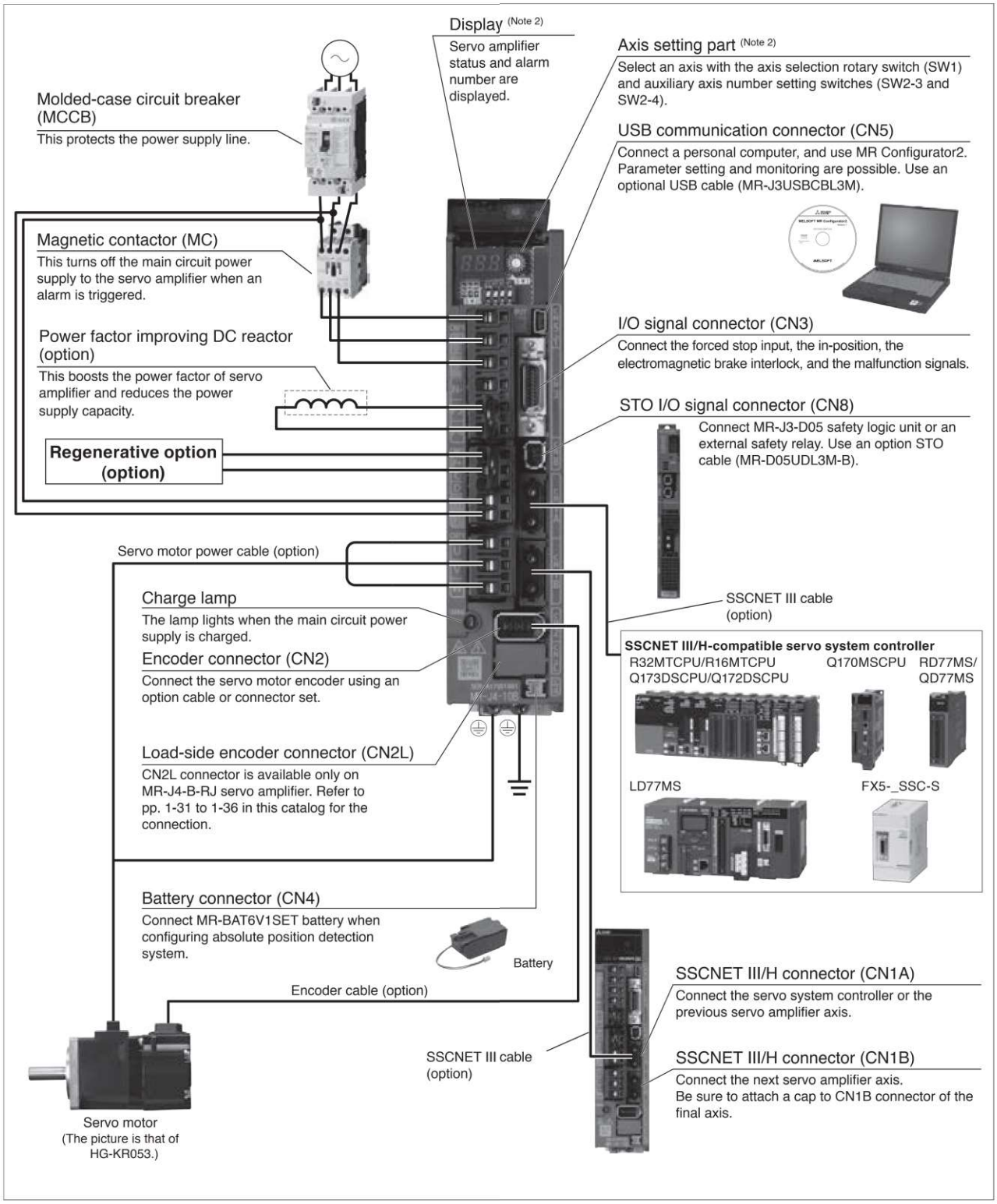
MR-J4-B/MR-J4-B-RJ Connections with Peripheral Equipment (Note 1)

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.

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

B B-RJ

Servo amplifier model MR-J4-_(-RJ)			10B	20B	40B	60B	70B	100B	200B	350B	500B	700B	11KB	15KB	22KB	10B1	20B1	40B1
Output	Rated voltage		3-phase 170 V AC															
	Rated current	[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
Main circuit power supply input	Voltage/ frequency (Note 1)	AC input	3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz					3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz (Note 17)		3-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		
		DC input (Note 19)	283 V DC to 340 V DC													-		
	Rated current (Note 15)	[A]	0.9	1.5	2.6	3.2 (Note 8)	3.8	5.0	10.5	16.0	21.7	28.9	46.0	64.0	95.0	3.0	5.0	9.0
	Permissible voltage fluctuation	AC input	3-phase or 1-phase 170 V AC to 264 V AC					3-phase or 1-phase 170 V AC to 264 V AC (Note 17)		3-phase 170 V AC to 264 V AC						1-phase 85 V AC to 132 V AC		
		DC input (Note 19)	241 V DC to 374 V DC													-		
	Permissible frequency fluctuation		±5% maximum															
Control circuit power supply input	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		
		DC input (Note 19)	283 V DC to 340 V DC													-		
	Rated current	[A]	0.2								0.3					0.4		
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC													1-phase 85 V AC to 132 V AC		
		DC input (Note 19)	241 V DC to 374 V DC													-		
	Permissible frequency fluctuation		±5% maximum															
	Power consumption	[W]	30								45					30		
Interface power supply			24 V DC ± 10% (required current capacity: 0.3 A (including CN8 connector signals))															
Control method			Sine-wave PWM control/current control method															
Permissible regenerative power	Built-in regenerative resistor (Note 2, 3)	[W]	-	10	10	10	20	20	100	100	130	170	-	-	-	-	10	10
	External regenerative resistor (standard accessory) (Note 2, 3, 11, 12)	[W]	-	-	-	-	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)	-	-	-
Dynamic brake (Note 4)			Built-in										External option (Note 13)			Built-in		
SSCNET III/H command communication cycle (Note 10)			0.222 ms, 0.444 ms, 0.888 ms															
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)															
Encoder output pulse			Compatible (A/B/Z-phase pulse)															
Analog monitor			2 channels															
Fully closed loop control	MR-J4-B(1) (Note 9)		Two-wire type communication method															
	MR-J4-B(1)-RJ		Two-wire/four-wire type communication method															
Load-side encoder interface	MR-J4-B(1)		Mitsubishi Electric high-speed serial communication															
	MR-J4-B(1)-RJ		Mitsubishi Electric high-speed serial communication, A/B/Z-phase differential input signal															
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, master-slave operation function (Note 14), scale measurement function (Note 14), J3 compatibility mode, super trace control (Note 16), lost motion compensation function (Note 16)															
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 amplifier model MR-J4-_(-RJ)		10B	20B	40B	60B	70B	100B	200B	350B	500B	700B	11KB	15KB	22KB	10B1	20B1	40B1
Functional safety		STO (IEC/EN 61800-5-2)															
Safety performance	Standards certified by CB (Note 20)	EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2															
	Response performance	8 ms or less (STO input OFF → energy shut-off)															
	Test pulse input (STO) (Note 7)	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 × 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)				Force cooling, open (IP20) (Note 5)					Natural cooling, open (IP20)		
Close mounting	3-phase power input	Possible (Note 5)								Not possible					-		
	1-phase power input	Possible (Note 6)					Not possible		-						Possible (Note 6)		
Environment	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)															
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust															
	Altitude	2000 m or less above sea level (Note 18)															
	Vibration resistance	5.9 m/s² 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 mass ratio.
5. Terminal blocks are excluded.
6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use 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 × 92 mm, minimum air flow: 1.0 m^3/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 sea level.
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)

B B-RJ

Drive unit model MR-J4-_(-RJ)			DU900B	DU11KB	DU15KB	DU22KB	DU30KB	DU37KB
Compatible converter unit model			MR-CV_				MR-CV_/MR-CR55K	
Output	Rated voltage		3-phase 170 V AC					
	Rated current	[A]	54	68	87	126	174	204
Main circuit power supply input			Main circuit power is supplied from the power regeneration converter unit/ resistance regeneration converter unit to the drive unit.					
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz					
	Rated current	[A]	0.3					
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC					
	Permissible frequency fluctuation		±5% maximum					
	Power consumption	[W]	45					
Interface power supply			24 V DC ± 10% (required current capacity: 0.3 A (including CN8 connector signals))					
Control method			Sine-wave PWM control/current control method					
Dynamic brake (Note 7)			External option (Note 4)					
SSCNET III/H command communication cycle (Note 3)			0.222 ms, 0.444 ms, 0.888 ms					
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)					
Encoder output pulse			Compatible (A/B/Z-phase pulse)					
Analog monitor			2 channels					
Fully closed loop control	MR-J4-DU_B		Two-wire type communication method					
	MR-J4-DU_B-RJ		Two-wire/four-wire type communication method					
Load-side encoder interface	MR-J4-DU_B		Mitsubishi Electric high-speed serial communication					
	MR-J4-DU_B-RJ		Mitsubishi Electric high-speed serial communication, A/B/Z-phase differential input signal					
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, master-slave operation function, scale measurement function, J3 compatibility mode, super trace control, lost motion compensation function					
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, magnetic pole detection protection, linear servo control fault protection					
Functional safety			STO (IEC/EN 61800-5-2)					
Safety performance	Standards certified by CB (Note 6)		EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2					
	Response performance		8 ms or less (STO input OFF → energy shut-off)					
	Test pulse input (STO) (Note 2)		Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum					
	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 × 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)			Force cooling, open (IP20) (Note 1)					
Environment	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)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Altitude		2000 m or less above sea level (Note 5)					
	Vibration resistance		5.9 m/s² 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 amplifier model MR-J4-_(-RJ)			60B4	100B4	200B4	350B4	500B4	700B4	11KB4	15KB4	22KB4
Output	Rated voltage		3-phase 323 V AC								
	Rated current	[A]	1.5	2.8	5.4	8.6	14.0	17.0	32.0	41.0	63.0
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz								
	Rated current	[A]	1.4	2.5	5.1	7.9	10.8	14.4	23.1	31.8	47.6
	Permissible voltage fluctuation		3-phase 323 V AC to 528 V AC								
	Permissible frequency fluctuation		±5% maximum								
Control circuit power supply input	Voltage/frequency		1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz								
	Rated current	[A]	0.1			0.2					
	Permissible voltage fluctuation		1-phase 323 V AC to 528 V AC								
	Permissible frequency fluctuation		±5% maximum								
	Power consumption	[W]	30			45					
Interface power supply			24 V DC ± 10% (required current capacity: 0.3 A (including CN8 connector signals))								
Control method			Sine-wave PWM control/current control method								
Permissible regenerative power	Built-in regenerative resistor (Note 2, 3)	[W]	15	15	100	100	130 (Note 11)	170 (Note 11)	-	-	-
	External regenerative resistor (standard accessory) (Note 2, 3, 8, 9)	[W]	-	-	-	-	-	-	500 (800)	850 (1300)	850 (1300)
Dynamic brake (Note 4)			Built-in						External option (Note 10)		
SSCNET III/H command 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			Compatible (A/B/Z-phase pulse)								
Analog monitor			2 channels								
Fully closed loop control	MR-J4-B4		Two-wire type communication method								
	MR-J4-B4-RJ		Two-wire/four-wire type communication method								
Load-side encoder interface	MR-J4-B4		Mitsubishi Electric high-speed serial communication								
	MR-J4-B4-RJ		Mitsubishi Electric high-speed serial communication, A/B/Z-phase differential input signal								
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, 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			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								
Functional safety			STO (IEC/EN 61800-5-2)								
Safety performance	Standards certified by CB (Note 15)		EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2								
	Response performance		8 ms or less (STO input OFF → energy shut-off)								
	Test pulse input (STO) (Note 6)		Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum								
	Mean time to dangerous failure (MTTFd)		MTTFd ≥ 100 [years] (314a)								
	Diagnostic coverage (DC)		DC = Medium, 97.6 [%]								
	Probability of dangerous Failure per Hour (PFH)		PFH = 6.4 × 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)		Force cooling, open (IP20) (Note 5)				
Close mounting			Not possible								
Environment	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)								
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust								
	Altitude		2000 m or less above sea level (Note 14)								
	Vibration resistance		5.9 m/s² at 10 Hz to 55 Hz (directions of X, Y, and Z axes)								
Mass		[kg]	1.7	1.7	2.1	3.6	4.3	6.5	13.4	13.4	18.2

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

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 ratio.
5. Terminal blocks are excluded.
6. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
7. The command communication cycle depends on the 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 × 92 mm, minimum air flow: 1.0 m^3/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 level.
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

Drive unit model MR-J4-_(-RJ)			DU900B4	DU11KB4	DU15KB4	DU22KB4	DU30KB4	DU37KB4	DU45KB4	DU55KB4
Compatible converter unit model			MR-CV_4				MR-CV_4/MR-CR55K4			
Output	Rated voltage		3-phase 323 V AC							
	Rated current	[A]	25	32	41	63	87	102	131	143
Main circuit power supply input			Main circuit power is supplied from the power regeneration converter unit/ resistance regeneration converter unit to the drive unit.							
Control circuit power supply input	Voltage/frequency		1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz							
	Rated current	[A]	0.2							
	Permissible voltage fluctuation		1-phase 323 V AC to 528 V AC							
	Permissible frequency fluctuation		±5% maximum							
	Power consumption	[W]	45							
Interface power supply			24 V DC ± 10% (required current capacity: 0.3 A (including CN8 connector signals))							
Control method			Sine-wave PWM control/current control method							
Dynamic brake (Note 7)			External option (Note 4)							
SSCNET III/H command communication cycle (Note 3)			0.222 ms, 0.444 ms, 0.888 ms							
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)							
Encoder output pulse			Compatible (A/B/Z-phase pulse)							
Analog monitor			2 channels							
Fully closed loop control	MR-J4-DU_B4		Two-wire type communication method							
	MR-J4-DU_B4-RJ		Two-wire/four-wire type communication method							
Load-side encoder interface	MR-J4-DU_B4		Mitsubishi Electric high-speed serial communication							
	MR-J4-DU_B4-RJ		Mitsubishi Electric high-speed serial communication, A/B/Z-phase differential input signal							
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, master-slave operation function, scale measurement function, J3 compatibility mode, super trace control, lost motion compensation function							
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, magnetic pole detection protection, linear servo control fault protection							
Functional safety			STO (IEC/EN 61800-5-2)							
Safety performance	Standards certified by CB (Note 6)		EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2							
	Response performance		8 ms or less (STO input OFF → energy shut-off)							
	Test pulse input (STO) (Note 2)		Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum							
	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 × 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)			Force cooling, open (IP20) (Note 1)							
Environment	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)							
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Altitude		2000 m or less above sea level (Note 5)							
	Vibration resistance		5.9 m/s² at 10 Hz to 55 Hz (directions of X, Y, and Z axes)							
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-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-DU_B4-RJ100 (SSCNET III/H Interface) Specifications (400 V)

B-RJ100

Drive unit model MR-J4-_			DU45KB4-RJ100	DU55KB4-RJ100
Compatible power regeneration converter unit model			MR-CV55K4 (Note 5)	
Output	Rated voltage		3-phase 323 V AC	
	Rated current	[A]	131	143
Main circuit power supply input			Main circuit power is supplied from the power regeneration converter unit to the drive unit.	
Control circuit power supply input	Voltage/frequency		1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz	
	Rated current	[A]	0.2	
	Permissible voltage fluctuation		1-phase 323 V AC to 528 V AC	
	Permissible frequency fluctuation		±5% maximum	
	Power consumption	[W]	45	
Interface power supply			24 V DC ± 10% (required current capacity: 0.3 A (including CN8 connector signals))	
Control method			Sine-wave PWM control/current control method	
Dynamic Brake (Note 7)			External option (Note 4)	
SSCNET III/H command communication cycle (Note 3)			0.222 ms, 0.444 ms, 0.888 ms	
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)	
Encoder output pulse			Compatible (A/B/Z-phase pulse)	
Analog monitor			2 channels	
Fully closed loop control			Not compatible	
Servo functions			Robust filter, auto tuning, drive recorder function, tightening & press-fit control, machine diagnosis function, master-slave operation function, super trace control, lost motion compensation	
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)	
Safety performance	Standards certified by CB (Note 6)		EN ISO 13849-1 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 3, EN 61800-5-2	
	Response performance		8 ms or less (STO input OFF → energy shut-off)	
	Test pulse input (STO) (Note 2)		Test pulse interval: 1 Hz to 25 Hz, test pulse off time: 1 ms maximum	
	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 × 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)			Force cooling, open (IP20) (Note 1)	
Environment	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)	
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust	
	Altitude		2000 m or less above sea level (Note 8)	
	Vibration resistance		5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y, and Z axes)	
Mass		[kg]	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 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-CV_ 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 regeneration converter unit model MR-CV_			11K	18K	30K	37K	45K	55K
Output	Rated voltage		270 V DC to 324 V DC					
	Rated current	[A]	41	76	144	164	198	238
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz					
	Rated current	[A]	35	65	107	121	148	200
	Permissible voltage fluctuation		3-phase 170 V AC to 264 V AC					
	Permissible frequency fluctuation		±3% maximum					
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz					
	Rated current	[A]	0.2					
	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 DC ± 10% (required current capacity: 0.35 A)					
Capacity		[kW]	11	18	30	37	45	55
Protective functions			Undervoltage protection, regenerative error protection, regenerative overvoltage shut-off, MC drive circuit error protection, open-phase detection, inrush current suppression circuit error protection, main circuit device overheat error protection, cooling fan error protection, overload shut-off (electronic thermal)					
Continuous rating		[kW]	7.5	11	20	22	22	37
Instantaneous maximum rating		[kW]	39	60	92	101	125	175
Compliance with global standards			Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.					
Structure (IP rating)			Force cooling, open (IP20) (Note 2)					
Environment	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)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Altitude		2000 m or less above sea level (Note 3)					
	Vibration resistance		5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)					
Mass		[kg]	6.1	6.1	12.1	12.1	12.1	25.0

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.

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

B B-RJ B-RJ100

Power regeneration converter unit model MR-CV_		11K4	18K4	30K4	37K4	45K4	55K4	75K4
Output	Rated voltage	513 V DC to 648 V DC						
	Rated current [A]	21	38	72	82	99	119	150
Main circuit power supply input	Voltage/frequency (Note 1)	3-phase 380 V AC to 480 V AC, 50 Hz/60 Hz						
	Rated current [A]	18	35	61	70	85	106	130
	Permissible voltage fluctuation	3-phase 323 V AC to 528 V AC						
	Permissible frequency fluctuation	±3% maximum						
Control circuit power supply input	Voltage/frequency	1-phase 380 V AC to 480 V AC, 50 Hz/60 Hz						
	Rated current [A]	0.1						
	Permissible voltage fluctuation	1-phase 323 V AC to 528 V AC						
	Permissible frequency fluctuation	±3% maximum						
	Power consumption [W]	30						
Interface power supply		24 V DC ± 10% (required current capacity: 0.35 A)						
Capacity [kW]		11	18	30	37	45	55	75
Protective functions		Undervoltage protection, regenerative error protection, regenerative overvoltage shut-off, MC drive circuit error protection, open-phase detection, inrush current suppression circuit error protection, main circuit device overheat error protection, cooling fan error protection, overload shut-off (electronic thermal)						
Continuous rating [kW]		7.5	11	20	25	25	55	55
Instantaneous maximum rating [kW]		39	60	92	101	125	175	180
Compliance with global standards		Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.						
Structure (IP rating)		Force cooling, open (IP20) (Note 2)						
Environment	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)						
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Altitude	2000 m or less above sea level (Note 3)						
	Vibration resistance	5.9 m/s² at 10 Hz to 55 Hz (directions of X, Y and Z axes)						
Mass [kg]		6.1	6.1	12.1	12.1	12.1	25.0	25.0

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.

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

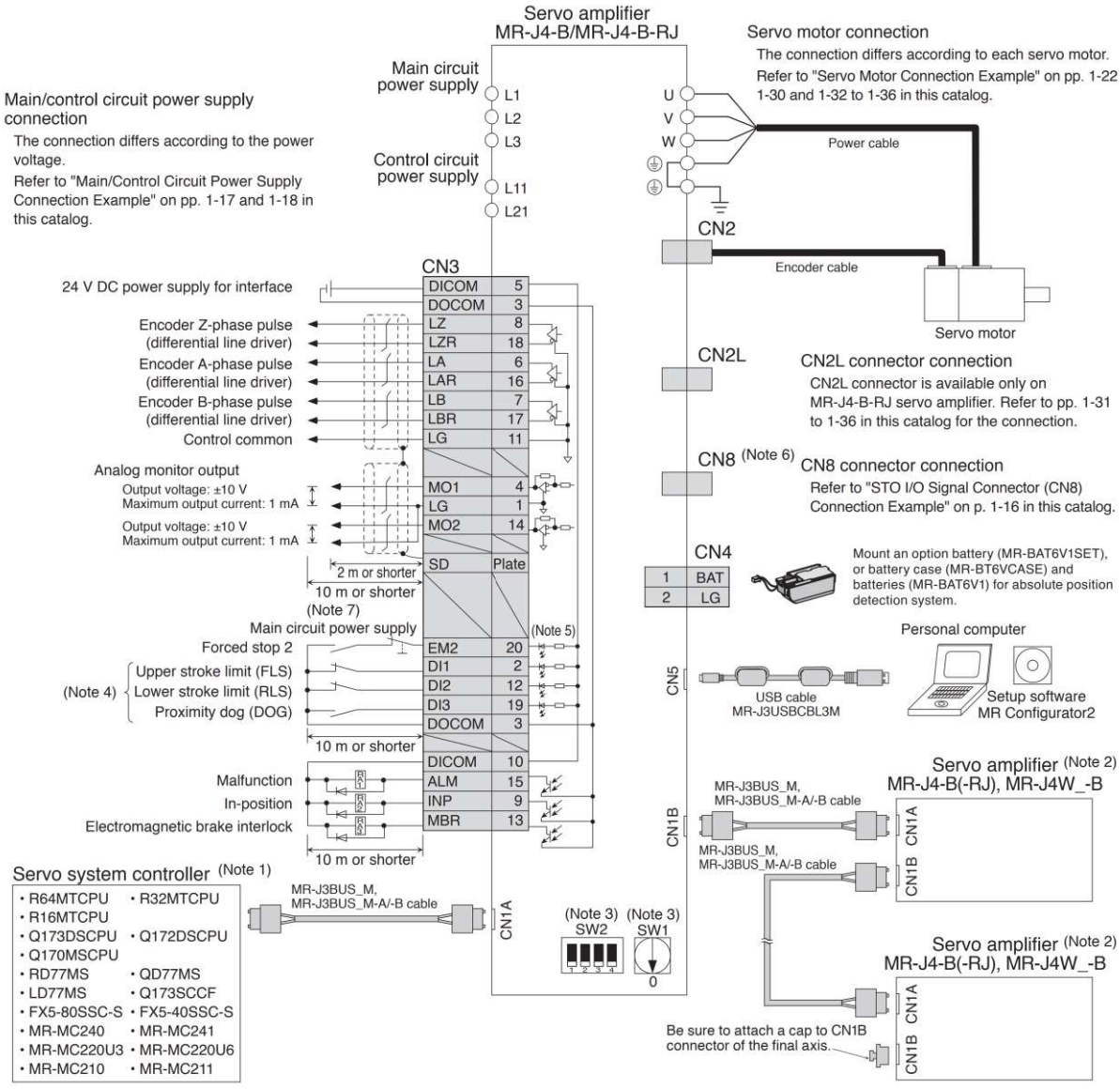
B B-RJ A A-RJ

Resistance regeneration converter unit model MR-CR_			55K	55K4
Output	Rated voltage		270 V DC to 324 V DC	513V DC to 648 V DC
	Rated current	[A]	215.9	113.8
Main circuit power supply input	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
	Rated current	[A]	191.3	100.7
	Permissible voltage fluctuation		3-phase 170 V AC to 264 V AC	3-phase 323 V AC to 528 V AC
	Permissible frequency fluctuation		±5% maximum	
Control circuit power supply input	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
	Rated current	[A]	0.3	0.2
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC	1-phase 323 V AC to 528 V AC
	Permissible frequency fluctuation		±5% maximum	
	Power consumption	[W]	45	
Interface power supply			24 V DC ± 10% (required current capacity: 0.15 A)	
Capacity		[kW]	55	
Regenerative power (when a regenerative option is used)			1300 W (one unit of MR-RB139) 3900 W (three units of MR-RB137)	1300 W (one unit of MR-RB137-4) 3900 W (three units of MR-RB13V-4)
Protective functions			Regenerative overvoltage shut-off, overload shut-off (electronic thermal), regenerative error protection, undervoltage protection, instantaneous power failure protection	
Continuous rating		[kW]	55	
Compliance with global standards			Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.	
Structure (IP rating)			Force cooling, open (IP20) (Note 2)	
Environment	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)	
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust	
	Altitude		2000 m or less above sea level (Note 3)	
	Vibration resistance		5.9 m/s² 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 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 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



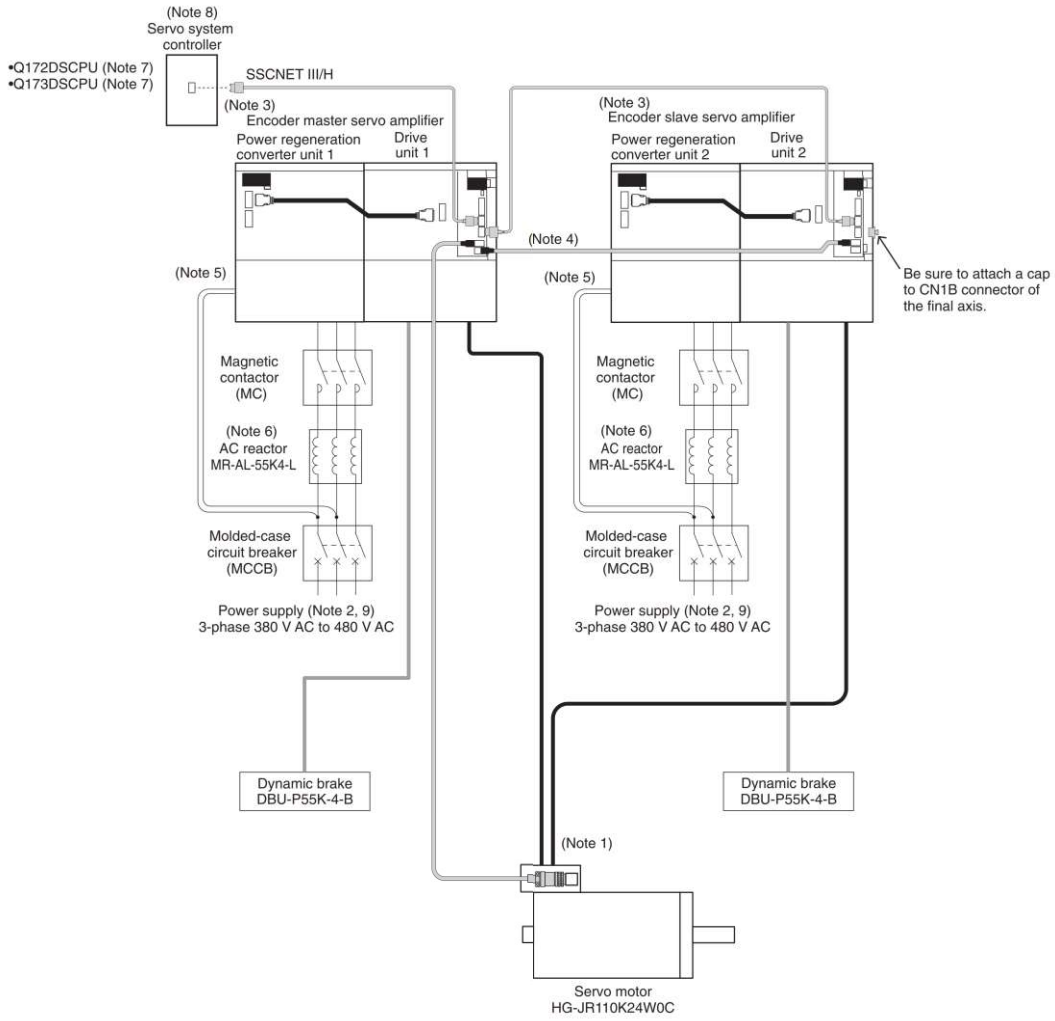
Notes: 1. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller.
2. Connections for the second and following axes are omitted.
3. Up to 64 axes are set with a combination of an axis selection rotary switch (SW1) and auxiliary axis number 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.

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

MR-J4-DU_B4-RJ100 System Configurations

B-RJ100

●For HG-JR110K24W0C

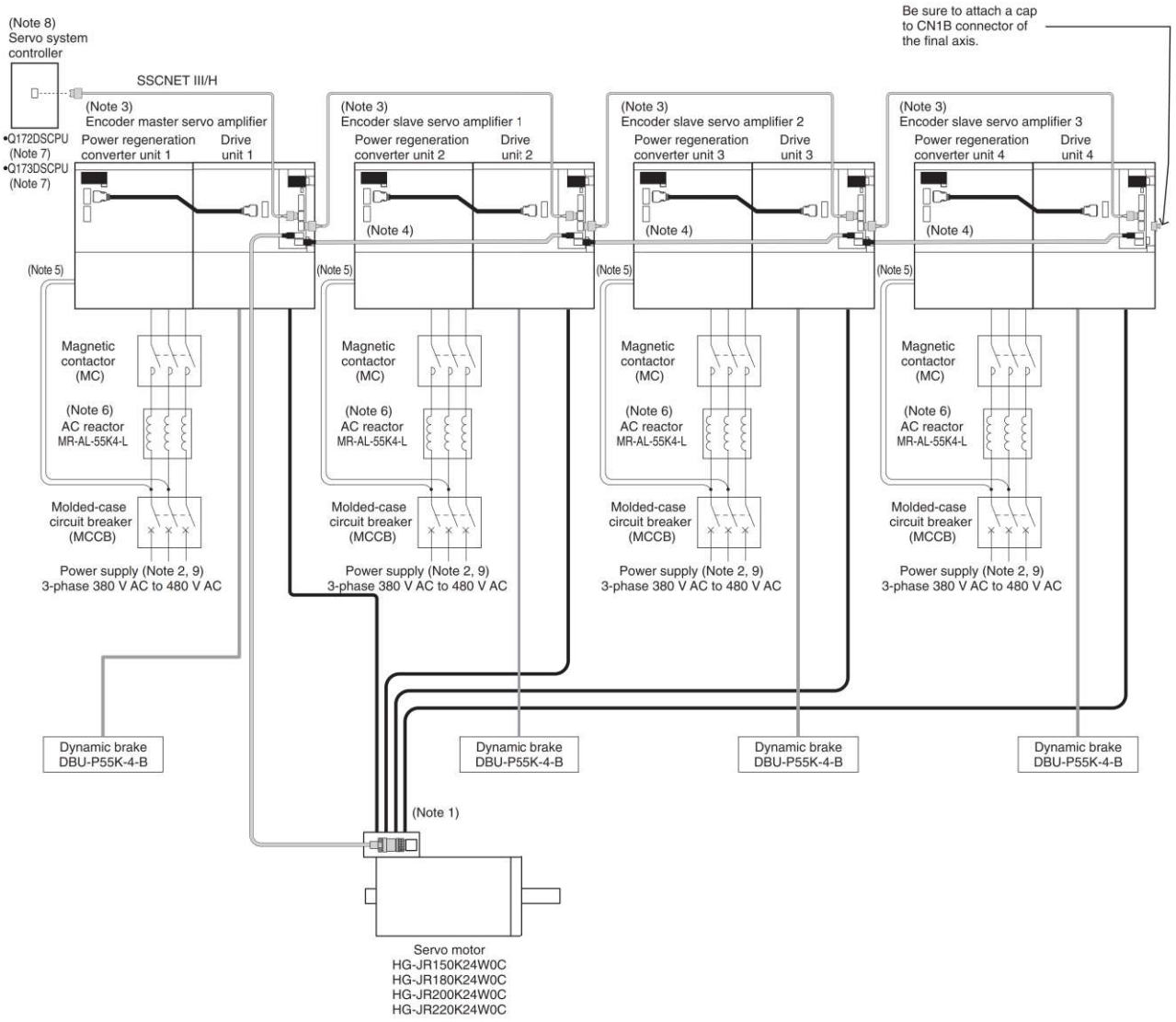


Notes: 1. Connect the grounding wire of the servo motor only to the first drive unit. If the grounding wire is connected to two drive units, circulating current may flow to the grounding wire, depending on the wiring situation. However, if the grounding wire has to be connected to the two drive units 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.

MR-J4-DU_B4-RJ100 System Configurations

B-RJ100

●For HG-JR150K24W0C/HG-JR180K24W0C/HG-JR200K24W0C/HG-JR220K24W0C



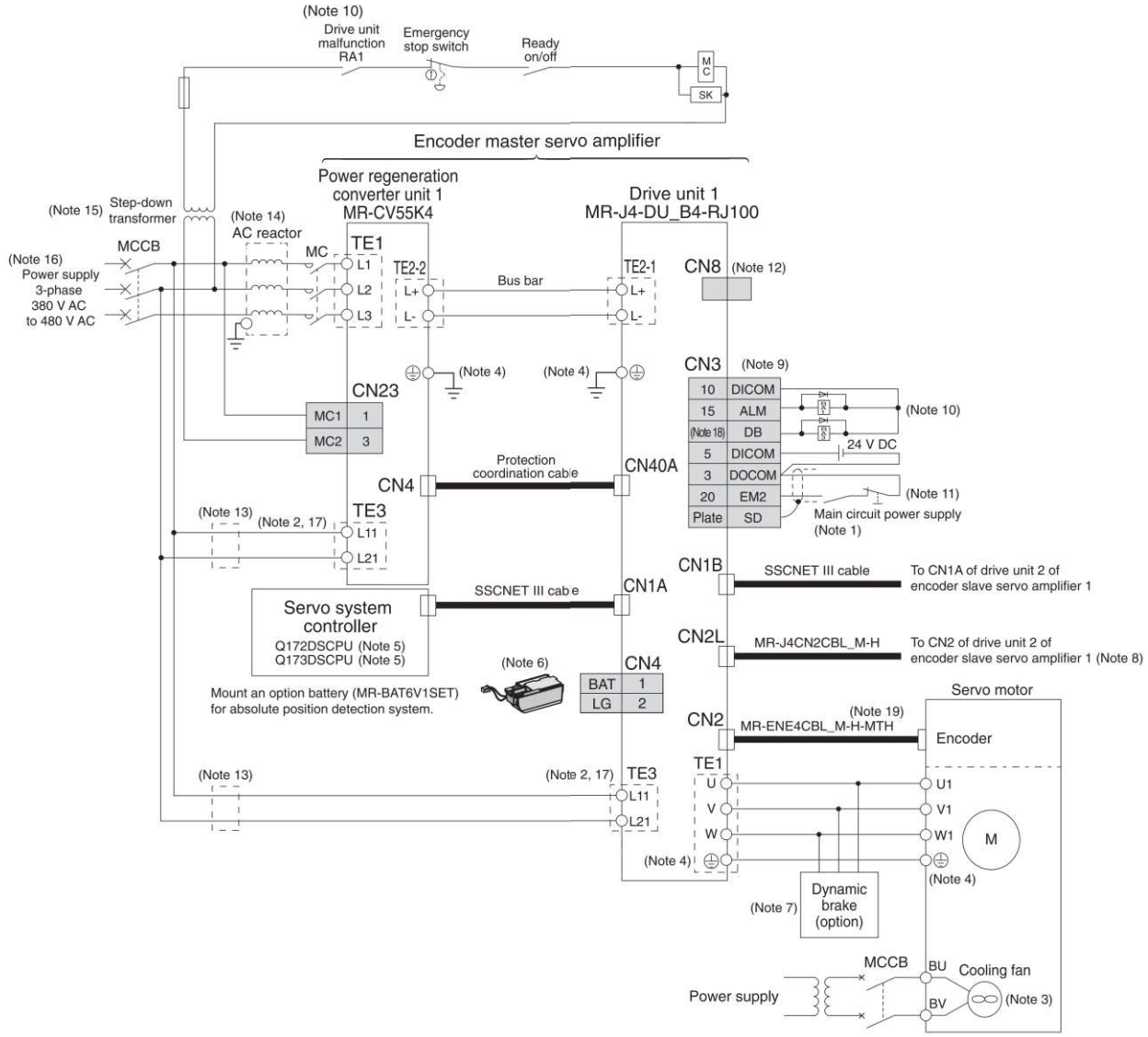
Notes: 1. Connect the grounding wire of the servo motor only to the first drive unit. If the grounding wire is connected to two or more drive units, circulating current may flow to the grounding wire, depending on the wiring situation. However, if the grounding wire has to be connected to the two or 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.
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 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

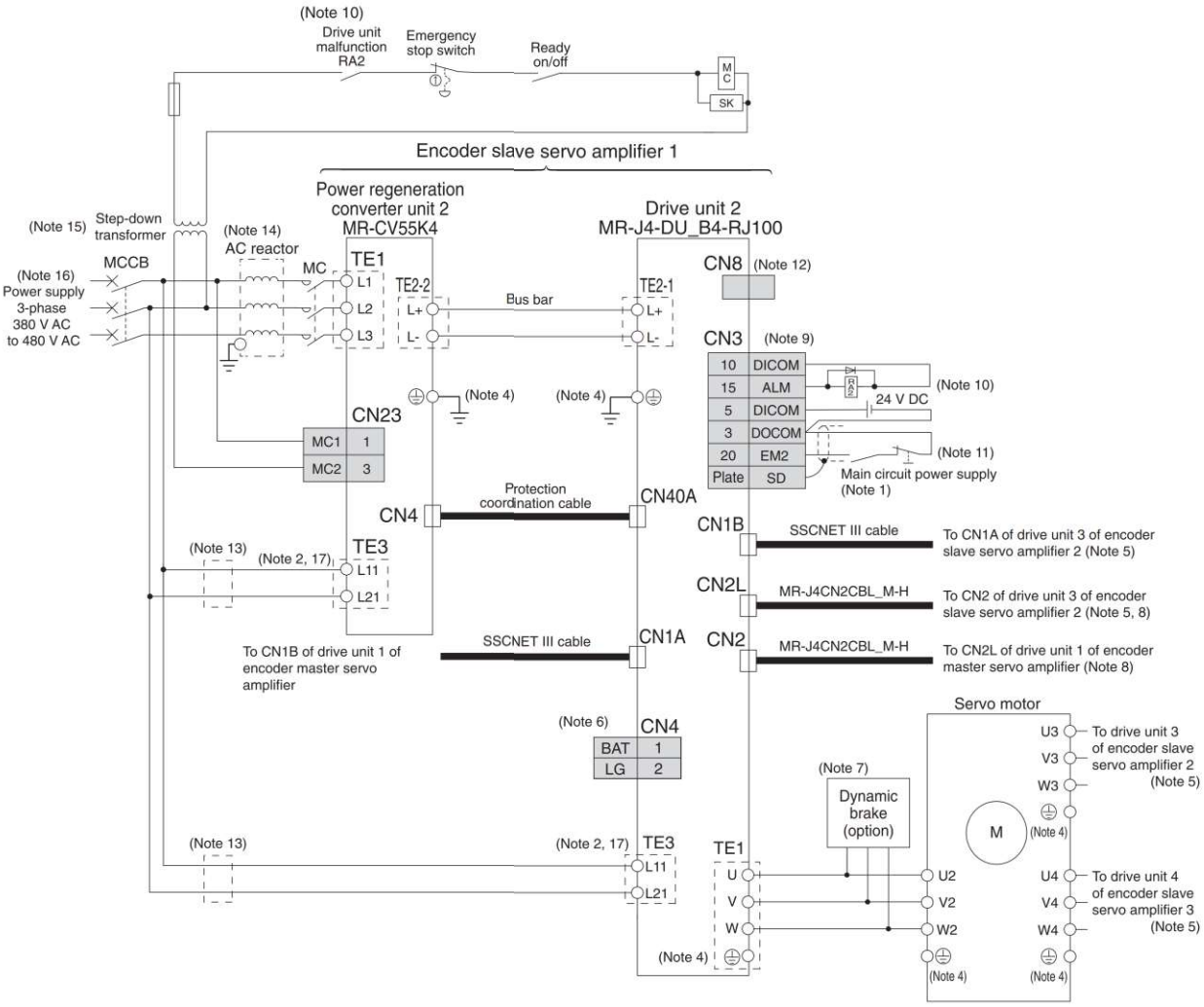


Notes: 1. To prevent an unexpected restart of the drive unit, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
2. The phases of the power supply connected to L11 and L21 on the power regeneration converter unit and the drive unit must always match the phases 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.

MR-J4-DU_B4-RJ100 Standard Wiring Diagram Example

B-RJ100

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



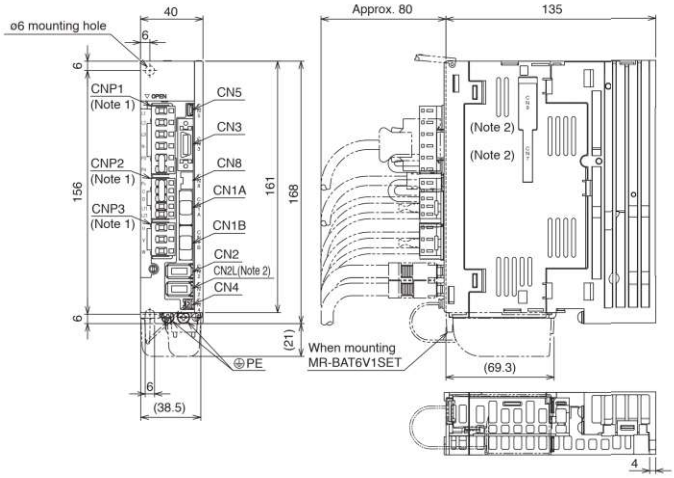
Notes: 1. To prevent an unexpected restart of the drive unit, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
2. The phases of the power supply connected to L11 and L21 on the power regeneration converter unit and the drive unit must always match the phases 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.
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).

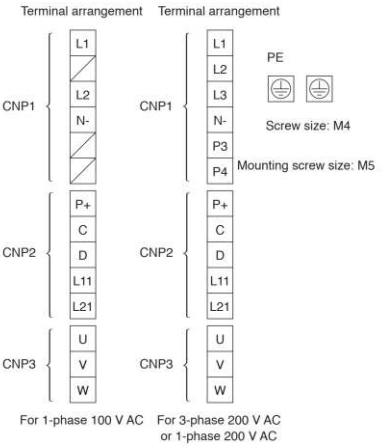
MR-J4-B/MR-J4-B-RJ Dimensions

B B-RJ

●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

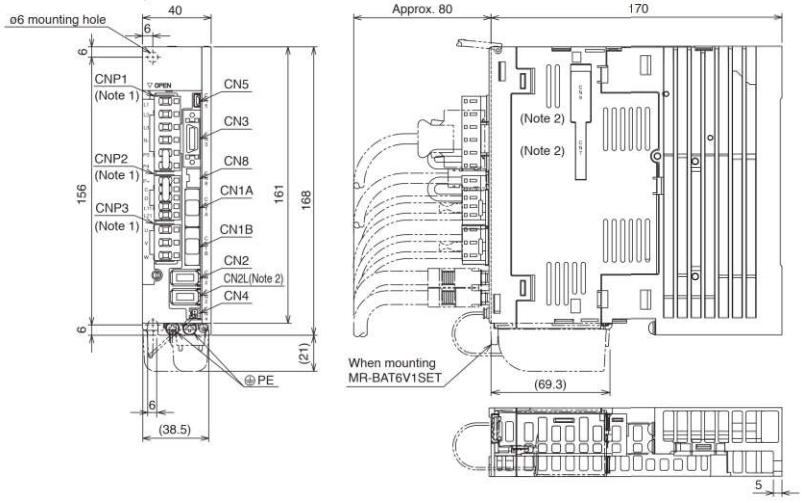


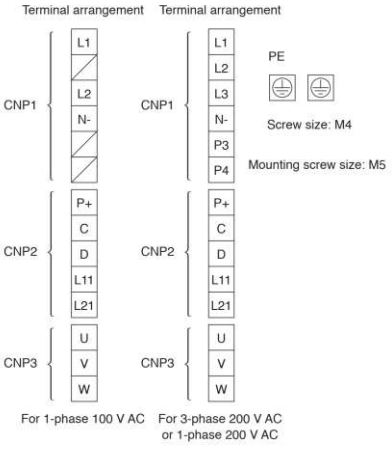


[Unit: mm]

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

●MR-J4-60B, MR-J4-60B-RJ

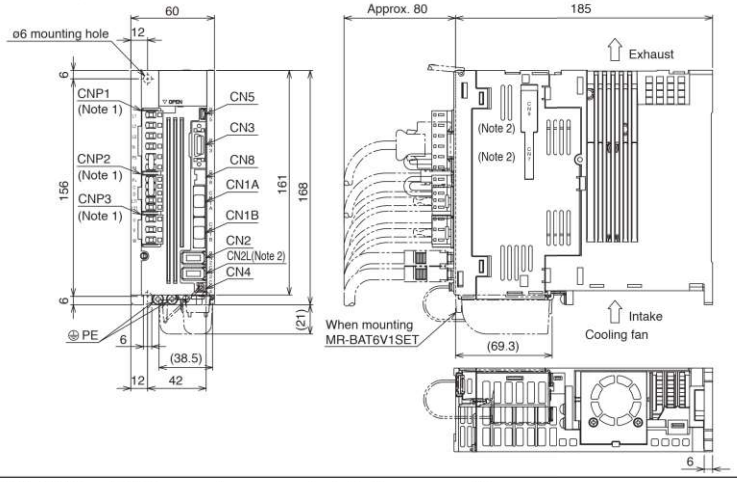


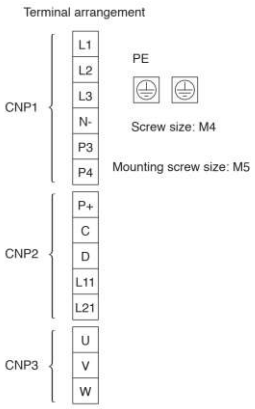


[Unit: mm]

●MR-J4-70B, MR-J4-70B-RJ

●MR-J4-100B, MR-J4-100B-RJ





[Unit: mm]

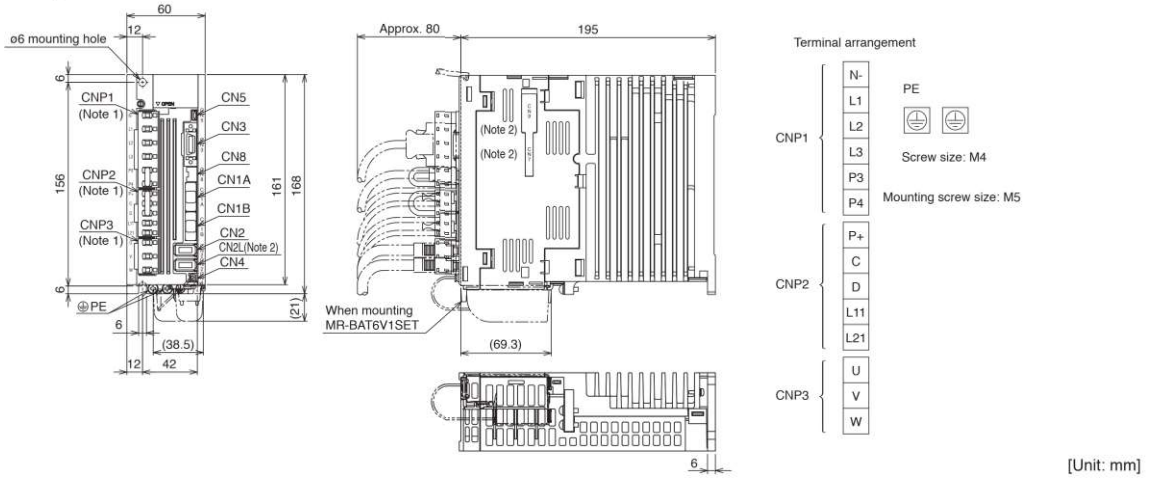
Notes: 1. CNP1, CNP2 and CNP3 connectors are supplied with the servo amplifier.
2. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

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

B B-RJ

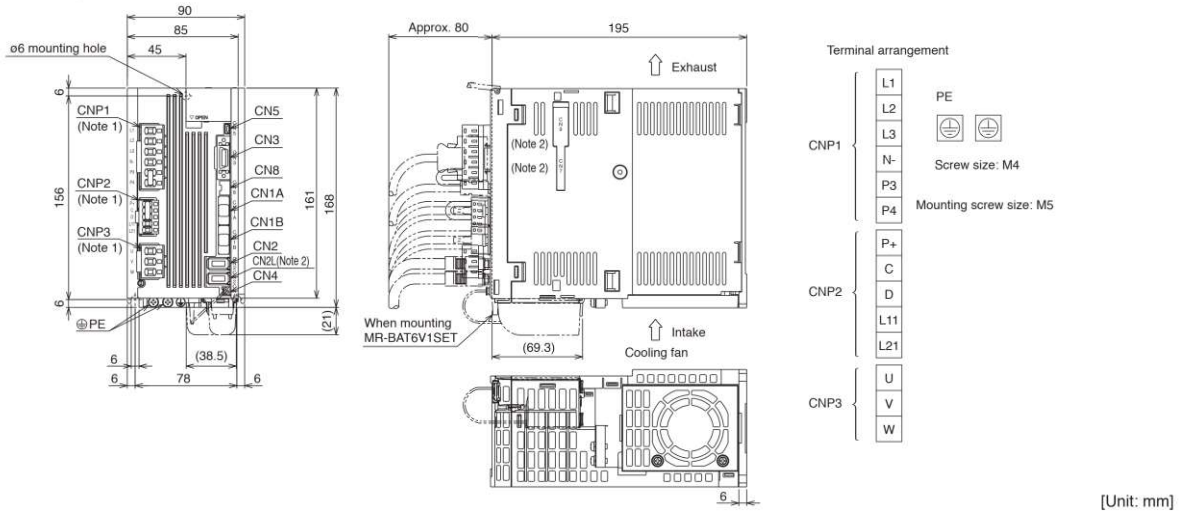
●MR-J4-60B4, MR-J4-60B4-RJ

●MR-J4-100B4, MR-J4-100B4-RJ



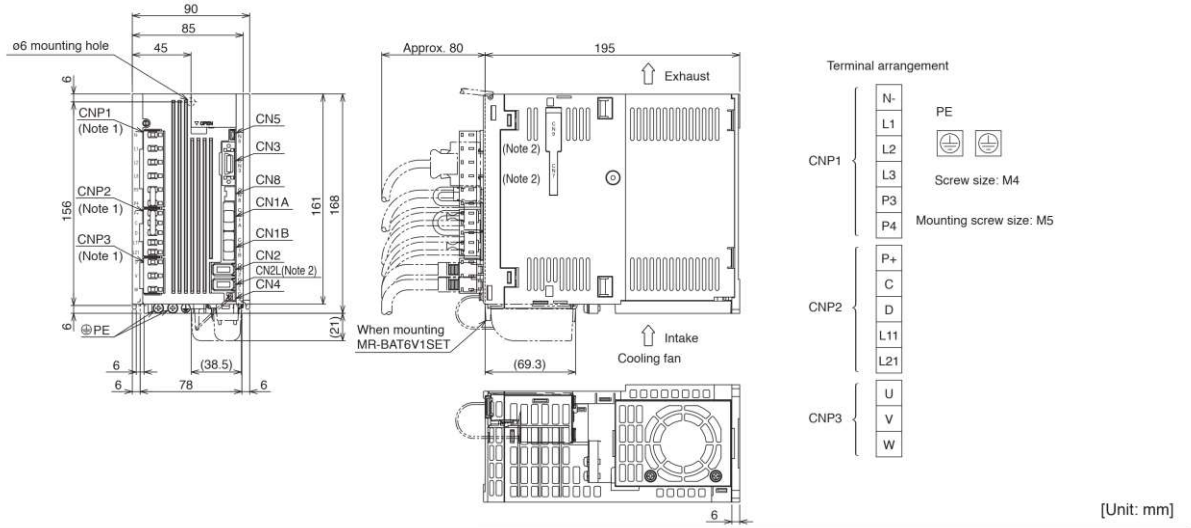
[Unit: mm]

●MR-J4-200B, MR-J4-200B-RJ



[Unit: mm]

●MR-J4-200B4, MR-J4-200B4-RJ



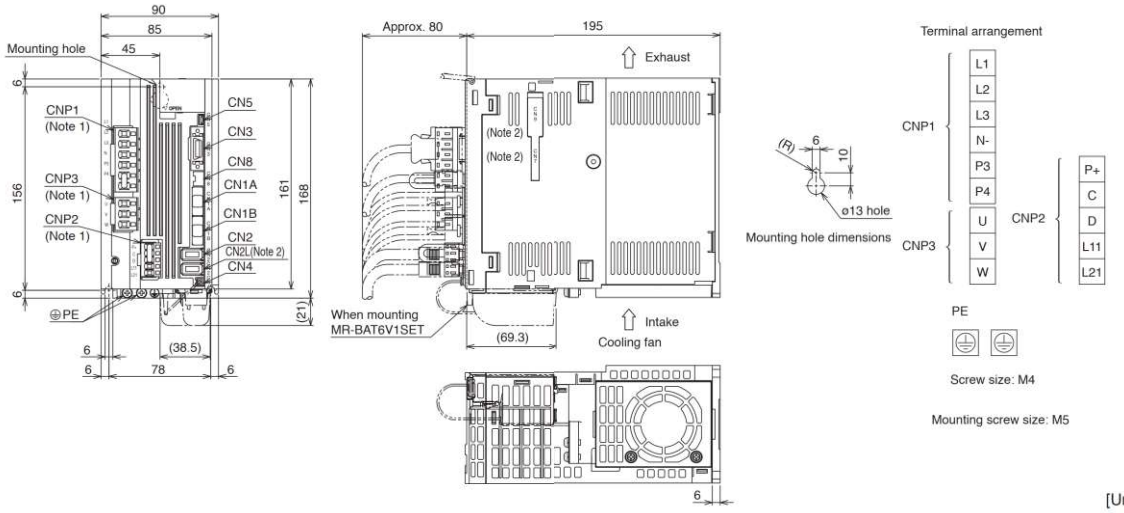
[Unit: mm]

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.

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

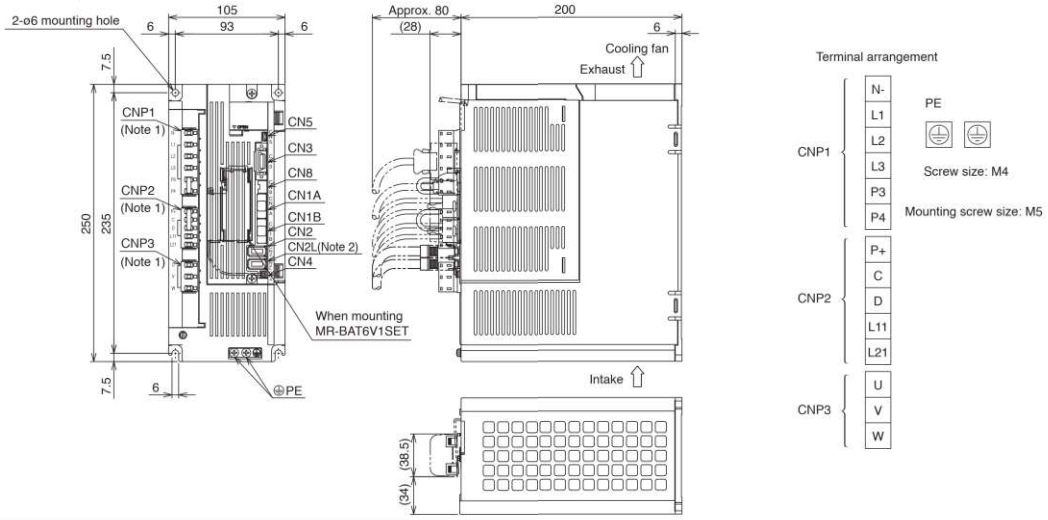
B B-RJ

●MR-J4-350B, MR-J4-350B-RJ



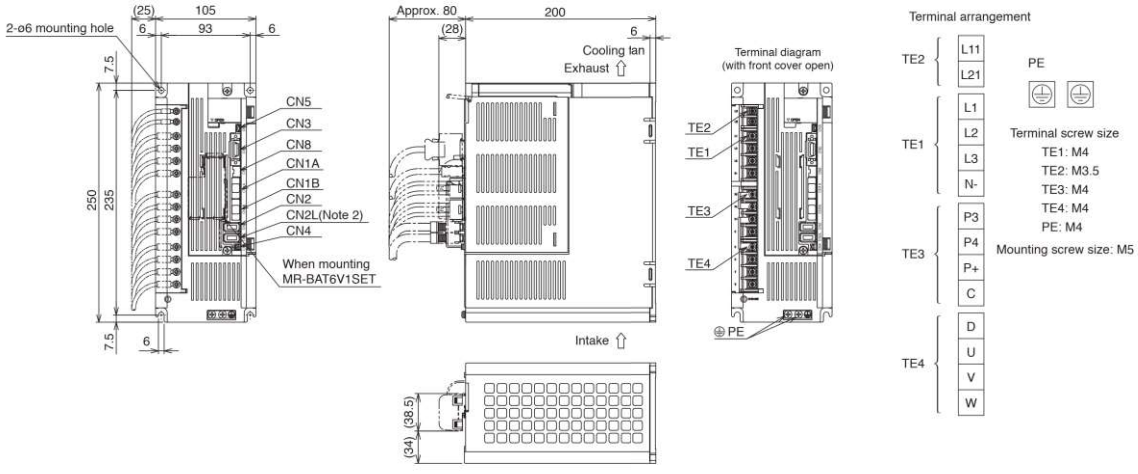
[Unit: mm]

●MR-J4-350B4, MR-J4-350B4-RJ



[Unit: mm]

●MR-J4-500B, MR-J4-500B-RJ



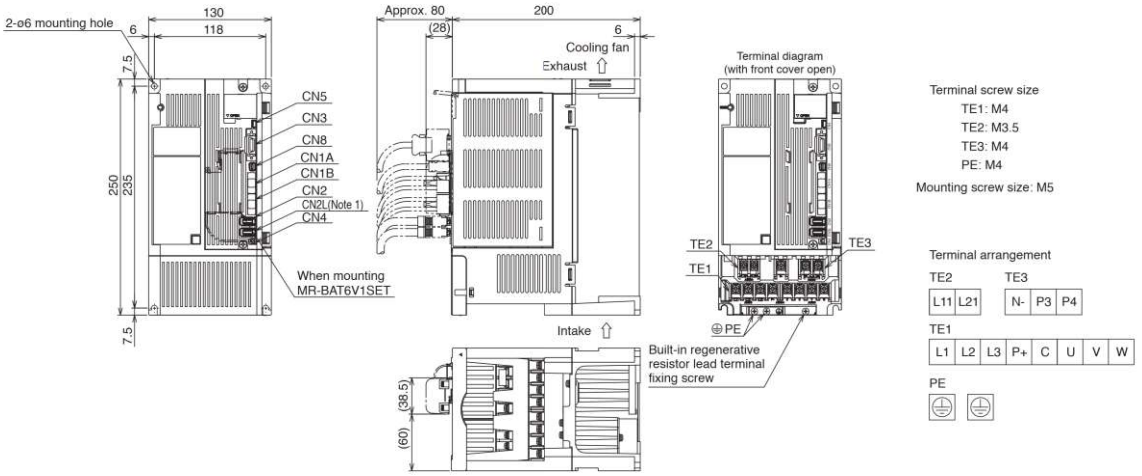
[Unit: mm]

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.

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

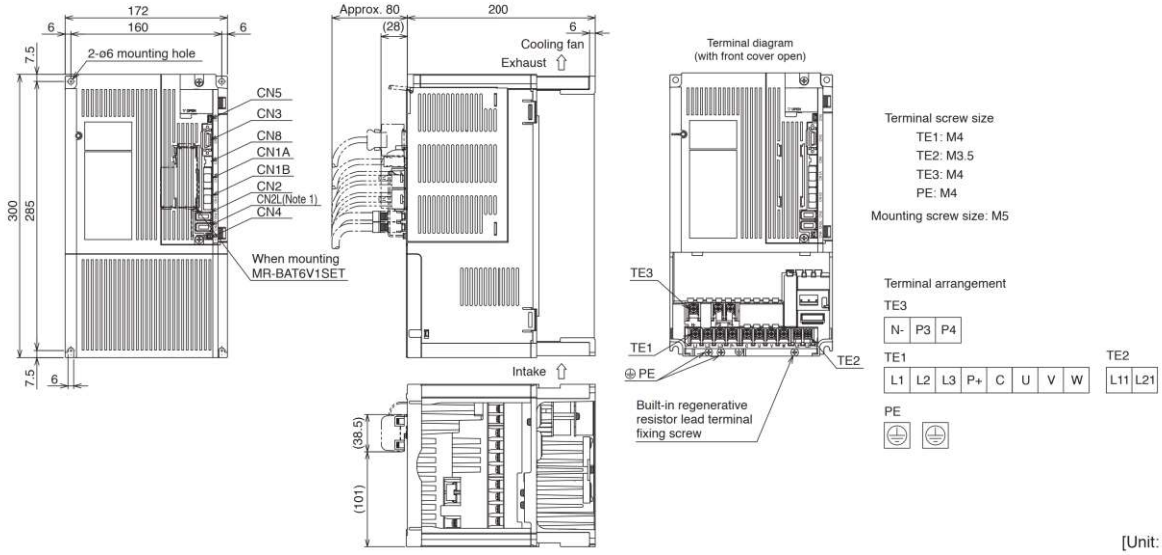
B B-RJ

●MR-J4-500B4, MR-J4-500B4-RJ



[Unit: mm]

●MR-J4-700B, MR-J4-700B-RJ, MR-J4-700B4, MR-J4-700B4-RJ



[Unit: mm]

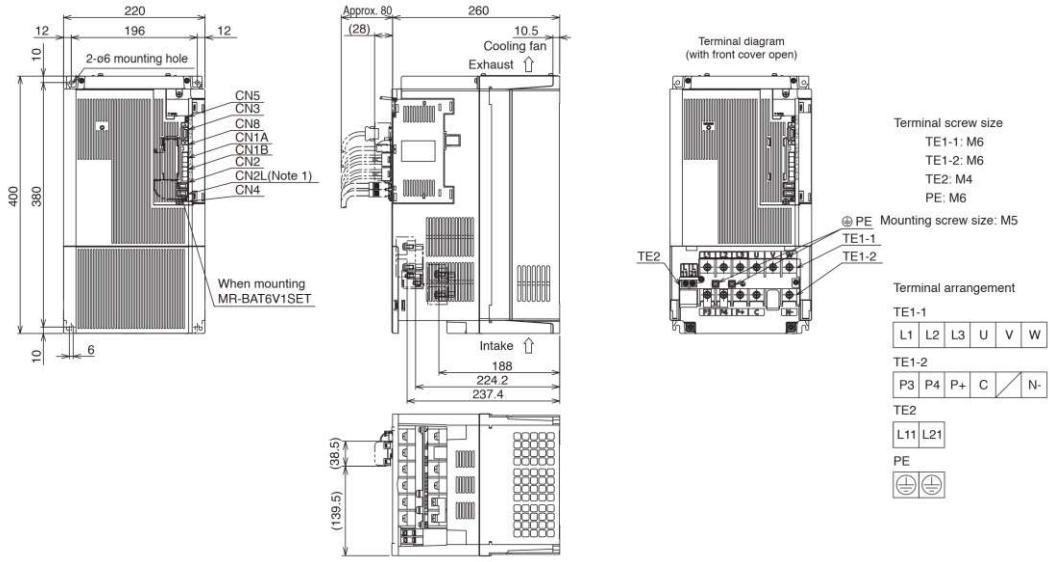
Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-B servo amplifier.

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

B B-RJ

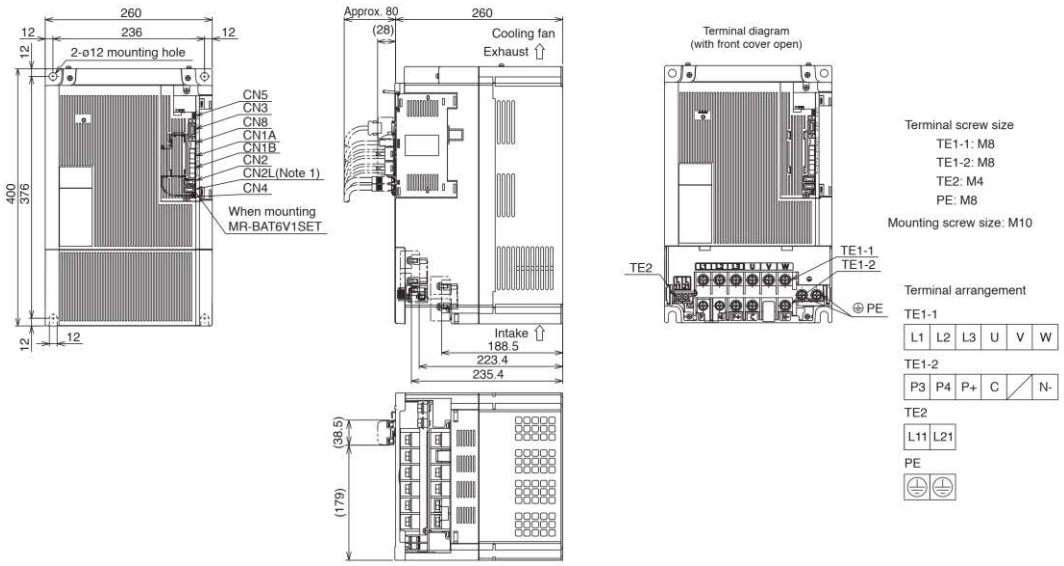
●MR-J4-11KB, MR-J4-11KB-RJ, MR-J4-11KB4, MR-J4-11KB4-RJ

●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



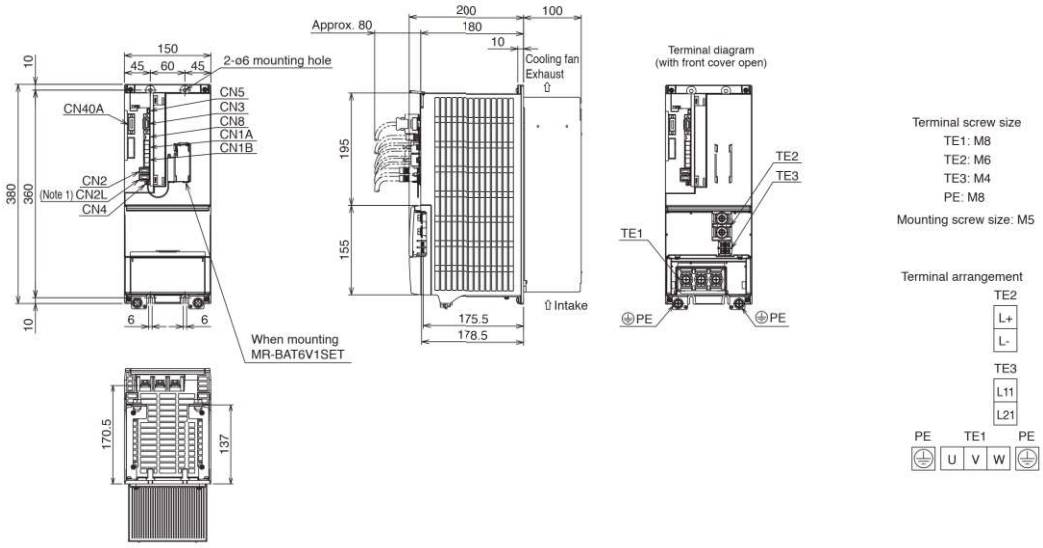
[Unit: mm]

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

MR-J4-DU_B/MR-J4-DU_B-RJ Dimensions

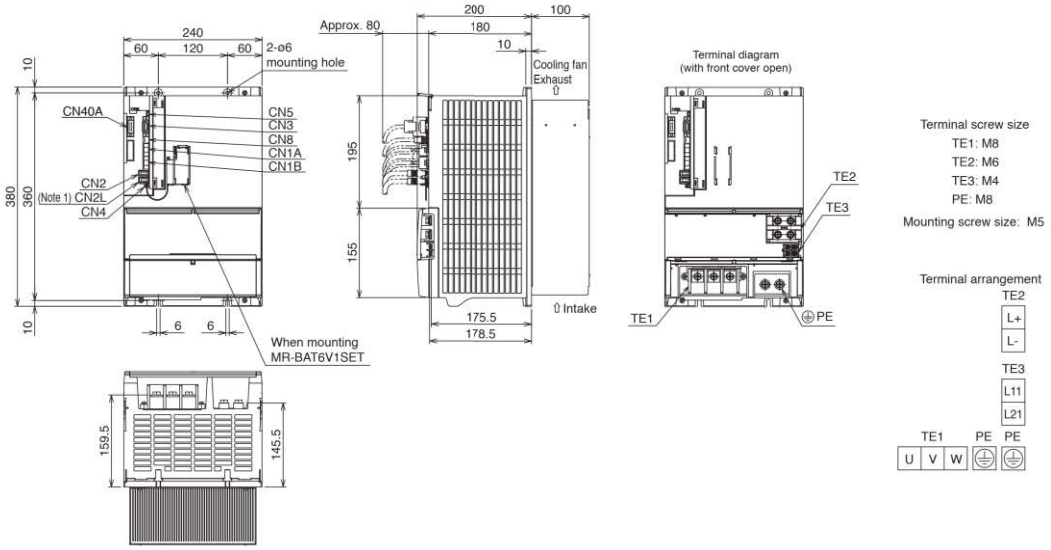
B B-RJ

●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



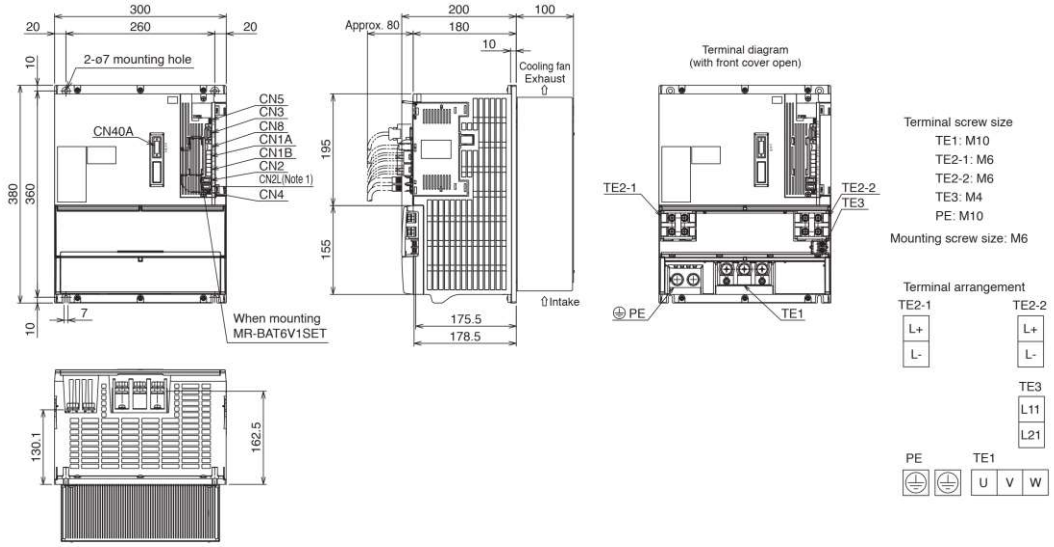
[Unit: mm]

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

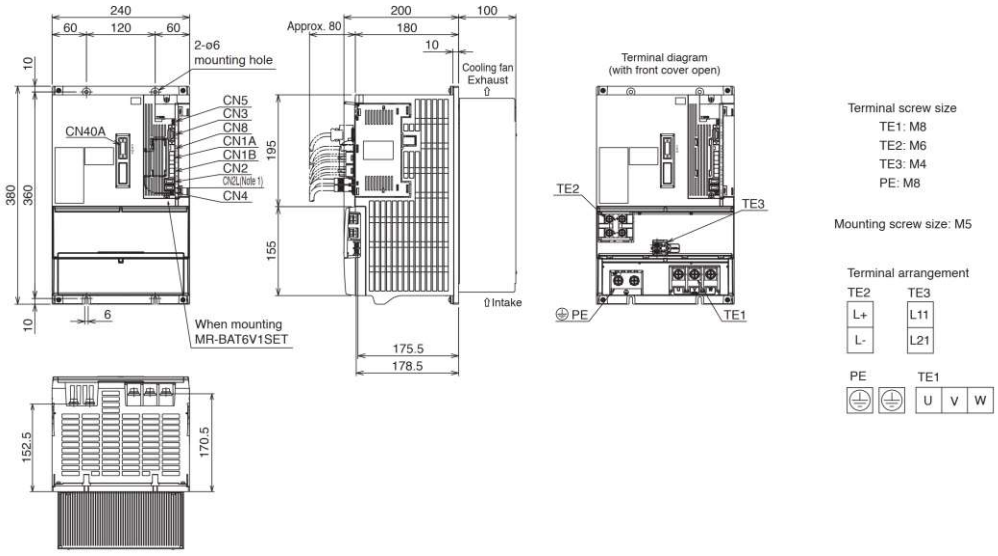
B B-RJ B-RJ100

- 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



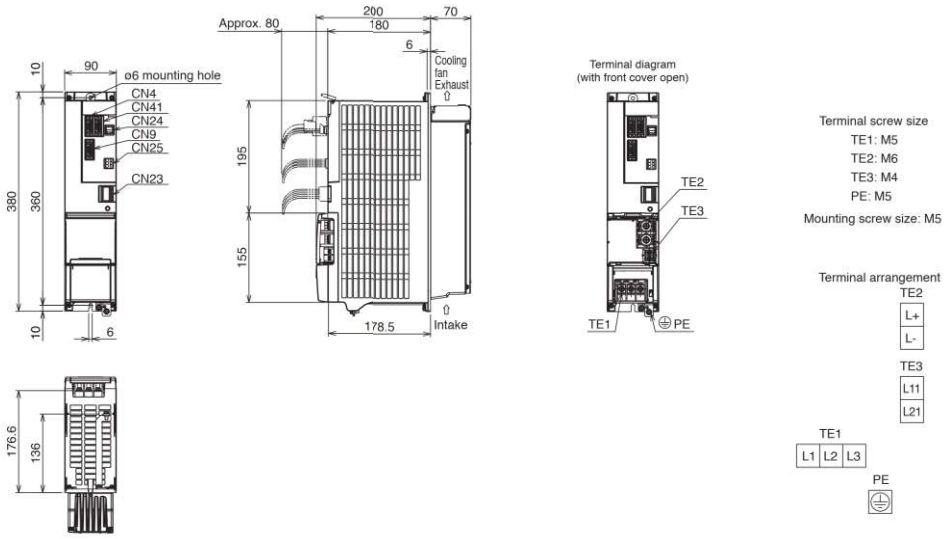
[Unit: mm]

Notes: 1. CN2L, CN7, and CN9 connectors are not available for MR-J4-DU_B_ drive unit.

MR-CV_ Power Regeneration Converter Unit Dimensions

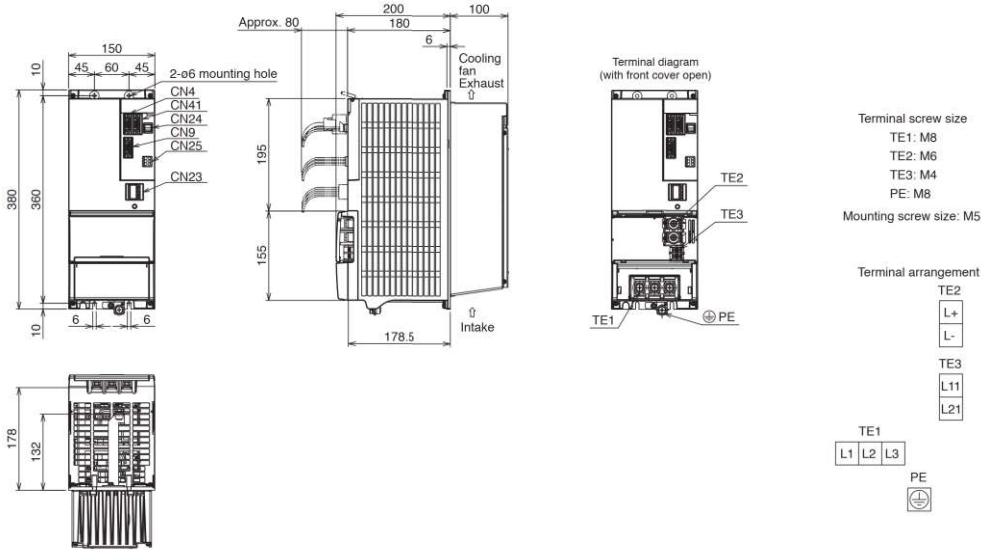
B B-RJ

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



[Unit: mm]

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

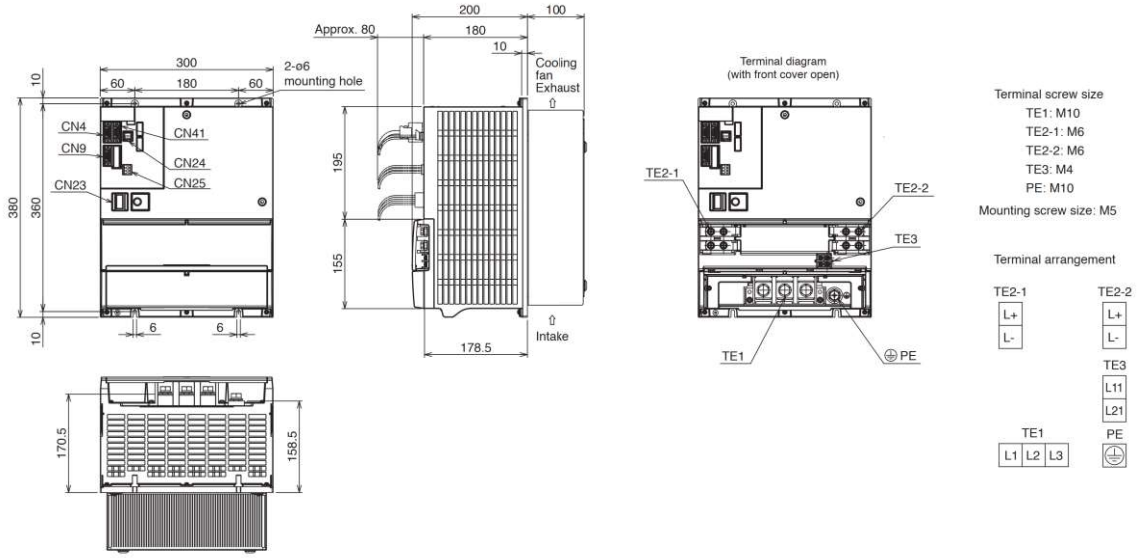


[Unit: mm]

MR-CV_ Power Regeneration Converter Unit Dimensions

B B-RJ B-RJ100

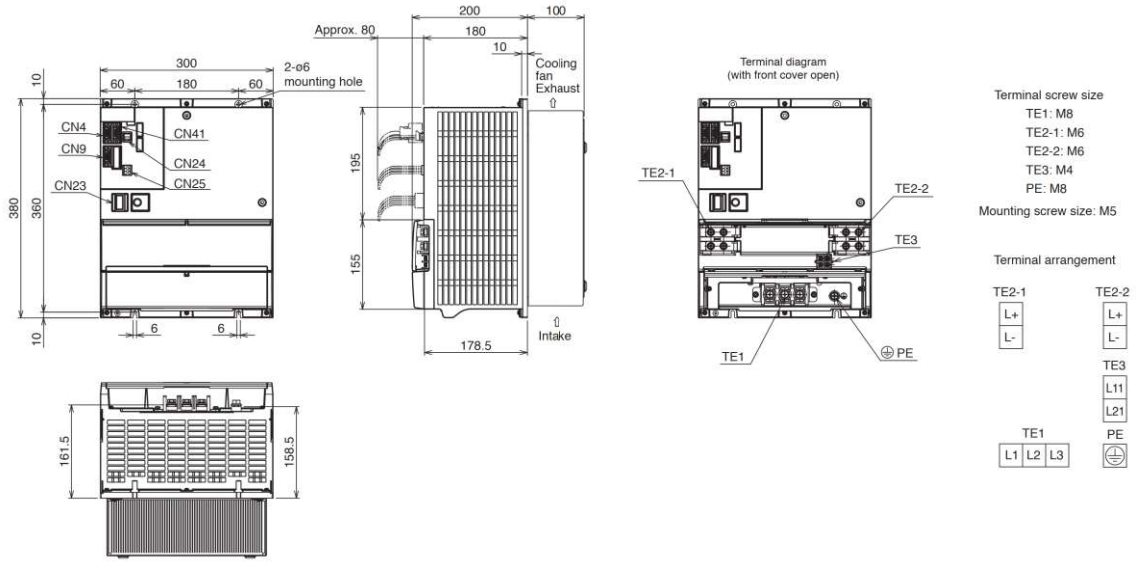
●MR-CV55K



[Unit: mm]

●MR-CV55K4

●MR-CV75K4

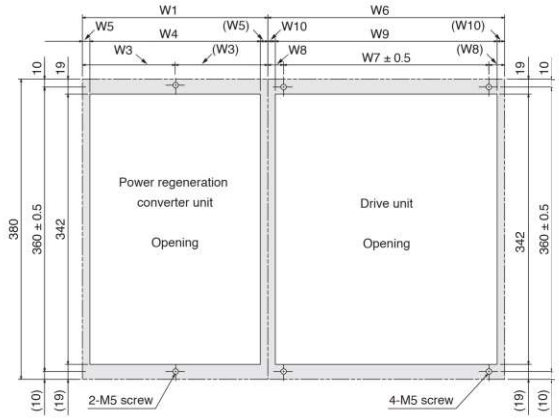


[Unit: mm]

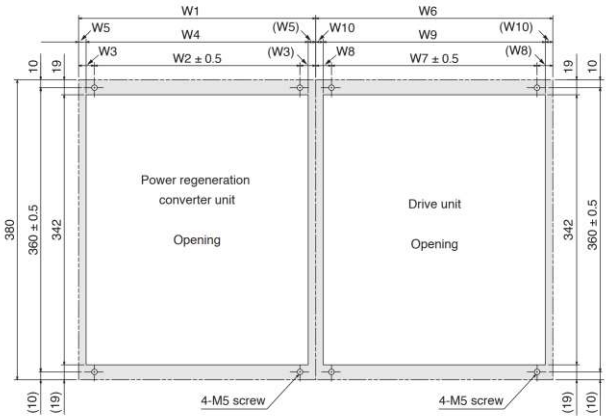
Panel Cut Dimensions for Power Regeneration Converter Unit and Drive unit

B B-RJ B-RJ100

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



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



Power regeneration converter unit	Variable dimensions				
	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

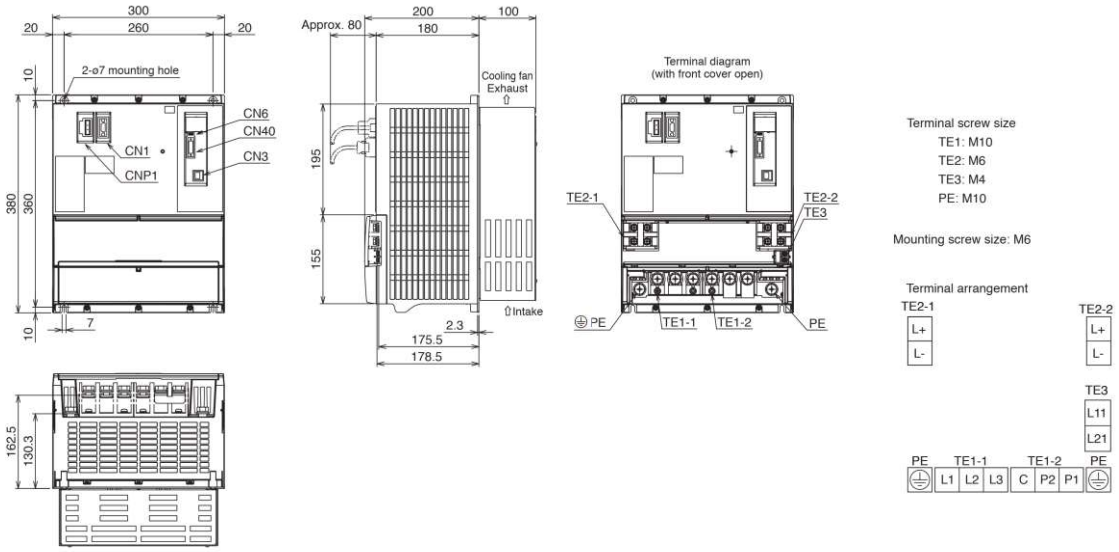
Drive unit	Variable dimensions				
	W6	W7	W8	W9	W10
MR-J4-DU900B(4)(-RJ), MR-J4-DU11KB(4)(-RJ)	150	60	45	142	4
MR-J4-DU15KB(4)(-RJ), MR-J4-DU22KB(4)(-RJ)	240	120	60	222	9
MR-J4-DU30KB(-RJ), MR-J4-DU37KB(-RJ) MR-J4-DU45KB4(-RJ), MR-J4-DU45KB4-RJ100 MR-J4-DU55KB4(-RJ), MR-J4-DU55KB4-RJ100	300	260	20	281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

[Unit: mm]

MR-CR_ Resistance Regeneration Converter Unit Dimensions

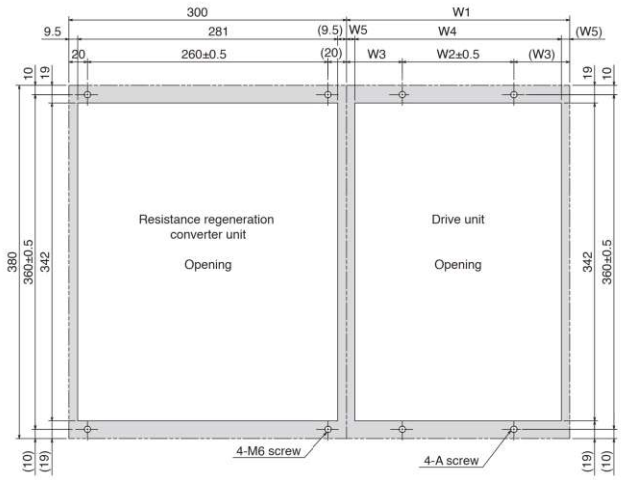
B B-RJ A A-RJ

●MR-CR55K, MR-CR55K4



[Unit: mm]

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



Drive unit model	Variable dimensions					Screw size
	W1	W2	W3	W4	W5	A
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

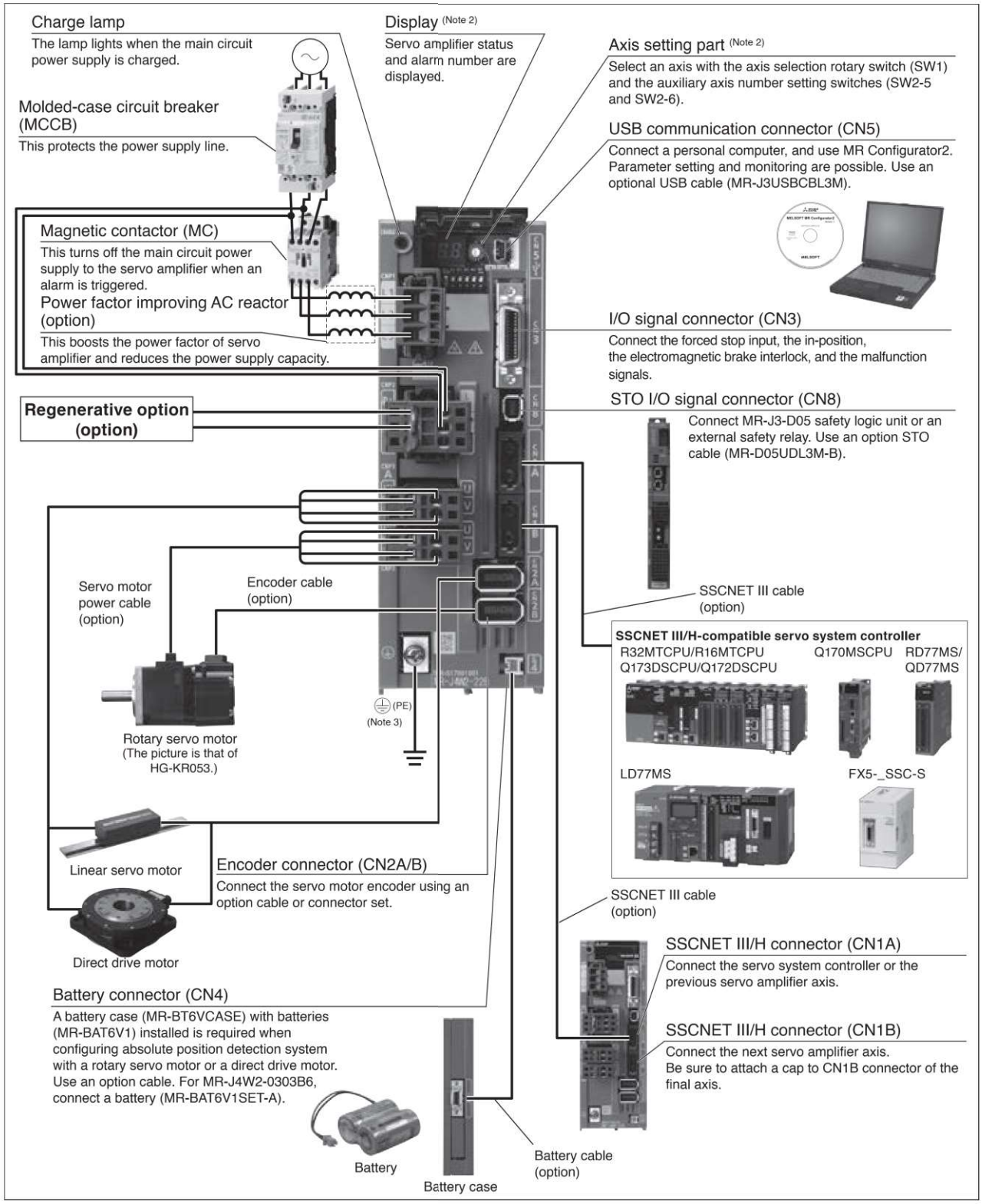
[Unit: mm]

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-J4W2-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for the actual connections of the multi-axis servo amplifier.
2. This picture shows when the display cover is open.
3. Connect the grounding terminal of the servo motor to ⏚ 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).

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			
	Rated current (each axis)	[A]	1.5	2.8	5.8	6.0
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz
	Rated current (Note 15)	[A]	2.9	5.2	7.5	9.8
	Permissible voltage fluctuation		3-phase or 1-phase 170 V AC to 264 V AC			3-phase 170 V AC to 264 V AC
	Permissible frequency fluctuation		±5% maximum			
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz			
	Rated current	[A]	0.4			
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC			
	Permissible frequency fluctuation		±5% maximum			
	Power consumption	[W]	55			
Interface power supply			24 V DC ± 10% (required current capacity: 0.35 A (including CN8 connector signals))			
Control method			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)	[× 10^{-4} kg•m^2]	3.45	4.26	8.92	
	Mass equivalent to permissible charging amount (Note 7)	LM-H3 [kg]	3.8	4.7	9.8	
		LM-K2 LM-U2 [kg]	8.5	10.5	22.0	
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3)		[W]	20		100	
Dynamic brake (Note 4)			Built-in			
SSCNET III/H command communication cycle (Note 13)			0.222 ms, 0.444 ms, 0.888 ms			
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)			
Encoder output 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-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-J4W2-B (2-axis, SSCNET III/H Interface) Specifications

WB

Servo amplifier 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 Category 3 PL e, IEC 61508 SIL 3, EN 62061 SIL CL 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 × 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 mounting		Possible			
Environment	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)			
	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 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)			
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 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 two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the two axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis. The value also applies to the direct drive motor.
7. This value is the mass when the linear servo motor decelerates from maximum speed to a stop. Mass of primary side (coil) is included. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the two axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.
8. The test pulse is a signal for the external circuit to perform self-diagnosis by turning off the signals to the servo amplifier instantaneously at regular intervals.
9. Not compatible with pulse train interface (A/B/Z-phase differential output type).
10. STO is common for all axes.
11. The load-side encoder and the servo motor encoder are 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-			222B	444B
Output	Rated voltage		3-phase 170 V AC	
	Rated current (each axis)	[A]	1.5	2.8
Main circuit power supply input	Voltage/frequency (Note 1)		3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
	Rated current (Note 12)	[A]	4.3	7.8
	Permissible voltage fluctuation		3-phase or 1-phase 170 V AC to 264 V AC	
	Permissible frequency fluctuation		±5% maximum	
Control circuit power supply input	Voltage/frequency		1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
	Rated current	[A]	0.4	
	Permissible voltage fluctuation		1-phase 170 V AC to 264 V AC	
	Permissible frequency fluctuation		±5% maximum	
	Power consumption	[W]	55	
Interface power supply			24 V DC ± 10% (required current capacity: 0.45 A (including CN8 connector signals))	
Control method			Sine-wave PWM control/current control method	
Capacitor regeneration	Reusable regenerative energy (Note 5)	[J]	21	30
	Moment of inertia (J) equivalent to permissible charging amount (Note 6)	[× 10^{-4} kg•m^2]	4.26	6.08
	Mass equivalent to permissible charging amount (Note 7)	LM-H3 [kg]	4.7	6.7
		LM-K2 LM-U2 [kg]	10.5	15.0
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3)		[W]	30	
Dynamic brake (Note 4)			Built-in	
SSCNET III/H command communication cycle (Note 10)			0.222 ms (Note 11), 0.444 ms, 0.888 ms	
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)	
Encoder output 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	

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

WB

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 61508 SIL 3, EN 62061 SIL CL 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 = 6.4×10^{-9} [1/h]	
Compliance with global standards		Refer to "Compliance with Global Standards and Regulations" on p. 55 in this catalog.	
Structure (IP rating)		Force cooling, open (IP20)	
Close mounting		Possible	
Environment	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)	
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust	
	Altitude	2000 m or less above sea level (Note 13)	
	Vibration resistance	5.9 m/s^2 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

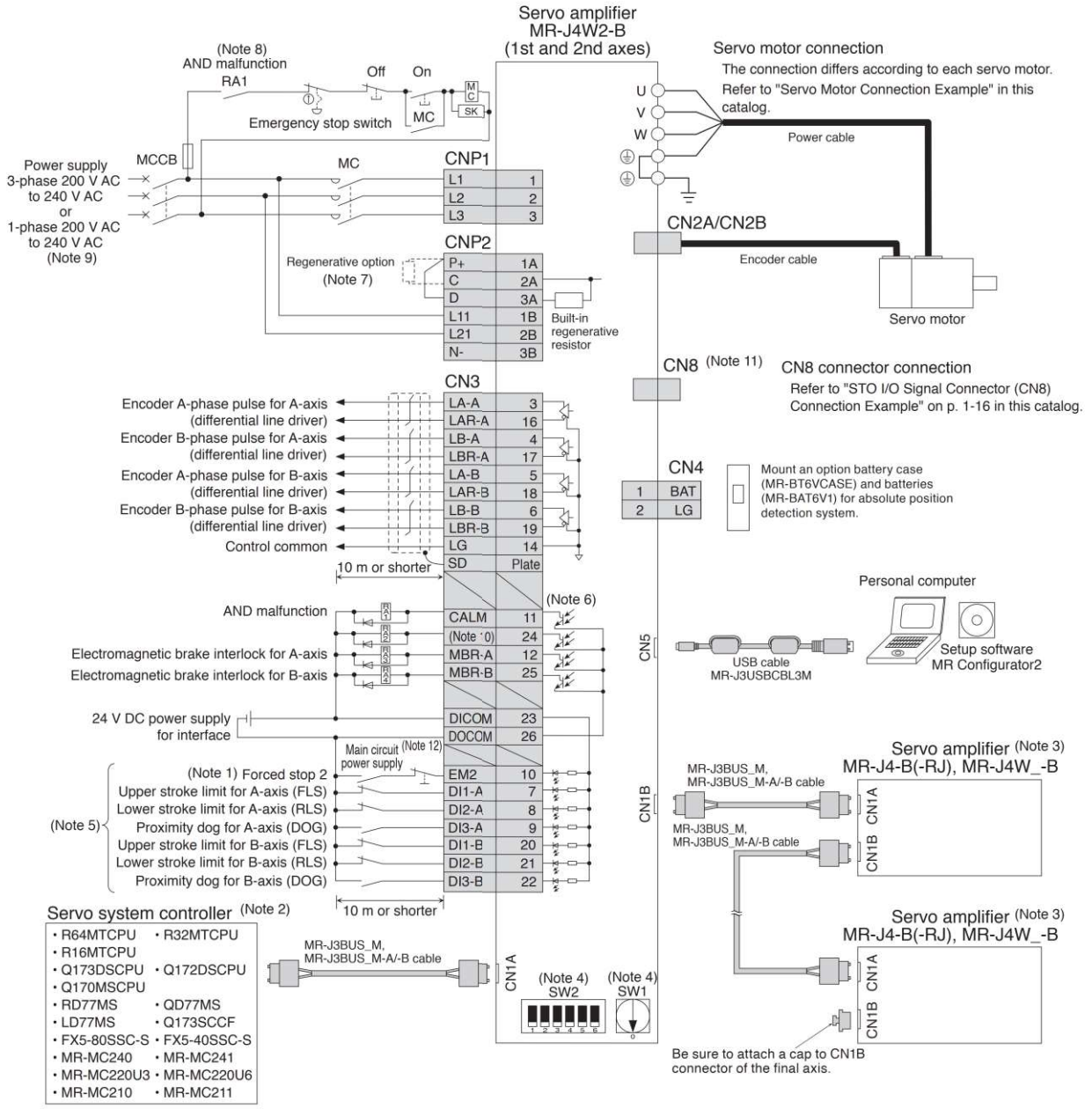
WB

Servo amplifier model			MR-J4W2-0303B6
Output	Rated voltage		3-phase 13 V AC
	Rated current (each axis)	[A]	2.4
Main circuit power supply input	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
	Permissible voltage fluctuation		For 48 V DC: 40.8 V DC to 55.2 V DC For 24 V DC: 21.6 V DC to 26.4 V DC
Control circuit power supply input	Voltage		24 V DC
	Rated current	[A]	0.5
	Permissible voltage fluctuation		21.6 V DC to 26.4 V DC
	Power consumption	[W]	10
Interface power supply			24 V DC ± 10% (required current capacity: 0.25 A)
Control method			Sine-wave PWM control/current control method
Capacitor regeneration	Reusable regenerative energy (Note 2)	[J]	0.9
	Moment of inertia (J) equivalent to permissible charging amount (Note 3)	[× 10^{-4} kg•m^2]	0.18
Permissible regenerative power of the built-in regenerative resistor		[W]	1.3
Dynamic brake (Note 6)			Built-in (Note 5)
SSCNET III/H command communication cycle (Note 8)			0.222 ms, 0.444 ms, 0.888 ms
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)
Encoder output pulse			Compatible (A/B-phase pulse)
Analog monitor			2 channels
Fully closed loop control			Not compatible
Servo functions			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 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
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
Environment	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)
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust
	Altitude		1000 m or less above sea level
	Vibration resistance		5.9 m/s^2 at 10 Hz to 55 Hz (directions of X, Y and Z axes)
Mass		[kg]	0.3

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.
2. 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.
3. 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.
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.
5. 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.
6. 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.
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.

MR-J4W2-B Standard Wiring Diagram Example (Note 13)

WB

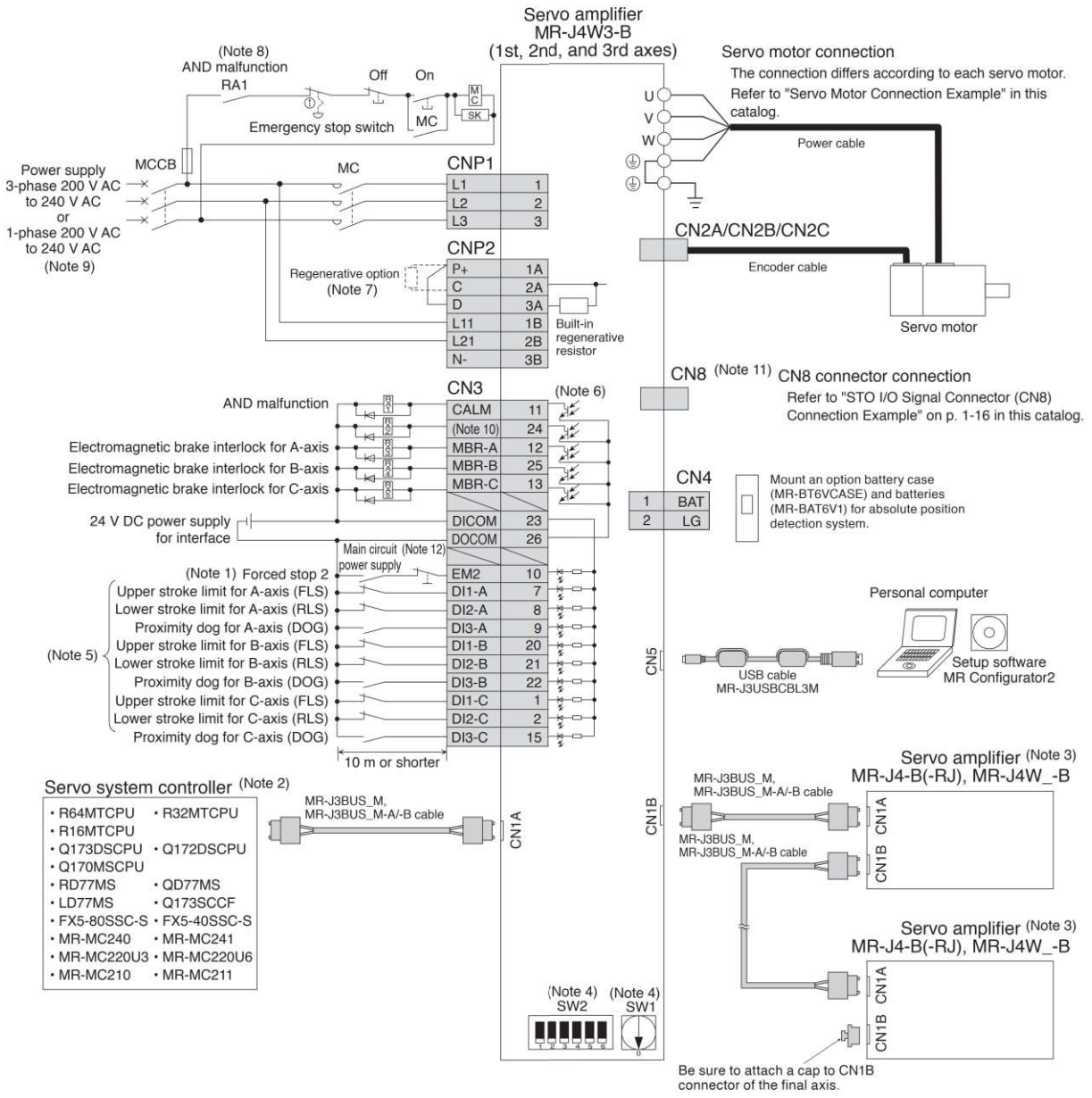


Notes: 1. The forced stop signal is issued for two axes of the servo amplifier. For overall system, apply the emergency stop on the servo system controller side.
2. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller.
3. Connections for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

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

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

WB



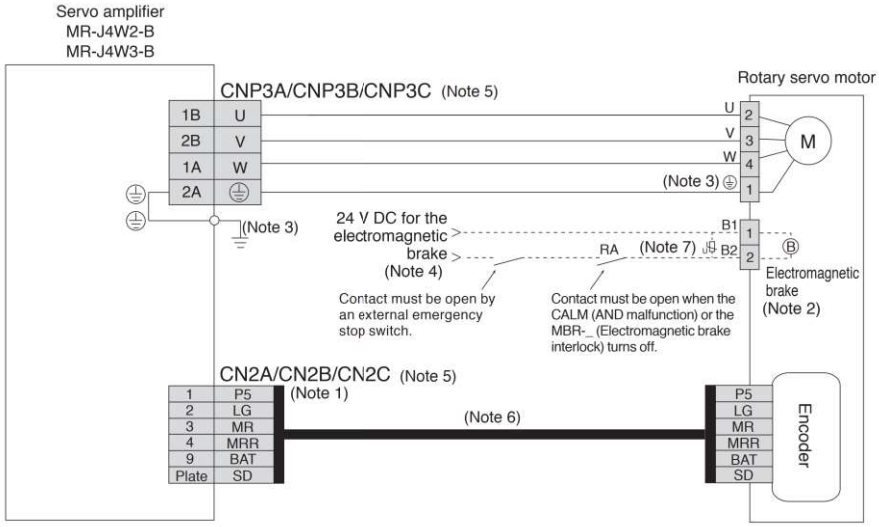
Notes: 1. The forced stop signal is issued for three axes of the servo amplifier. For overall system, apply the emergency stop on the servo system controller side.
2. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller.
3. Connections 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-_B MR-J4W3-_B MR-J4W2-0303B6 Servo Amplifier Instruction Manual" for a connection example of the power supply circuit.

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

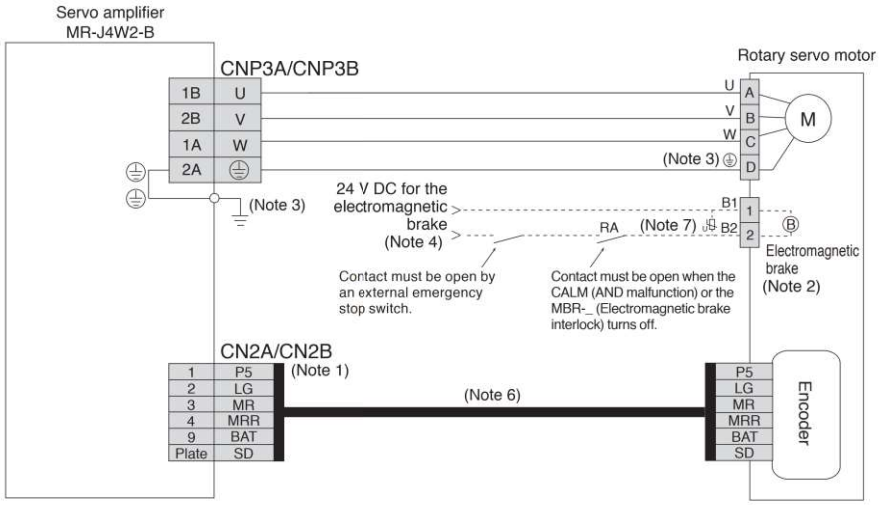
Servo Motor Connection Example (Rotary Servo Motor)

Semi-Closed Loop Control System 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 ⏚ of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (⏚) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
5. 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.

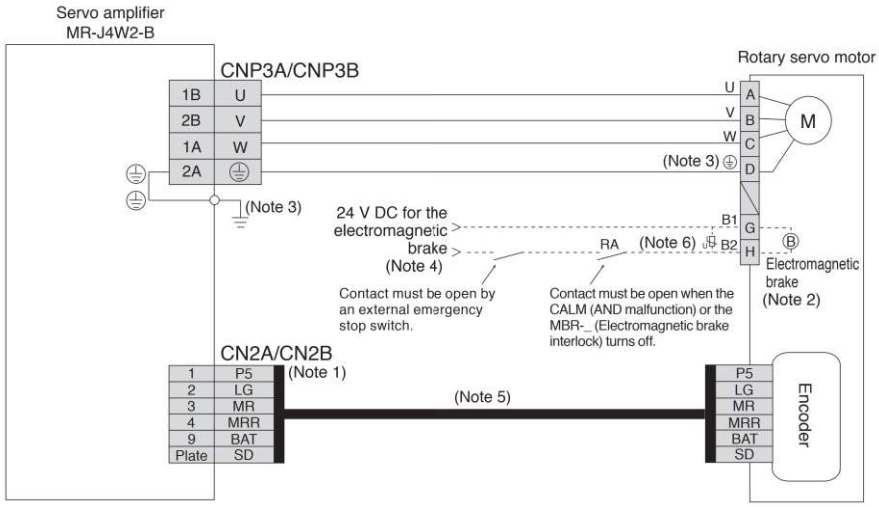
⚠ Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor)

WB

Semi-Closed Loop Control System with MR-J4W2-B

●For HG-UR series



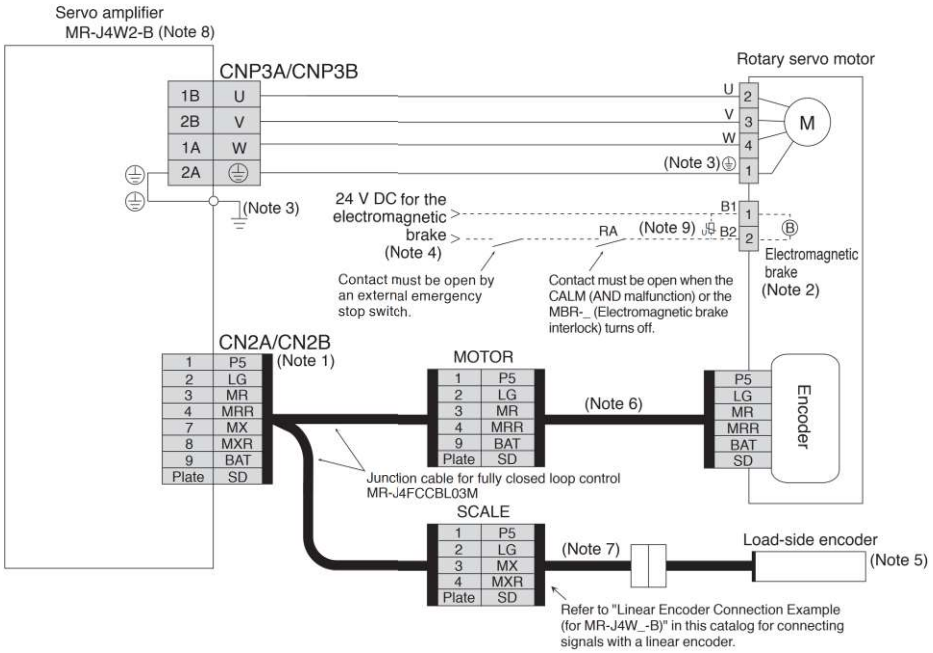
Notes: 1. The signals shown are applicable when using a two-wire type encoder cable. Four-wire type is also compatible.
2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
3. Connect the grounding terminal of the servo motor to ⏚ 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.

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

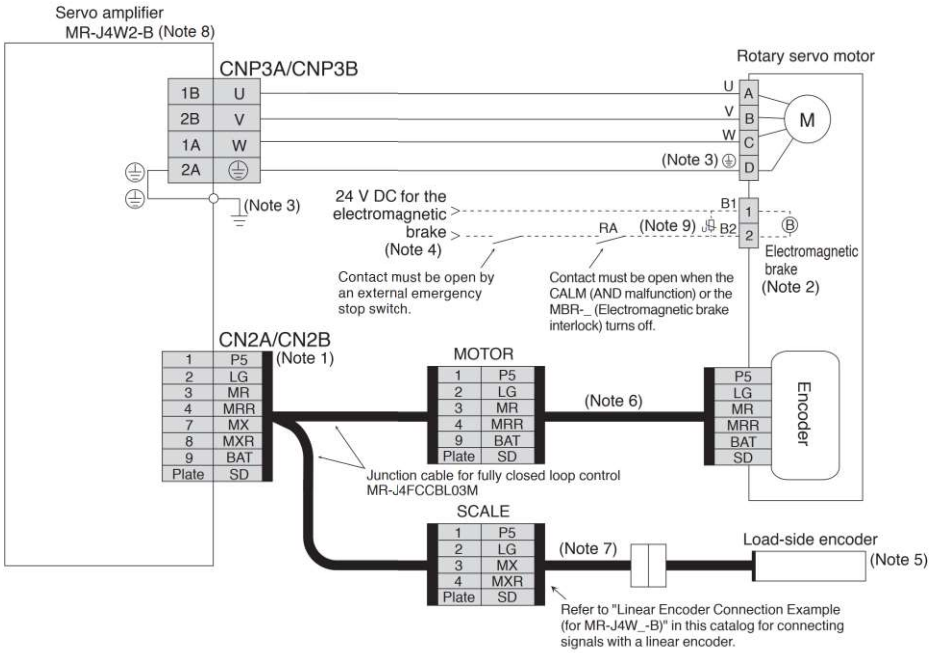
Servo Motor Connection Example (Rotary Servo Motor)

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-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.

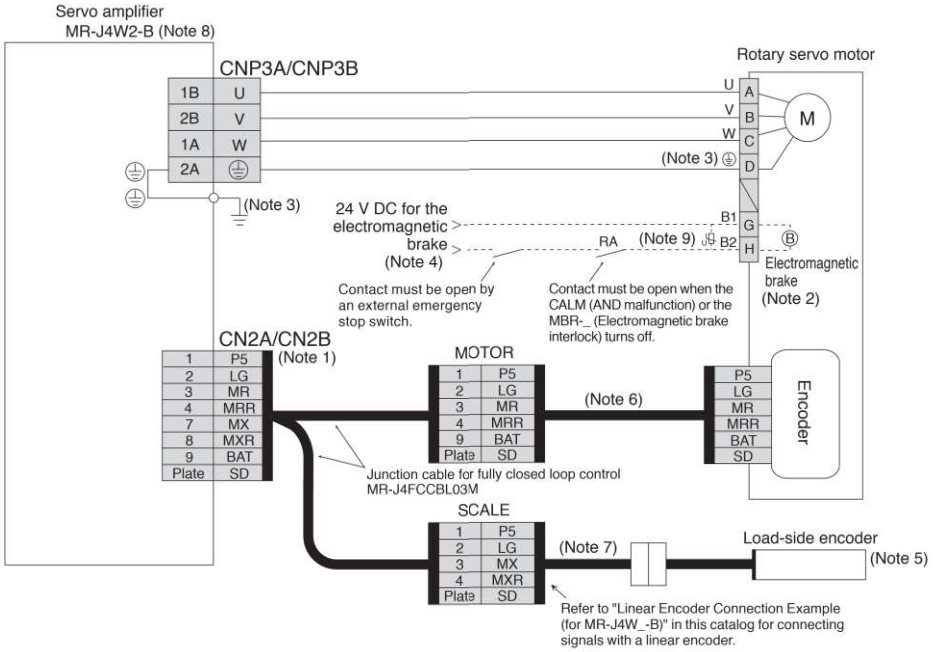
⚠ Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor)

WB

Fully Closed Loop Control System with MR-J4W2-B

●For HG-UR series



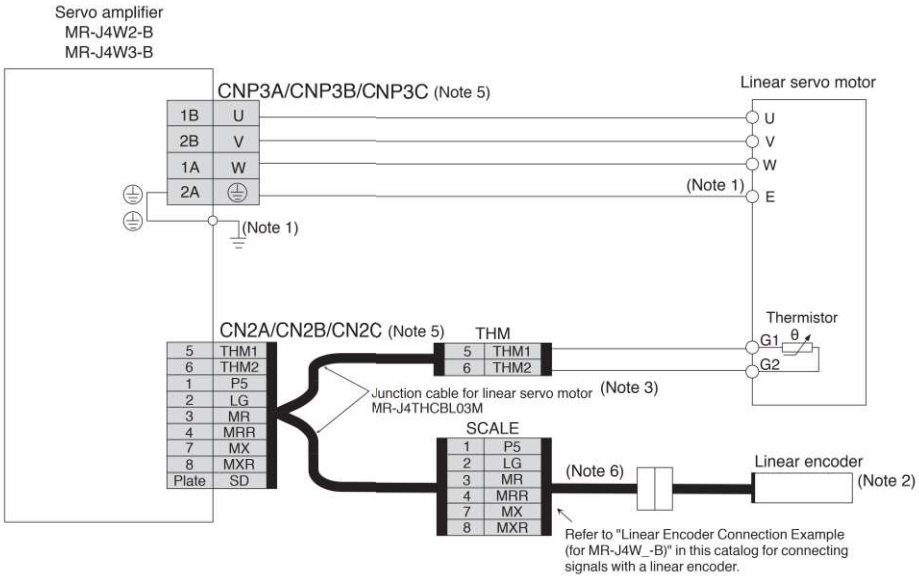
Notes: 1. For fully closed loop control, the load-side encoder and the servo motor encoder are compatible only with two-wire type communication method. Four-wire type cannot be used.
2. This is for the servo motor with electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.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

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

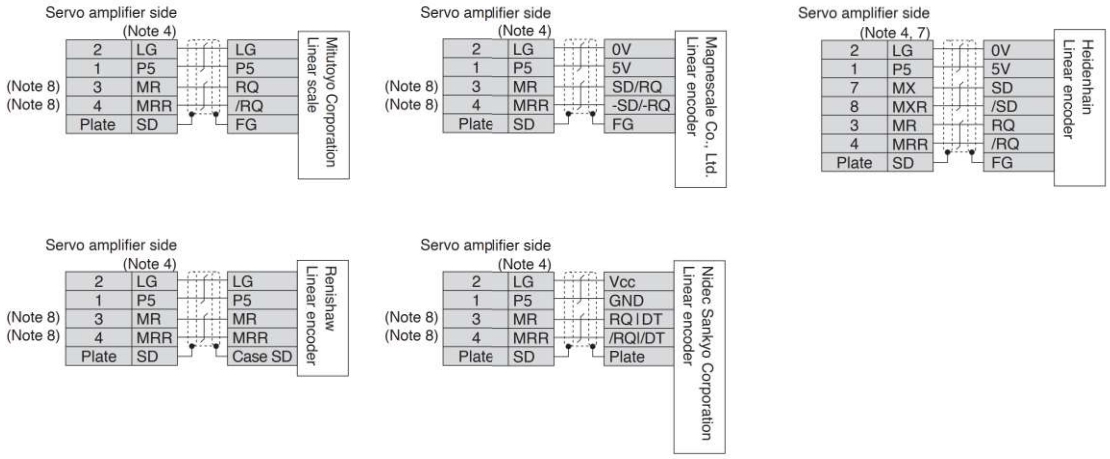
Servo Motor Connection Example (Linear Servo Motor)

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)



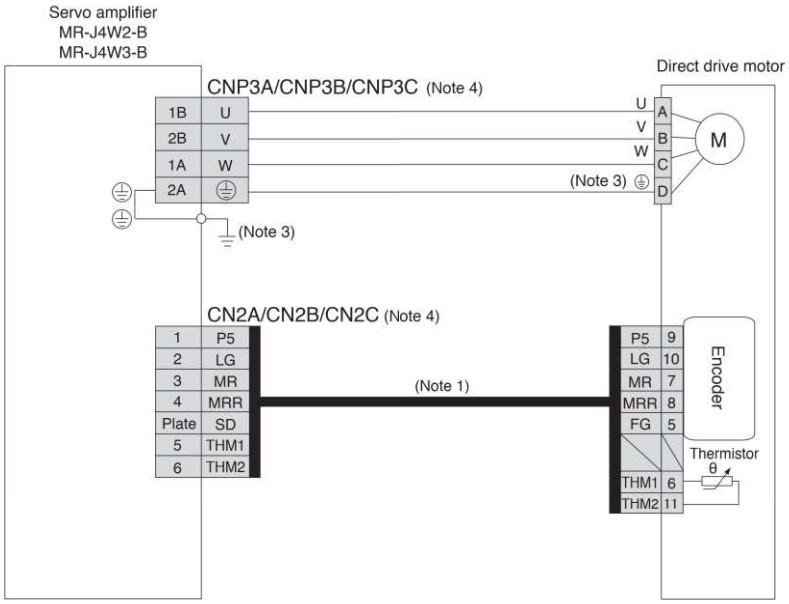
Notes: 1. Connect the grounding terminal of the servo motor to ⏚ of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (⏚) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
2. For linear encoders, refer to "List of Linear Encoders" under section 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.
8. For the fully closed loop control, the signals of 3-pin and 4-pin are as follows:
3-pin: MX
4-pin: MXR

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

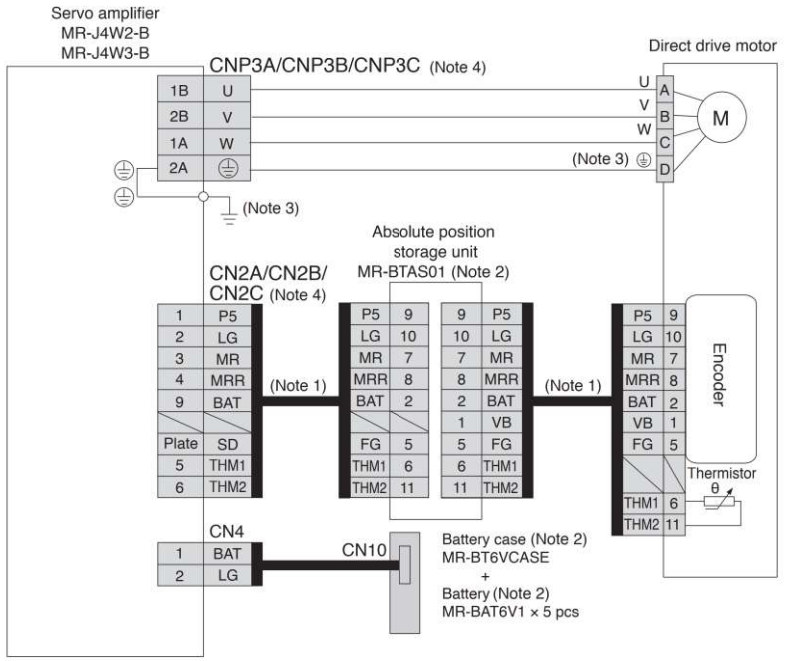
Servo Motor Connection Example (Direct Drive Motor)

WB

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



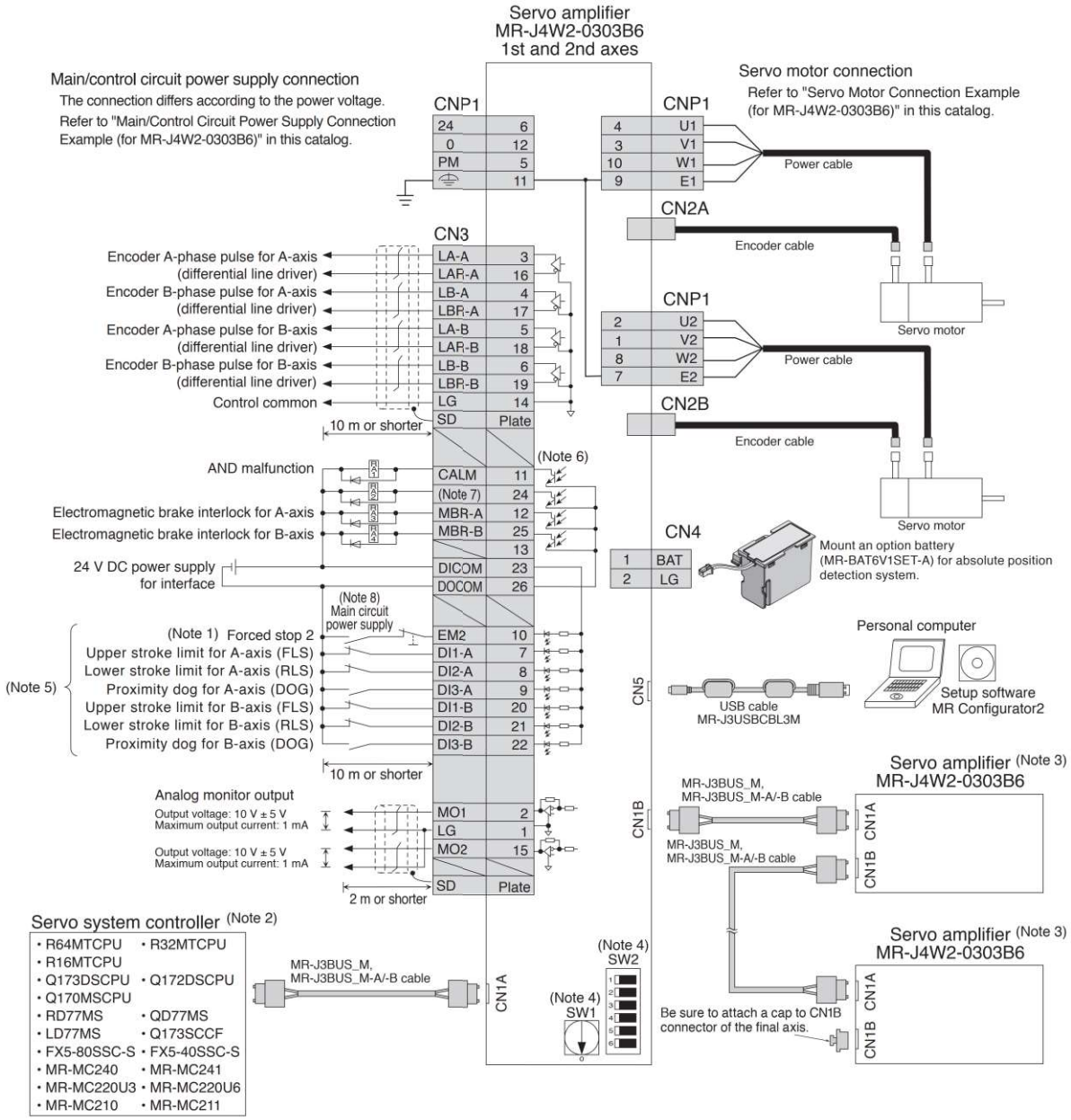
●For TM-RG2M/TM-RU2M/TM-RFM series (absolute position detection system)



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.

MR-J4W2-0303B6 Standard Wiring Diagram Example



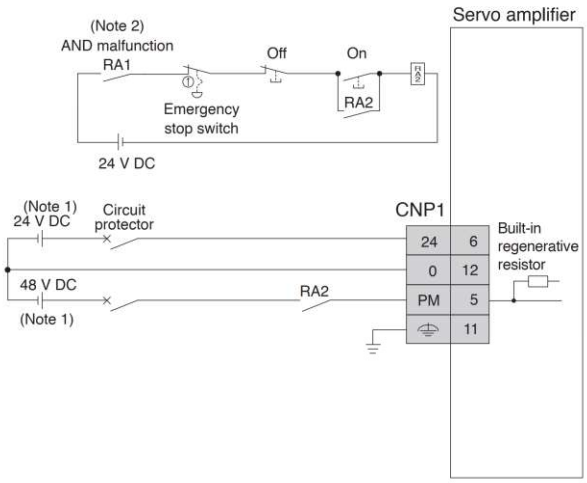
Notes: 1. The forced stop signal is issued for two axes of the servo amplifier. For overall system, apply the emergency stop on the servo system controller side.
2. For details such as setting the servo system controllers, refer to the programming or user's manual of each controller.
3. Connections for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

⚠ 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.

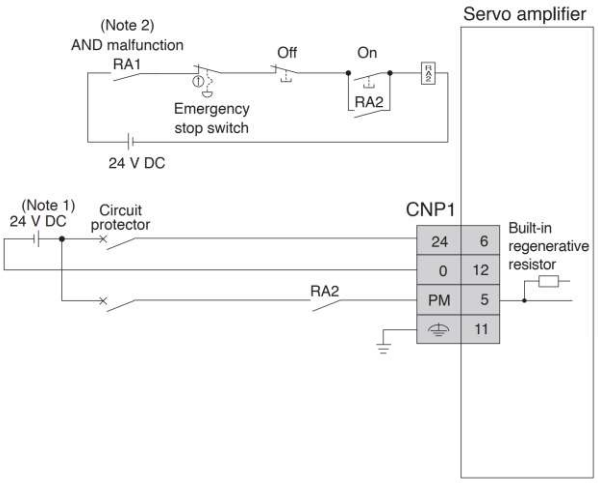
Main/Control Circuit Power Supply Connection Example (for MR-J4W2-0303B6)

WB

●For 48 V DC

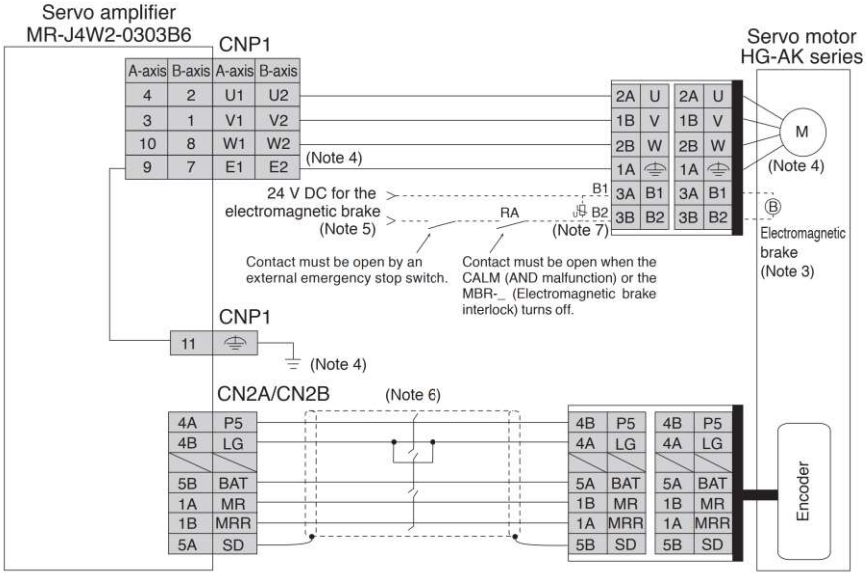


●For 24 V DC



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 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.
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.

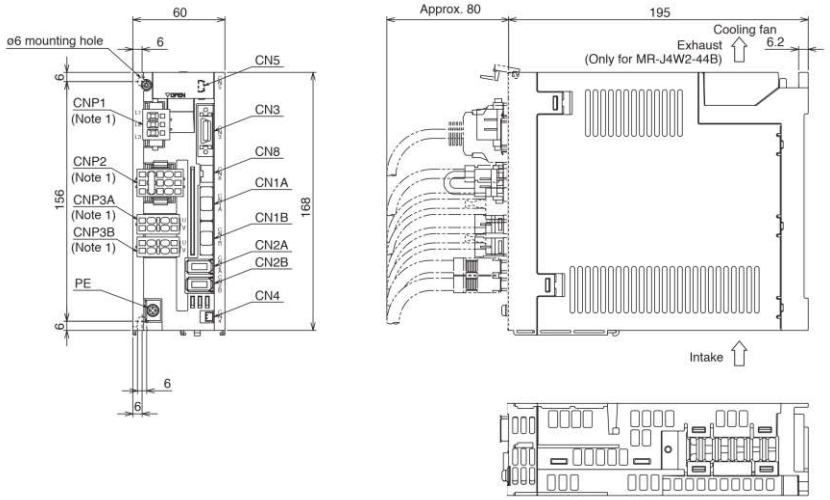
⚠ Be sure to read through Instruction Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

MR-J4W2-B Dimensions

WB

●MR-J4W2-22B

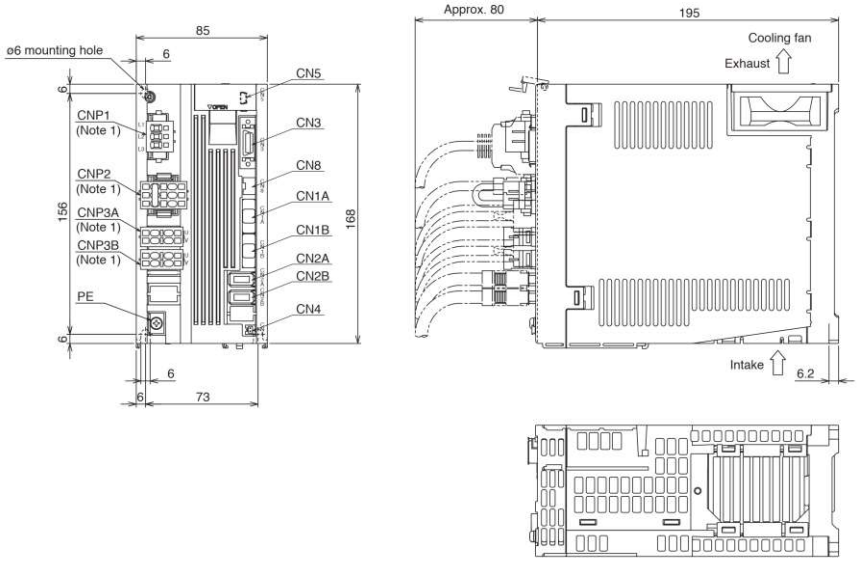
●MR-J4W2-44B



[Unit: mm]

●MR-J4W2-77B

●MR-J4W2-1010B



[Unit: mm]

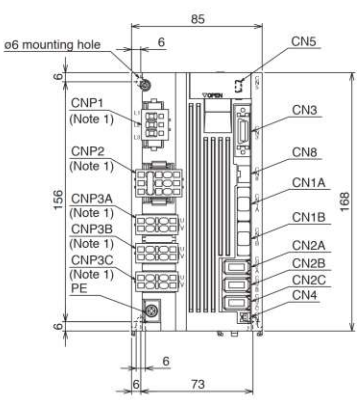
Notes: 1. CNP1, CNP2, CNP3A and CNP3B connectors are supplied with the servo amplifier.

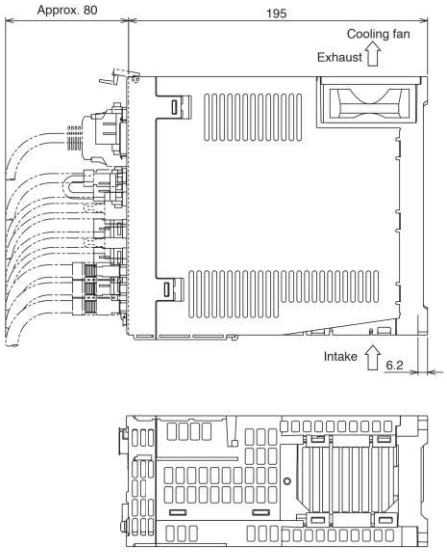
MR-J4W3-B Dimensions

WB

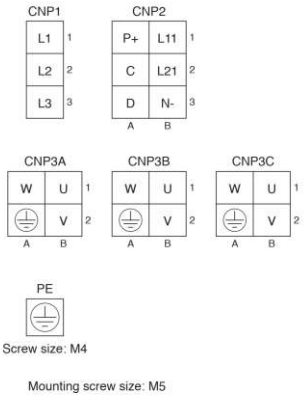
●MR-J4W3-222B

●MR-J4W3-444B





Terminal arrangement

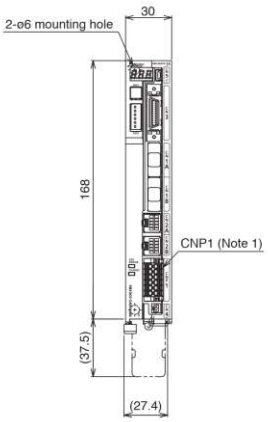


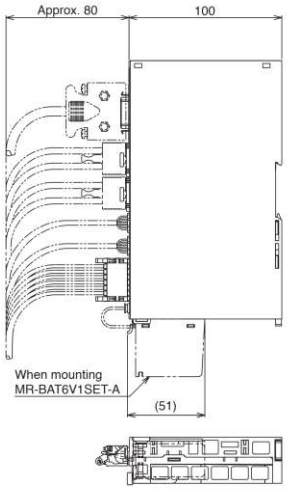
Screw size: M4

Mounting screw size: M5

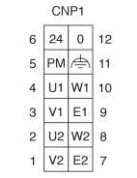
[Unit: mm]

MR-J4W2-0303B6 Dimensions





Terminal arrangement



Mounting screw size: M5

[Unit: mm]

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