire has to be connected to the two or more drive units for safety reasons, be sure to twist the U. V and W wires of each drive unit.
- 5. This diagram is applicable when HG-JR150K24W0C, HG-JR180K24W0C, HG-JR200K24W0C, or HG-JR220K24W0C servo motor is used. For HG-JR110K24W0C, connections to drive unit 3 and 4 are not required.
- 6. For absolute position detection system, connect an option battery only to the drive unit of the encoder master servo amplifier. Do not connect the battery to the drive units of the encoder slave servo amplifiers.
- 7. Use an external dynamic brake (option) with the drive unit. 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 "MR-J4-DU\_B4-RJ100 Drive Unit Instruction Manual" when wiring the dynamic brake.
- 8. Encoder signals are distributed to all the drive units in the system via each drive unit.
- This is for sink wiring. Source wiring is also possible.

  Create a sequence that shuts off the main circuit power when an alarm occurs.
- 11. Create a circuit to turn on or off EM2 (Forced stop 2) of the drive units of the encoder master servo amplifier and encoder slave servo amplifiers simultaneously.
- 11. Create a circuit to turn on or or EMZ (Forced stop 2) of the drive units of the encoder master servo ampliner and encoder slave servo ampliners simultaneously.
- 12. Be sure to attach a short-circuit connector supplied with the drive unit when the STO function is not used.
- 13. Install an overcurrent protection device (molded-case circuit breaker, fuse, etc.) to protect the branch circuit. Refer to "MR-CV\_ MR-CR55K\_ MR-J4-DU\_B\_(-RJ) MR-J4-DU\_A\_(-RJ) Instruction Manual" for details.
- 14. The AC reactor may be installed between the power regeneration converter unit and the magnetic contactor.
- 15. A step-down transformer is required if coil voltage of the magnetic contactor is in 200 V class.
- 16. All the servo amplifiers (power regeneration converter units and drive units) must be powered from a single power source. If power is supplied from different power sources, the output may be different between the encoder master servo amplifier and the encoder slave servo amplifiers, causing the servo motor to be driven improperly.
- 17. Simultaneously turn on the control circuit power supplies of all the servo amplifiers (power regeneration converter units and drive units).

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

- ●MR-J4-10B, MR-J4-10B-RJ, MR-J4-10B1, MR-J4-10B1-RJ
- •MR-J4-20B, MR-J4-20B-RJ, MR-J4-20B1, MR-J4-20B1-RJ

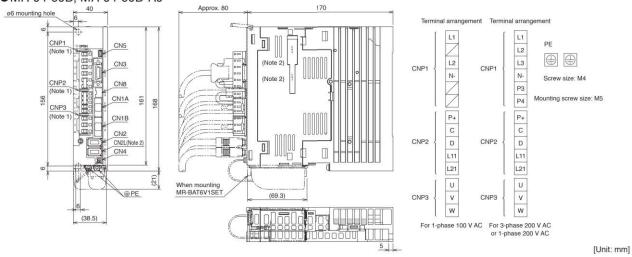




B B-RJ

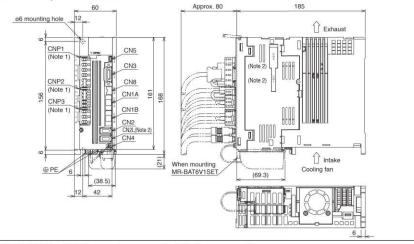
•MR-J4-40B, MR-J4-40B-RJ, MR-J4-40B1, MR-J4-40B1-RJ

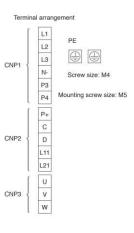
●MR-J4-60B, MR-J4-60B-RJ



●MR-J4-70B, MR-J4-70B-RJ

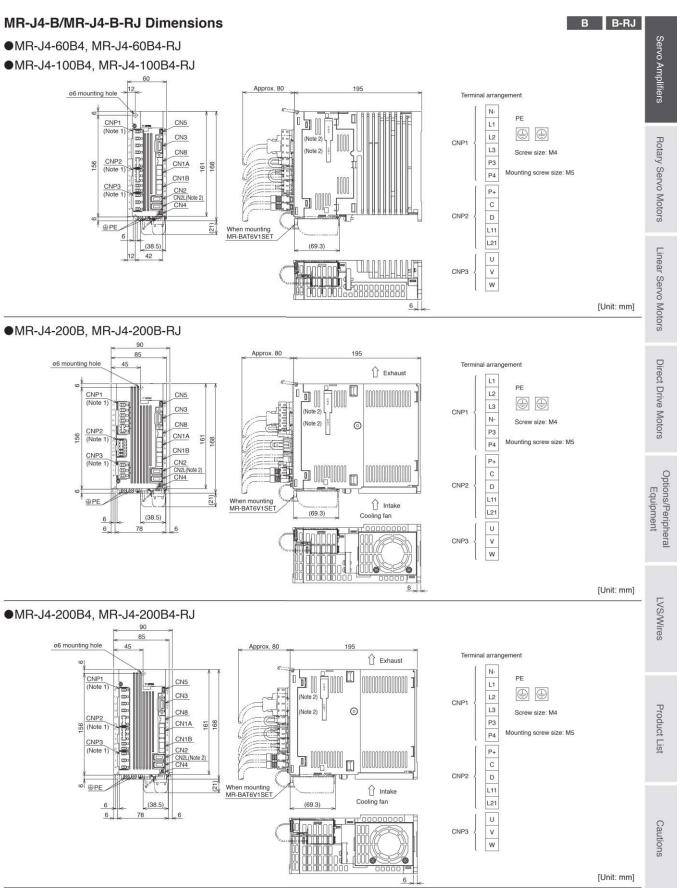
•MR-J4-100B, MR-J4-100B-RJ





[Unit: mm]

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

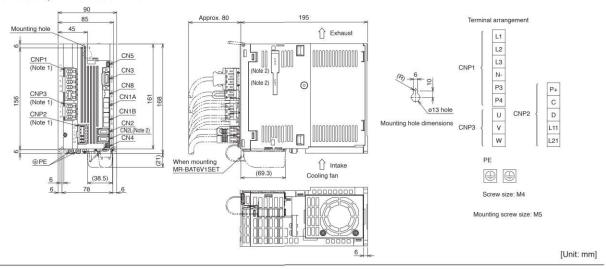


Notes: 1. CNP1, CNP2 and CNP3 connectors are supplied with the servo amplifier.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

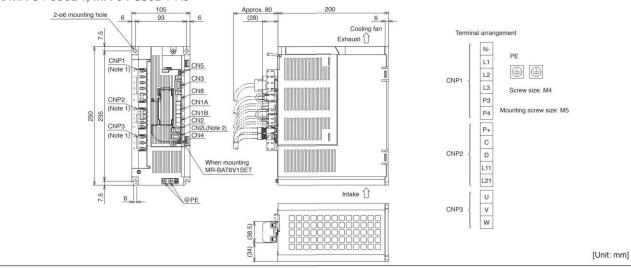
#### MR-J4-B/MR-J4-B-RJ Dimensions

#### B B-RJ

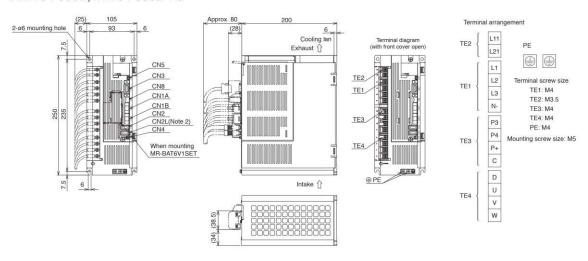
#### ●MR-J4-350B, MR-J4-350B-RJ



#### ●MR-J4-350B4, MR-J4-350B4-RJ

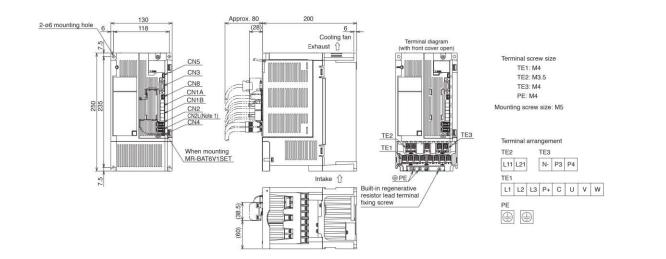


#### ●MR-J4-500B, MR-J4-500B-RJ



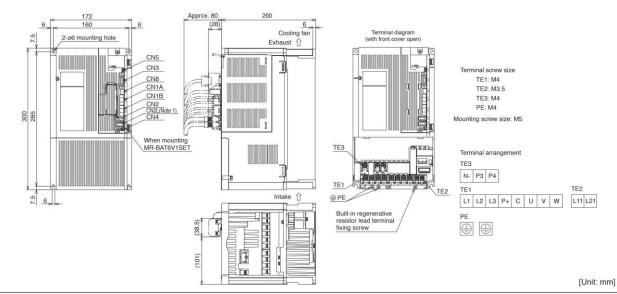
[Unit: mm]

●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.

Rotary Servo Motors

Linear Servo Motors

**Direct Drive Motors** 

Options/Peripheral Equipment

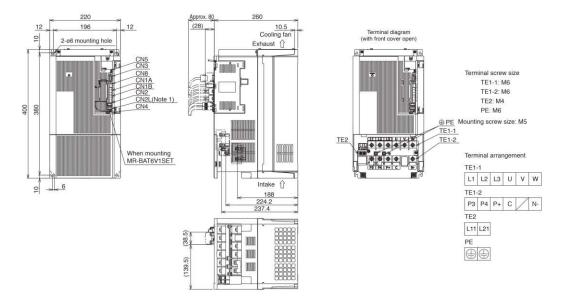
**LVS/Wires** 

Product List

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

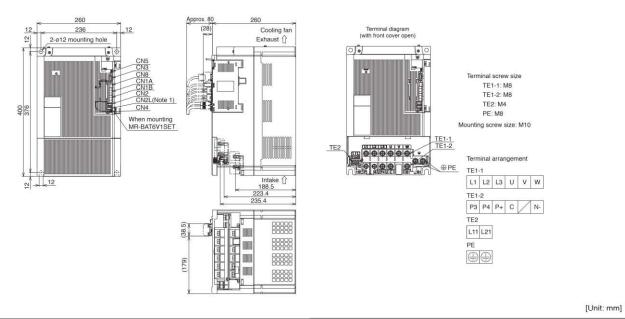
B B-RJ

- ●MR-J4-11KB, MR-J4-11KB-RJ, MR-J4-11KB4, MR-J4-11KB4-RJ
- •MR-J4-15KB, MR-J4-15KB-RJ, MR-J4-15KB4, MR-J4-15KB4-RJ



[Unit: mm]

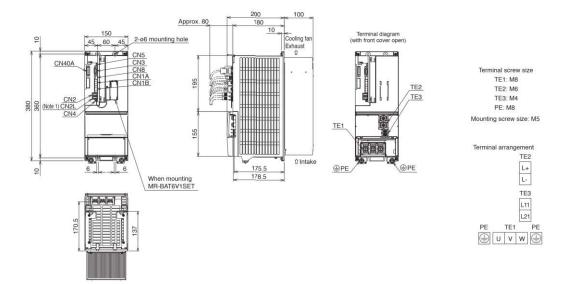
#### ●MR-J4-22KB, MR-J4-22KB-RJ, MR-J4-22KB4, MR-J4-22KB4-RJ



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

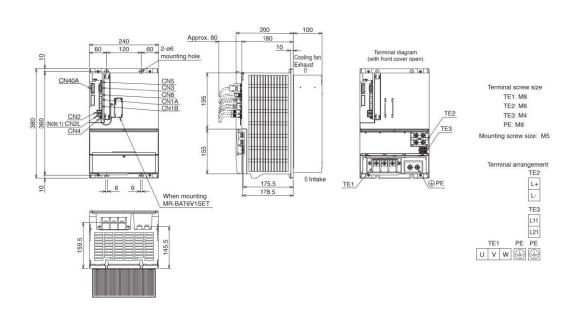
●MR-J4-DU900B, MR-J4-DU900B-RJ, MR-J4-DU900B4, MR-J4-DU900B4-RJ

●MR-J4-DU11KB, MR-J4-DU11KB-RJ, MR-J4-DU11KB4, MR-J4-DU11KB4-RJ



[Unit: mm]

- ●MR-J4-DU15KB, MR-J4-DU15KB-RJ, MR-J4-DU15KB4, MR-J4-DU15KB4-RJ
- ●MR-J4-DU22KB, MR-J4-DU22KB-RJ, MR-J4-DU22KB4, MR-J4-DU22KB4-RJ



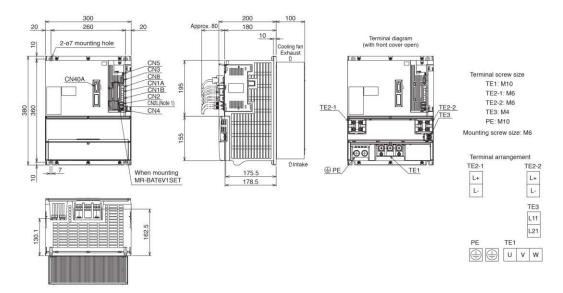
[Unit: mm]

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

#### MR-J4-DU\_B/MR-J4-DU\_B-RJ/MR-J4-DU\_B4-RJ100 Dimensions

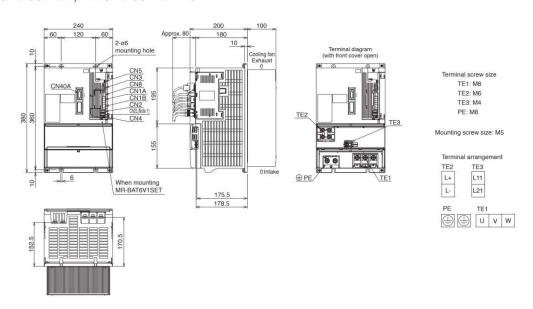
B B-RJ B-RJ100

- •MR-J4-DU30KB, MR-J4-DU30KB-RJ
- •MR-J4-DU37KB, MR-J4-DU37KB-RJ
- ●MR-J4-DU45KB4, MR-J4-DU45KB4-RJ, MR-J4-DU45KB4-RJ100
- ●MR-J4-DU55KB4, MR-J4-DU55KB4-RJ, MR-J4-DU55KB4-RJ100



[Unit: mm]

- ●MR-J4-DU30KB4, MR-J4-DU30KB4-RJ
- •MR-J4-DU37KB4, MR-J4-DU37KB4-RJ

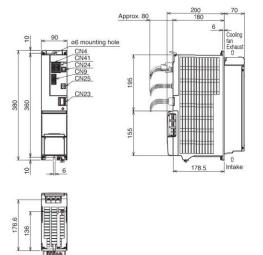


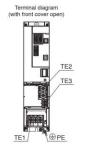
[Unit: mm]

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

MR-CV\_ Power Regeneration Converter Unit Dimensions

- ●MR-CV11K, MR-CV11K4
- ●MR-CV18K, MR-CV18K4



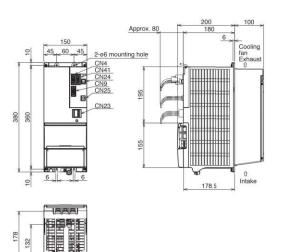


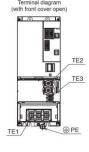
TE3: M4 PE: M5 Mounting screw size: M5 L+ TE3 L11 L21 TE1 L1 L2 L3

Terminal screw size TE1: M5 TE2: M6

[Unit: mm]

- ●MR-CV30K, MR-CV30K4
- •MR-CV37K, MR-CV37K4
- ●MR-CV45K, MR-CV45K4







Terminal screw size TE1: M8

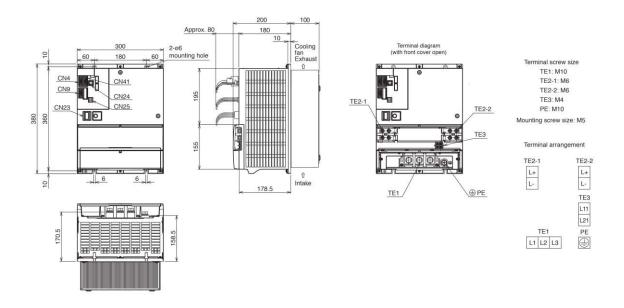
TE2: M6 TE3: M4

[Unit: mm]

## MR-CV\_ Power Regeneration Converter Unit Dimensions

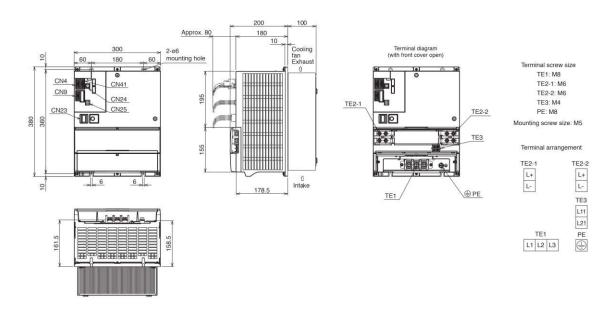
B B-RJ B-RJ100

●MR-CV55K



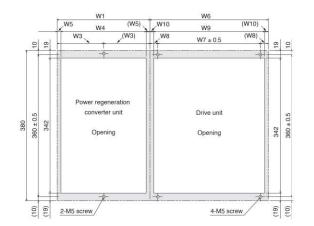
[Unit: mm]

- ●MR-CV55K4
- ●MR-CV75K4

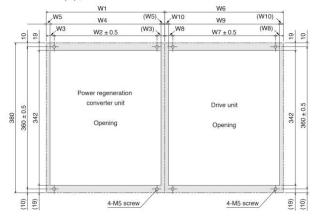


[Unit: mm]

For MR-CV11K(4) and MR-CV18K(4)



For MR-CV30K(4), MR-CV37K(4), MR-CV45K(4), MR-CV55K(4), and MR-CV75K4



Dower regeneration converter unit	Variable dimensions						
Power regeneration converter unit	W1	W2	W3	W4	W5		
MR-CV11K(4), MR-CV18K(4)	90	-	45	82	4		
MR-CV30K(4), MR-CV37K(4), MR-CV45K(4)	150	60	45	142	4		
MR-CV55K(4), MR-CV75K4	300	180	60	282	9		

Drive unit	Variable dimensions					
Drive unit	W6	W7	W8	W9	W10	
MR-J4-DU900B(4)(-RJ), MR-J4-DU11KB(4)(-RJ)	150	60	45	142	4	
MR-J4-DU15KB(4)(-RJ), MR-J4-DU22KB(4)(-RJ)	240	120	60	222	9	
MR-J4-DU30KB(-RJ), MR-J4-DU37KB(-RJ) MR-J4-DU45KB4(-RJ), MR-J4-DU45KB4-RJ100	300	260	20	281	9.5	
MR-J4-DU55KB4(-RJ), MR-J4-DU55KB4-RJ100						

[Unit: mm]

Servo Amplifiers

Rotary Servo Motors

Linear Servo Motors

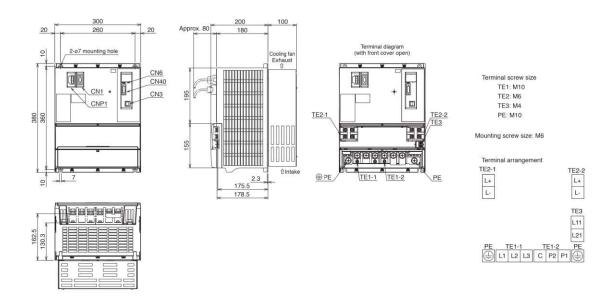
Direct Drive Motors

Options/Peripheral Equipment

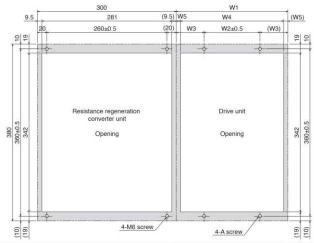
## MR-CR\_ Resistance Regeneration Converter Unit Dimensions

B B-RJ A A-RJ

●MR-CR55K, MR-CR55K4



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



Drive unit model	Variable dimensions					Screw size
Drive unit model		W2	W3	W4	W5	Α
MR-J4-DU30KB, MR-J4-DU37KB, MR-J4-DU45KB4, MR-J4-DU55KB4 MR-J4-DU30KA, MR-J4-DU37KA, MR-J4-DU45KA4, MR-J4-DU55KA4	300	260	20	281	9.5	M6
MR-J4-DU30KB4, MR-J4-DU37KB4 MR-J4-DU30KA4, MR-J4-DU37KA4	240	120	60	222	9	M5

[Unit: mm]

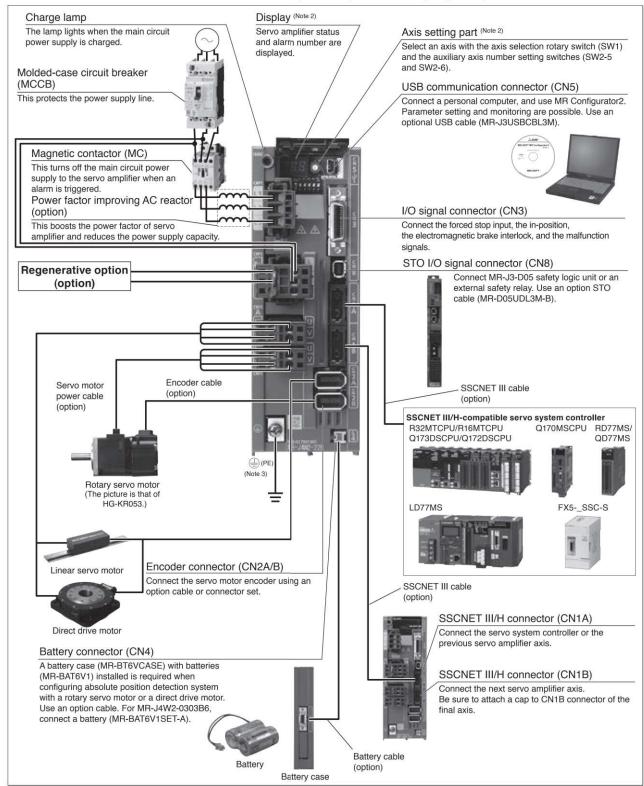
[Unit: mm]

Notes:1. The panel cut dimensions for resistance regeneration converter 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.

## MR-J4W2-B/MR-J4W3-B Connections with Peripheral Equipment (Note 1)

WB

Peripheral equipment is connected to MR-J4W2-B/MR-J4W3-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-J4W3- B MR-J4W3- B MR-J4W3-
  - 2. This picture shows when the display cover is open.
  - 3. Connect the grounding terminal of the servo motor to  $\oplus$  of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (  $\oplus$  ) located on the lower front of the servo amplifier to the cabinet protective earth (PE).

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

WB

Servo amplifier model MR-J4W2-		22B	44B	77B	1010B		
Output	Rated voltage			3-phase	170 V AC		
Output	Rated current (ea	ch axis) [A]	1.5	2.8	5.8	6.0	
Main	Voltage/frequency (Note 1)		3-phas	se or 1-phase 200 V AC to 2- 50 Hz/60 Hz	40 V AC,	3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
circuit	Rated current (Not	te 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	or 1-phase 170 V AC to 264 V AC 3-phase 170 V AC 264 V AC		
input	Permissible frequently fluctuation	uency		±5% ma	aximum		
	Voltage/frequence	у		1-phase 200 V AC to 2	40 V AC, 50 Hz/60 Hz		
Control	Rated current	[A]		0.	4		
circuit power	Permissible volta fluctuation	ige		1-phase 170 V	AC to 264 V AC		
supply input	Permissible freque	uency		±5% ma	aximum		
	Power consumpt	tion [W]		5	5		
Interface po	ower supply		24 V DC ± 10°	6 (required current capacity:	0.35 A (including CN8	connector signals))	
Control met	thod		Sine-wave PWM control/current control method				
Capacitor regeneration	Reusable regenerative energy (Note 5) [J]		17	21	44		
	Moment of inertia (J) equivalent to permissible charging amount (Note 6)		3.45	4.26		8.92	
	Mass equivalent	LM-H3	3.8	4.7		9.8	
	to permissible charging amount (Note 7) [kg]	LM-K2 LM-U2	8.5	10.5		22.0	
Permissible regenerative power of the built-in regenerative [W] resistor (Note 2, 3)			20		100		
Dynamic br	ake (Note 4)		Built-in				
SSCNET III/H o	command communicatio	n cycle (Note 13)	0.222 ms, 0.444 ms, 0.888 ms				
Communica	ation function	USB	Connect a personal computer (MR Configurator2 compatible)				
Encoder ou	tput pulse		Compatible (A/B-phase pulse)				
Analog monitor		None					
Fully closed loop control (Note 12)			Available (Note 11)				
Load-side encoder interface (Note 9)		Mitsubishi Electric high-speed serial communication					
Servo functions			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, scale measurement function (Note 14), J3 compatibility mode				
Protective functions			Overcurrent shut-overset protection, instantane	off, regenerative overvoltage protection, encoder error propous power failure protection, tic pole detection protection,	shut-off, overload shut- tection, regenerative er overspeed protection,	off (electronic thermal), ror protection, undervoltage error excessive protection,	

Servo a	mplifier model MR-J4W2-	22B	44B	77B	1010B		
Functional safety		STO (IEC/EN 61800-5-2) (Note 10)					
Safety performance	Standards certified by CB (Note 17)	EN ISO 13849-1 C	Category 3 PL e, IEC 6150	08 SIL 3, EN 62061 SIL CI	_3, EN 61800-5-2		
	Response performance		8 ms or less (STO input	OFF → energy shut-off)			
	Test pulse input (STO) (Note 8)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum					
	Mean time to dangerous failure (MTTFd)		MTTFd ≥ 100 [years] (314a)				
	Diagnostic coverage (DC)	DC = Medium, 97.6 [%]					
	Probability of dangerous Failure per Hour (PFH)	$PFH = 6.4 \times 10^{-9} [1/h]$					
Compliance with global standards		Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.					
Structure (IP rating)		Natural cooling, open (IP20)	Force cooling, open (IP20)				
Close mour	nting	Possible					
	Ambient temperature	Operation: 0 °C	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)				
	Ambient humidity	Operation/storage: 5 %RH to 90 %RH (non-condensing)					
Environment	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Altitude		2000 m or less above sea level (Note 16)				
	Vibration resistance	5.9	es)				
Mass [kg]		1.5	1.5	2.0	2.0		

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 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 permissible regenerative power [W] when a regenerative option is used.

  4. When using the dynamic brake, refer to "MR-J4W2-B MR-J4W3-B MRand 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
- 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
- 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 supported only in the two-wire type communication method.
- 12. Fully closed loop control is supported by the servo amplifiers with software version A3 or later.
- 13. The command communication cycle depends on the servo system controller specifications and the number of axes connected.
- 14. This function is supported by the servo amplifiers with software version A8 or later.
- 15. This value is applicable when a 3-phase power supply is used.
- 16. Refer to "MR-J4W2-\_B MR-J4W3-\_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
- 17. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to "MR-J4W2- B MR-J4W3- B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for details

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

WB

Servo amplifier model MR-J4W3-		R-J4W3-	222B	444B		
Output	Rated voltage		3-phase	170 V AC		
Output	Rated current (ea	ch axis) [A]	1.5	2.8		
Main	Voltage/frequency (Note 1)		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			
circuit	Rated current (Not	te 12) [A]	4.3	7.8		
power supply	Permissible voltage fluctuation		3-phase or 1-phase 170 V AC to 264 V AC			
input	Permissible frequence fluctuation	uency	±5% ma	5% maximum		
	Voltage/frequence	у	1-phase 200 V AC to 2	240 V AC, 50 Hz/60 Hz		
Control	Rated current	[A]	0.	4		
circuit power	Permissible volta fluctuation	ige	1-phase 170 V	AC to 264 V AC		
supply input	Permissible freque	uency	±5% ma	aximum		
	Power consumpt	tion [W]	5	5		
Interface po	ower supply		24 V DC ± 10% (required current capacity:	0.45 A (including CN8 connector signals))		
Control me	thod		Sine-wave PWM control/current control method			
	Reusable regenerative energy (Note 5) [J]		21	30		
Capacitor regeneration	Moment of inertia (J) equivalent to permissible charging amount (Note 6)		4.26	6.08		
	Mass equivalent	LM-H3	4.7	6.7		
	to permissible	LM-K2 LM-U2	10.5	15.0		
of the built-	Permissible regenerative power of the built-in regenerative [W] resistor (Note 2, 3)		3	0		
Dynamic br	ake (Note 4)		Built-in			
SSCNET II cycle (Note 10)	I/H command com	nmunication	0.222 ms (Note 11), 0.444 ms, 0.888 ms			
Communica	ation function	USB	Connect a personal computer (MR Configurator2 compatible)			
Encoder ou	tput pulse		Not compatible			
Analog monitor			None			
Fully closed loop control			Not available			
Servo functions			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, J3 compatibility mode			
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			

Servo amplifier model MR-J4W3-		222B 444B		
Functional safety		STO (IEC/EN 61800-5-2) (Note 9)		
Safety performance	Standards certified by CB (Note 14)	EN ISO 13849-1 Category 3 PL e, IEC 6150	8 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2	
	Response performance	8 ms or less (STO input 0	OFF → energy shut-off)	
	Test pulse input (STO) (Note 8)	Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum		
	Mean time to dangerous failure (MTTFd)	MTTFd ≥ 100 [	years] (314a)	
	Diagnostic coverage (DC)	DC = Mediur	n, 97.6 [%]	
	Probability of dangerous Failure per Hour (PFH)	$PFH = 6.4 \times 10^{-9} [1/h]$		
Compliance with global standards		Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog		
Structure (II	P rating)	Force cooling, open (IP20)		
Close mour	nting	Possible		
	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing),	storage: -20 °C to 65 °C (non-freezing)	
	Ambient humidity	Operation/storage: 5 %RH to	90 %RH (non-condensing)	
Environment	Ambience	Indoors (no direct sunlight); no corrosive	gas, inflammable gas, oil mist or dust	
	Altitude	2000 m or less abo	ve sea level (Note 13)	
	Vibration resistance	5.9 m/s² at 10 Hz to 55 Hz (directions 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 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 permissible regenerative power [W] when a regenerative option is used.
- 4. When using the dynamic brake, refer to "MR-J4W2- B MR-J4W3- B MR-J4W2-0303B6 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 servo system controller specifications and the number of axes connected.
- 11. 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.
- 12. This value is applicable when a 3-phase power supply is used.
- 13. Refer to "MR-J4W2-B MR-J4W3-B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.
- 14. The safety level depends on the setting value of [Pr. PF18 STO diagnosis error detection time] and whether or not STO input diagnosis is performed by TOFB output. Refer to "MR-J4W2-B MR-J4W3-B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for details

#### MR-J4W2-0303B6 (2-axis, SSCNET III/H Interface) Specifications

WB

Servo amplifier model			MR-J4W2-0303B6		
	Rated voltage		3-phase 13 V AC		
Output	Rated current (each axis)	[A]	2.4		
Main circuit power	Voltage (Note 1)		48 V DC/24 V DC (Note 4)		
	Rated current	[A]	For 48 V DC: 2.4 A For 24 V DC: 4.8 A		
supply	Permissible voltage		For 48 V DC: 40.8 V DC to 55.2 V DC		
input	fluctuation		For 24 V DC: 21.6 V DC to 26.4 V DC		
Control	Voltage		24 V DC		
circuit	Rated current	[A]	0.5		
power supply	Permissible voltage fluctuation		21.6 V DC to 26.4 V DC		
input	Power consumption	[W]	10		
Interface po	wer supply		24 V DC ± 10% (required current capacity: 0.25 A)		
Control met	hod		Sine-wave PWM control/current control method		
	Reusable regenerative energy (Note 2)	[J]	0.9		
Capacitor regeneration	Moment of inertia (J) equivalent to permissible charging amount (Note 3) [x 10-4 kg/s	m²]	0.18		
of the built-i	Permissible regenerative power of the built-in regenerative [W]		1.3		
resistor					
Dynamic brake (Note 6)			Built-in (Note 5)		
cycle (Note 8)	/H command communica	ion	0.222 ms, 0.444 ms, 0.888 ms		
Communica	tion function USB		Connect a personal computer (MR Configurator2 compatible)		
Encoder ou	tput pulse		Compatible (A/B-phase pulse)		
Analog mon	itor		2 channels		
Fully closed	loop control		Not compatible		
Servo functi	ons		Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, vibration tough drive function, drive recorder function, tightening & press-fit control, machine diagnosis function, power monitoring function, J3 compatibility mode		
Protective for	unctions		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		
Compliance	with global standards		Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.		
Structure (IP rating)			Natural cooling, open (IP20)		
Close mounting			Possible (Note 7)		
DIN rail mounting (35 mm wide)			Possible		
	Ambient temperature		Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)		
	Ambient humidity		Operation/storage: 5 %RH to 90 %RH (non-condensing)		
Environment			Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust		
111	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)		
Mass		[kg]	0.3		
	1 200 N N N N N N N N N N N N N N N N N N	. 31	2007 00 8 90 90 and a second of a second o		

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

axis.

4. Initial value is 48 V DC. For 24 V DC, set [Pr. PC05] to "\_ 1 \_ \_." Servo motor characteristics vary depending on whether the voltage is 48 V DC or 24 V DC. Refer to "HG-AK Series (Ultra-Compact Size, Ultra-Small Capacity) Specifications" and "HG-AK Series Torque Characteristics" in this catalog.

- 6. When using the dynamic brake, refer to "MR-J4W2-\_B MR-J4W3-\_B MR-J4W2-C303B6 Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio. 7. When the servo amplifiers are closely mounted, keep the ambient temperature at 45 °C or lower, or keep the total load of the two axes at 45 W or lower.
- 8. The command communication cycle depends on the servo system controller specifications and the number of axes connected.

<sup>2.</sup> Reusable regenerative energy is equivalent to 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.

<sup>3.</sup> 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

<sup>5.</sup> The dynamic brake is electronic. The electronic dynamic brake does not operate when the control circuit power is off. It may not operate depending on alarms and warnings. Refer to "MR-J4W2-\_B MR-J4W3-\_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for details.

Rotary Servo Motors

Linear Servo Motors

**Direct Drive Motors** 

Options/Peripheral

**LVS/Wires** 

Product

List

Cautions

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

- 2. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller
- 3. Connections for the third and following axes are omitted.

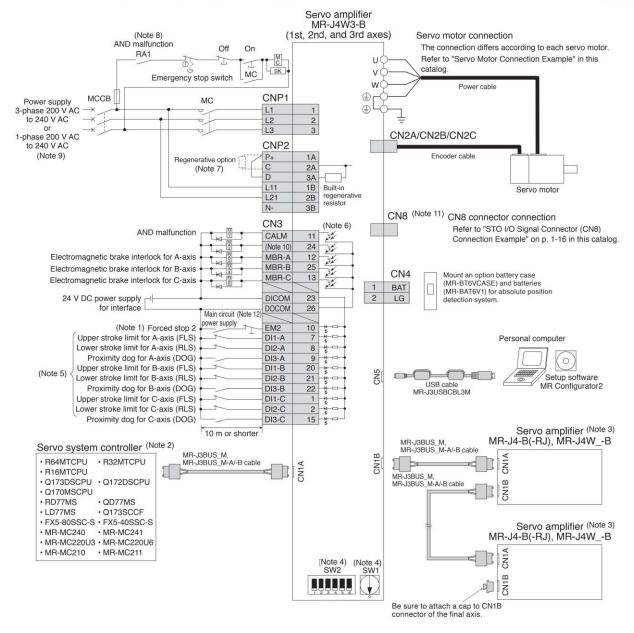
MR-MC211

MR-MC210

- 4. Up to 64 axes are set with 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 servo system controller specifications
- 5. Devices can be assigned for DI1-A/B, DI2-A/B and DI3-A/B with the servo system controller setting. Refer to the controller instruction manuals for details on setting
- 6. This is for sink wiring. Source wiring is also possible.
- . 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 servo system controller.
- 1) The contact opens when an alarm occurs on one of the axes.
- 2) 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. 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 with [Pr. PD08].
- 11. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
- 12. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
- 13. To turn on/off the main circuit power supply by a DC power supply, refer to "MR-J4W2-\_B MR-J4W3-\_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for a connection example of the power supply circuit.





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

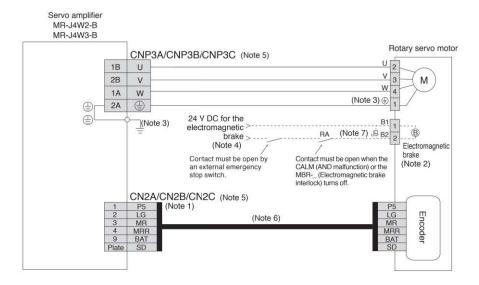
- 2. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller
- 3. Connections for the fourth and following axes are omitted.
  4. Up to 64 axes are set with a combination of an axis selection rotary switch (SW1) and auxiliary axis number setting switches (SW2-5 and SW2-6). Note that the number of the connectable axes depends on the servo system controller specifications
- 5. Devices can be assigned for DI1-A/B/C, DI2-A/B/C and DI3-A/B/C with the servo system 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 servo system controller
- 1) The contact opens when an alarm occurs on one of the axes. 2) 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 with [Pr. PD08].
- 11. Be sure to attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.

  12. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
- 13. To turn on/off the main circuit power supply by a DC power supply, refer to "MR-J4W2-DB MR-J4W3-B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for a connection example of the power supply circuit.

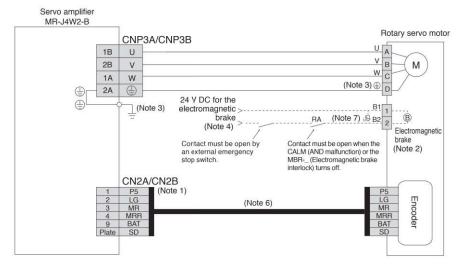


# Servo Motor Connection Example (Rotary Servo Motor) Semi-Closed Loop Control System with MR-J4W2-B/MR-J4W3-B

For HG-KR/HG-MR series



#### •For HG-SR series



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

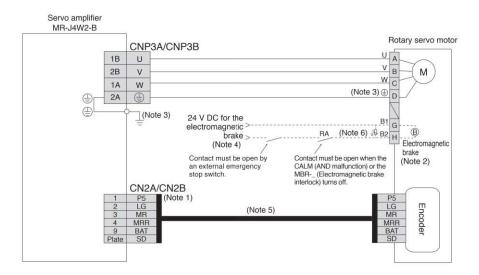
- 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
- 3. Connect the grounding terminal of the servo motor to  $\textcircled{\oplus}$  of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (  $\textcircled{\oplus}$  ) 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. 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
- 7. Be sure to install a surge absorber between B1 and B2.



# Servo Motor Connection Example (Rotary Servo Motor) Semi-Closed Loop Control System with MR-J4W2-B

WB

• For HG-UR series



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

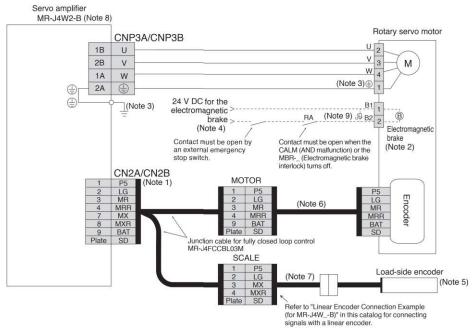
  2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
  - 3. Connect the grounding terminal of the servo motor to 🏐 of CNP3A and CNP3B. Connect the protective earth (PE) terminal ( 🏐 ) located on the lower front of the servo amplifier 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.

  - 6. Be sure to install a surge absorber between B1 and B2.

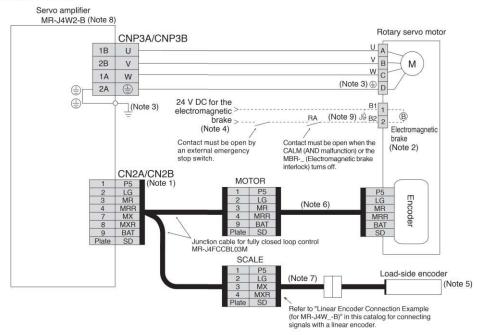


# Servo Motor Connection Example (Rotary Servo Motor) Fully Closed Loop Control System with MR-J4W2-B

For HG-KR/HG-MR series



#### ●For HG-SR/HG-JR 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-J4W2-B MR-J4W3-B MR-J
  - 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 does not support fully closed loop control.

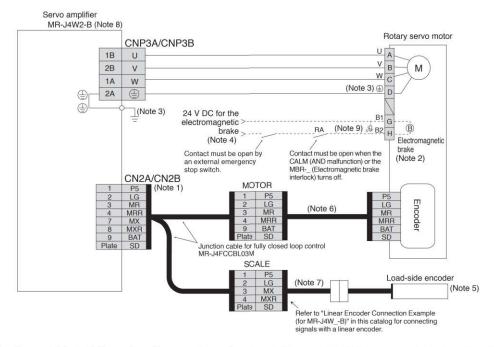
  - 9. Be sure to install a surge absorber between B1 and B2



#### WB

# Servo Motor Connection Example (Rotary Servo Motor) Fully Closed Loop Control System with MR-J4W2-B

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.

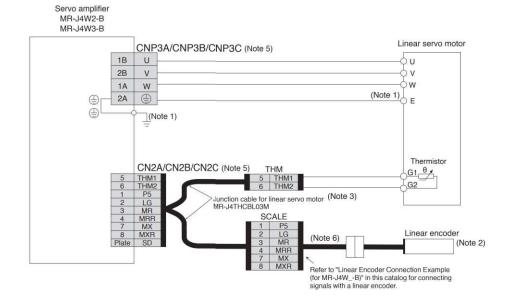
- 2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
- 3. Connect the grounding terminal of the servo motor to 😩 of CNP3A and CNP3B. Connect the protective earth (PE) terminal ( 🌚 ) located on the lower front of the servo amplifier 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-J4W2-\_B MR-J4W3-\_B MR-J4W2-0303B6 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 does not support fully closed loop control. 9. Be sure to install a surge absorber between B1 and B2.

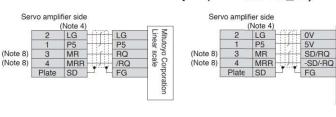


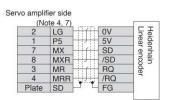
Servo Motor Connection Example (Linear Servo Motor)
Linear Servo Motor System with MR-J4W2-B/MR-J4W3-B

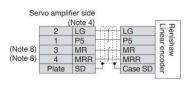
● For LM-H3/LM-K2/LM-U2 series

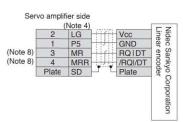


## Linear Encoder Connection Example (for MR-J4W\_-B)









Magnescale Co., Linear encoder

Ltd.

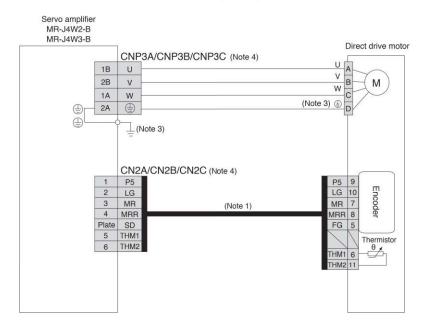
Notes: 1. Connect the grounding terminal of the servo motor to 🏐 of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal ( 🏐 ) located on the lower front of the servo amplifier to the cabinet protective earth (PE).

- 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. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier.
- 6. Necessary encoder cables vary depending on the linear encoder. Refer to relevant Instruction Manual.
- 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 used.
- For the fully closed loop control, the signals of 3-pin and 4-pin are as follows:
   3-pin: MX
   4-pin: MXR

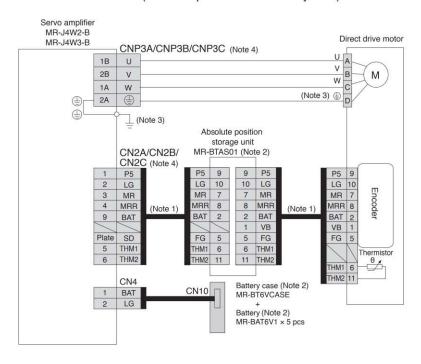


#### Servo Motor Connection Example (Direct Drive Motor)

● For TM-RG2M/TM-RU2M/TM-RFM series (incremental system)



For TM-RG2M/TM-RU2M/TM-RFM series (absolute position detection system)



Notes: 1. Fabricate this encoder cable. Refer to "TM-RFM TM-RG2M TM-RU2M Direct Drive Motor Instruction Manual" for fabricating the encoder cable.

- 2. An MR-BTAS01 absolute position storage unit, MR-BT6VCASE battery case, and MR-BAT6V1 batteries (sold as options) are required for absolute position detection system. Refer to relevant Servo Amplifier Instruction Manual and "TM-RFM TM-RG2M TM-RU2M 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.

WB

Rotary Servo Motors

Linear Servo Motors

**Direct Drive Motors** 

Options/Peripheral

LVS/Wires

Product List

Cautions

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

- 3. Connections for the third and following axes are omitted.
- 4. Up to 64 axes are set with 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 servo system controller specifications.

  5. Devices can be assigned for DI1-A/B, DI2-A/B and DI3-A/B with the servo system controller setting. Refer to the controller instruction manuals for details on setting
- 6. This is for sink wiring. Source wiring is also possible.

• MR-MC220U3 • MR-MC220U6

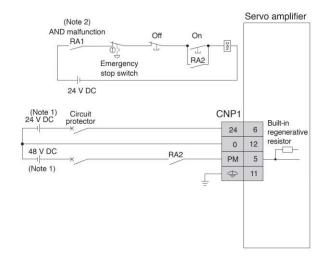
- 7. CINP (AND in-position) is assigned to this pin as default. Device for this pin can be changed with [Pr. PD08].
- 8. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.

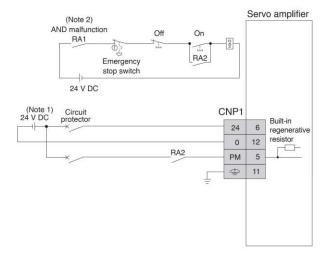
## Main/Control Circuit Power Supply Connection Example (for MR-J4W2-0303B6)

WB

•For 48 V DC

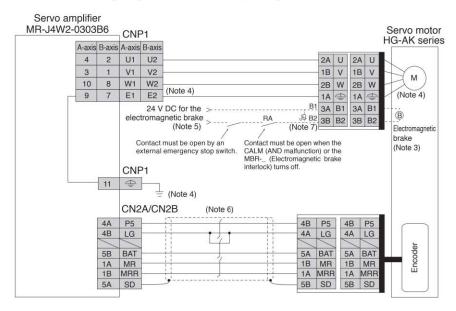
•For 24 V DC





## Servo Motor Connection Example (for MR-J4W2-0303B6)

WB



Notes: 1. Use 48 V DC and 24 V DC power supplies with reinforced insulation, and connect the negative side wiring (0 V) to the power supply terminal. 2. Select either of the following functions for CALM (AND malfunction) with the serve system controller.

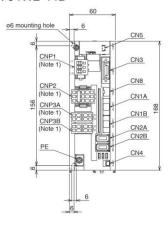
- The contact opens when an alarm occurs on one of the axes.
- 2) The contact opens when an alarm occurs on all axes.
- 3. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
- 4. Noiseless grounding ( 🚖 ) terminals are connected to E1 and E2 terminals in the servo amplifier. Connect the noiseless ( 🚖 ) terminals of CNP1 and the grounding terminal of the cabinet.
- 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.
- 7. Be sure to install a surge absorber between B1 and B2.

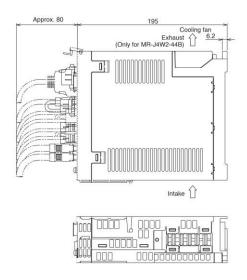


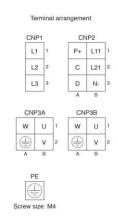
WB

#### MR-J4W2-B Dimensions

- •MR-J4W2-22B
- ●MR-J4W2-44B



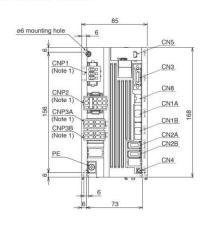


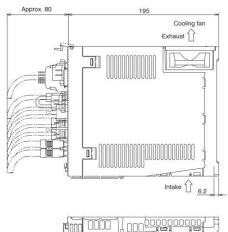


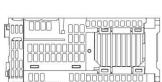
Mounting screw size: M5

[Unit: mm]

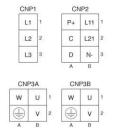
- •MR-J4W2-77B
- •MR-J4W2-1010B













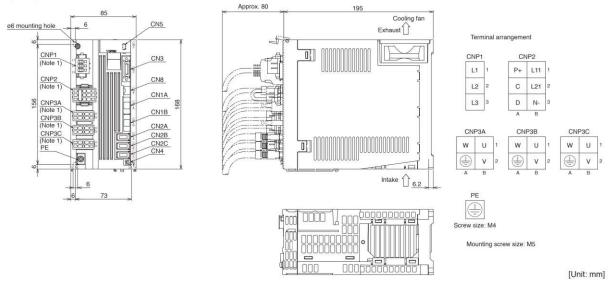
Mounting screw size: M5

[Unit: mm]

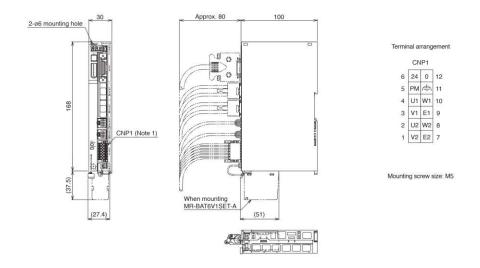
Notes: 1. CNP1, CNP2, CNP3A and CNP3B connectors are supplied with the servo amplifier.

#### MR-J4W3-B Dimensions

- ●MR-J4W3-222B
- ●MR-J4W3-444B



#### MR-J4W2-0303B6 Dimensions



[Unit: mm]

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

WB