Traffa

Servoverstärker J5

TRAFFA
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Der optimale Antrieb individuell für Ihre Anforderung

3 Servo Amplifiers

G MR-J5-G **G-RJ** MR-J5-G-RJ **WG** MR-J5W2-G/MR-J5W3-G **A** MR-J5-A **A-RJ** MR-J5-A-RJ

* MR-J5-G-RJ and MR-J5-A-RJ are planned for a future release.
* Refer to p. 7-55 in this catalog for conversion of units.

Model Designation for 1-Axis Servo Amplifier (Note 1)

G | G-RJ | A | A-RJ

M R - J 5 - 1 0 G _ - _

Mitsubishi Electric AC servo amplifier MELSERVO-J5 Series

Symbol	Special specification
None	Standard
RJ	Future release planned

Symbol	Power supply
None	3-phase 200 V AC, 1-phase 200 V AC, or DC input

Symbol	Interface
G	CC-Link IE TSN
A	General-purpose

Symbol	Rated output [kW]
10	0.1
20	0.2
40	0.4
60	0.6
70	0.75
100	1
200	2
350	3.5

Model Designation for Multi-Axis Servo Amplifier (Note 1)

WG

M R - J 5 W 2 - 2 2 G _

Mitsubishi Electric AC servo amplifier MELSERVO-J5 Series

Symbol	Main circuit power supply
None	3-phase 200 V AC, 1-phase 200 V AC, or DC input

Symbol	Interface
G	CC-Link IE TSN

Symbol	Rated output [kW]		
	A-axis (Note 2)	B-axis (Note 2)	C-axis (Note 2)
22	0.2	0.2	-
44	0.4	0.4	-
77	0.75	0.75	-
1010	1	1	-
222	0.2	0.2	0.2
444	0.4	0.4	0.4

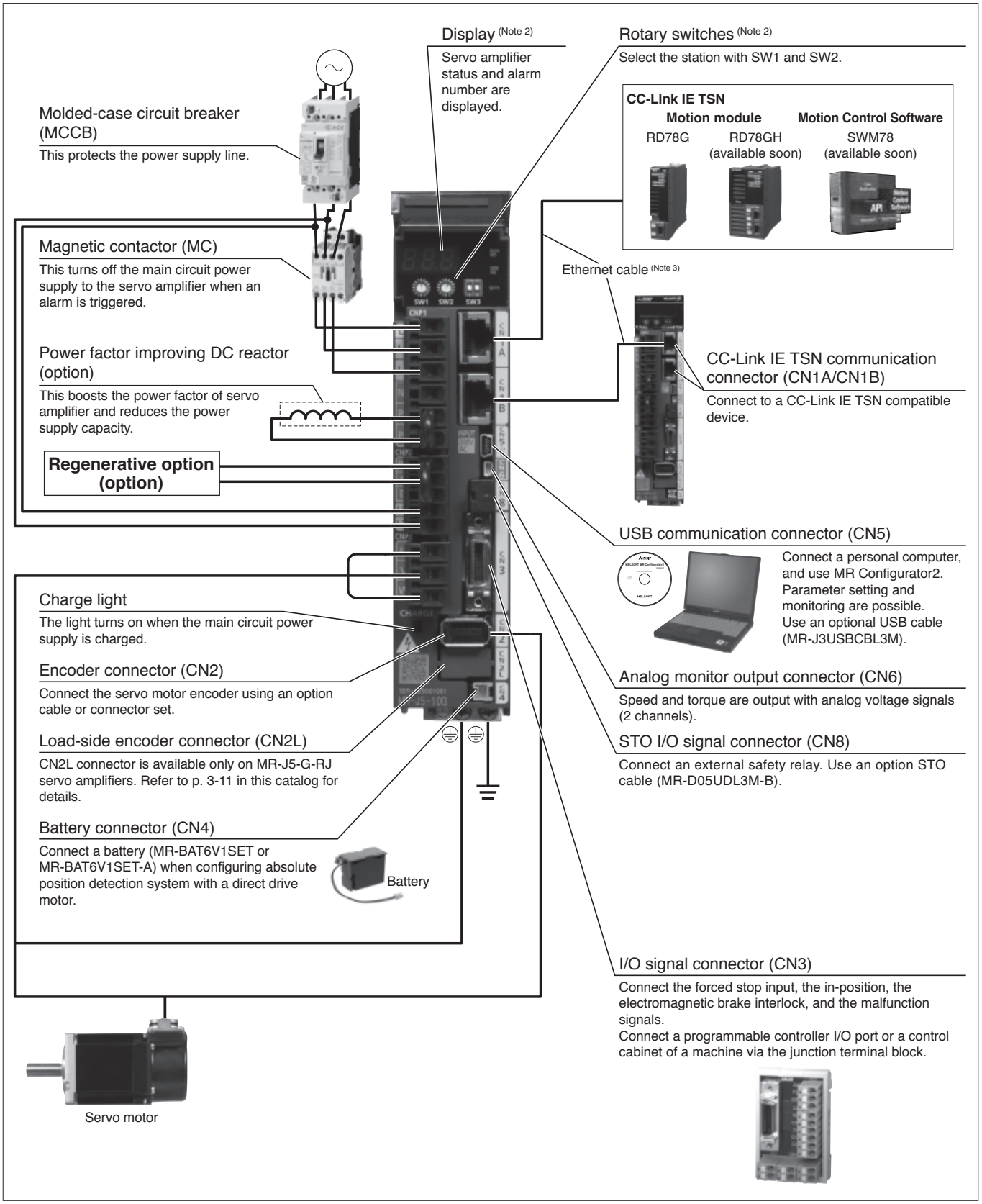
Symbol	Number of axes
W2	2 axes
W3	3 axes

Notes: 1. This section describes what each symbol in a model name indicates. Some combinations of symbols are not available.
2. A-axis, B-axis, and C-axis indicate names of axes of the multi-axis servo amplifier. The C-axis is available for the 3-axis servo amplifier.

MR-J5-G/MR-J5-G-RJ Connections with Peripheral Equipment (Note 1)

G G-RJ

Peripheral equipment is connected to MR-J5-G/MR-J5-G-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. Refer to "MR-J5 User's Manual" for the actual connections.
2. This picture shows when the display cover is open.
3. For specifications of the Ethernet cable, refer to "Ethernet Cable Specifications" on p. 7-26 in this catalog.

MR-J5-G/MR-J5-G-RJ (CC-Link IE TSN) Specifications

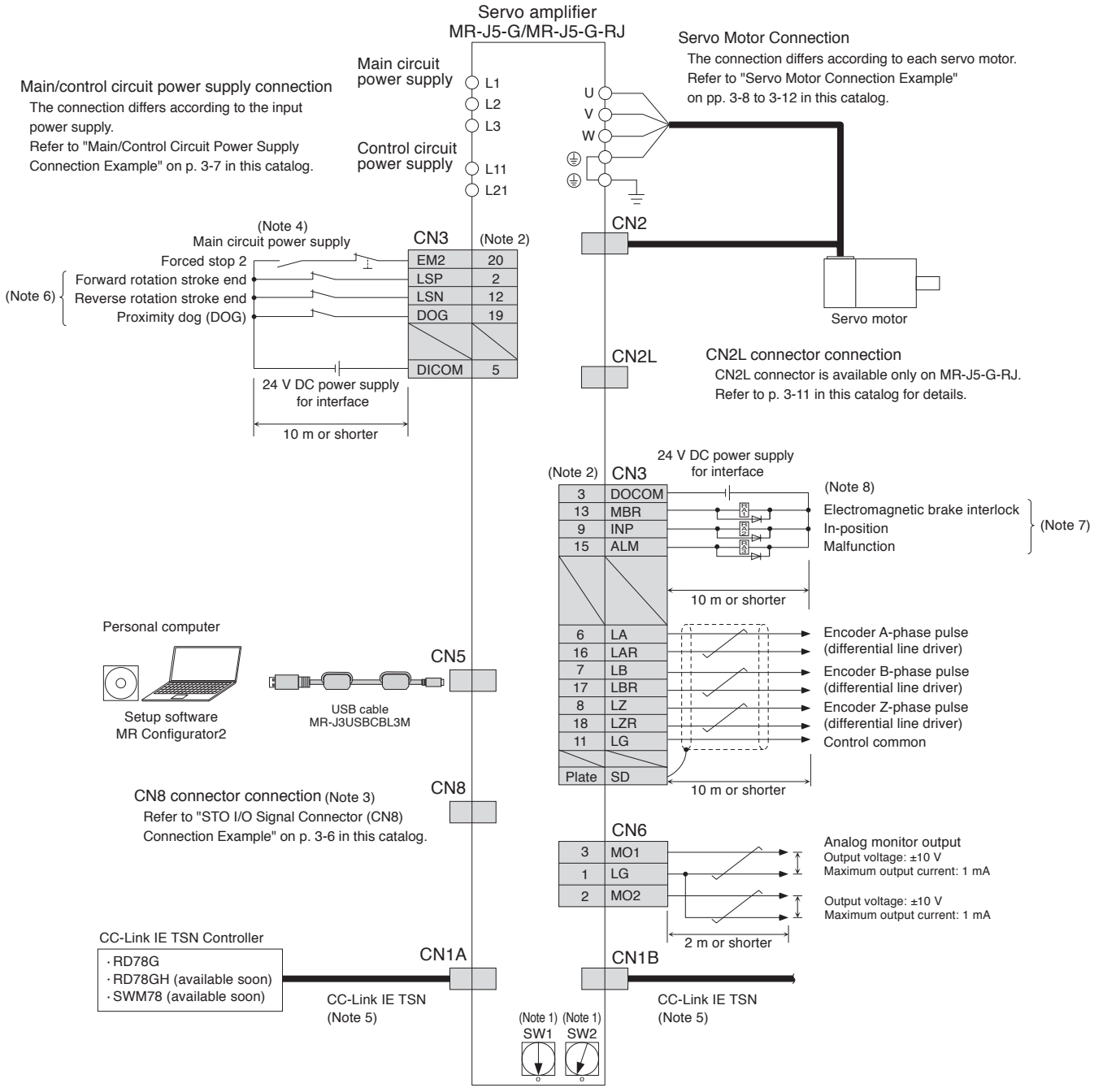
G G-RJ

Servo amplifier model MR-J5-_(-RJ)			10G	20G	40G	60G	70G	100G	200G	350G
Output	Voltage		3-phase 0 V AC to 240 V AC							
	Rated current	[A]	1.3	1.8	2.8	3.2	5.8	6.0	11.0	17.0
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 7)		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz
		DC input (Note 8)	283 V DC to 340 V DC							
	Rated current (Note 6)	[A]	0.9	1.5	2.6	3.2	3.8	5.0	10.5	16.0
	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 7)		3-phase 170 V AC to 264 V AC
		DC input (Note 8)	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							
		DC input (Note 8)	283 V DC to 340 V DC							
	Rated current	[A]	0.2							
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC							
		DC input (Note 8)	241 V DC to 374 V DC							
	Permissible frequency fluctuation		±5 % maximum							
	Power consumption	[W]	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 of the built-in regenerative resistor (Note 2, 3)		[W]	-	10			30		100	
Dynamic brake (Note 4)			Built-in							
CC-Link IE TSN	Communication cycle (Note 10)		31.25 µs, 62.5 µs, 125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms							
	Authentication class		Class B							
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)							
Encoder output pulse			Compatible (A/B/Z-phase pulse)							
Analog monitor			2 channels							
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, quick tuning, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function (including failure prediction), power monitoring function, lost motion compensation function							
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 9)		EN ISO 13849-1:2015 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 5)		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]							
Structure (IP rating)			Natural cooling, open (IP20)				Force cooling, open (IP20)			
Close mounting	3-phase power supply input		Possible (Note 11)							
	1-phase power supply input		Possible (Note 11)					Not possible		-
Mass		[kg]	0.8			1.0	1.4		2.2	

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 drive system sizing software Motorizer.
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-J5 User's Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. 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.
6. This value is applicable when a 3-phase power supply is used.
7. 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.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. 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-J5 User's Manual" for details.
10. The command communication cycle depends on the controller specifications and the number of axes connected.
11. 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.

MR-J5-G/MR-J5-G-RJ Standard Wiring Diagram Example

G G-RJ

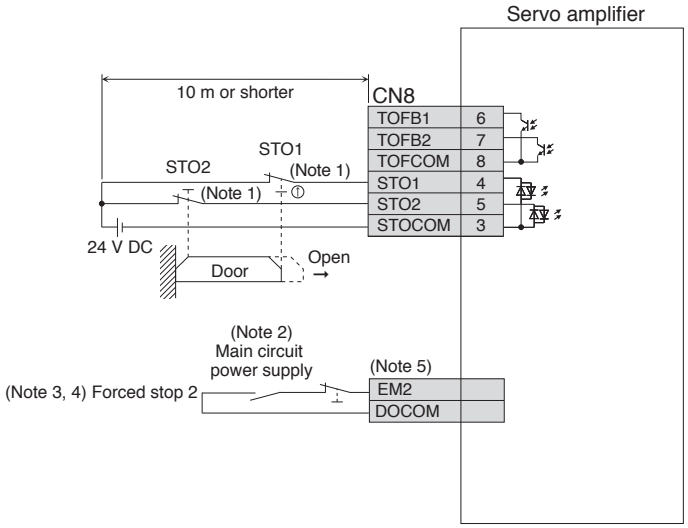


Notes:
1. Up to 254 stations are set with a combination of the rotary switches (SW1 and SW2). Note that the number of the connectable stations depends on the controller specifications.
2. This is for sink wiring. Source wiring is also possible.
3. Attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
4. 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.
5. When branching off CC-Link IE TSN (synchronous communication function) with a switching hub, use a switching hub (Class B) recommended by CC-Link Partner Association. When a switching hub (Class A) is used, there are restrictions on the topologies to be used. Refer to "MELSEC iQ-R Motion Module User's Manual" for details.
6. Devices for these pins can be changed with [Pr. PD03], [Pr. PD04], and [Pr. PD05].
7. Devices for these pins can be changed with [Pr. PD07], [Pr. PD08], and [Pr. PD09].
8. When using a linear servo motor or direct drive motor, use MBR (Electromagnetic brake interlock) for an external brake mechanism.

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

STO I/O Signal Connector (CN8) Connection Example

G A



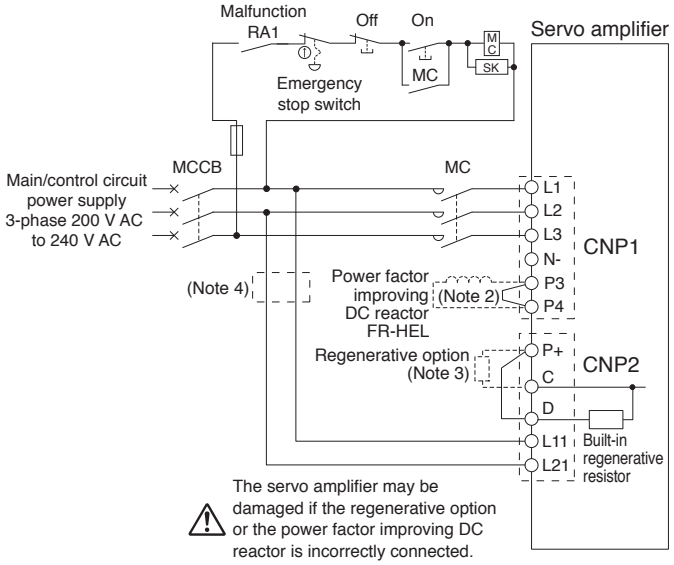
Notes:
1. When using the STO function, turn off STO1 and STO2 at the same time. Turn off STO1 and STO2 after the servo motor stops in servo-off state or after the servo motor stops with deceleration by turning off EM2 (Forced stop 2).
2. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
3. If the controller does not have a forced stop function, install a forced stop 2 switch (normally closed contact).
4. Turn on EM2 (Forced stop 2) before starting the operation.
5. The connector and the pin numbers for each signal vary depending on the servo amplifier. Refer to the standard wiring diagram example for the relevant servo amplifier in this catalog for details.

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

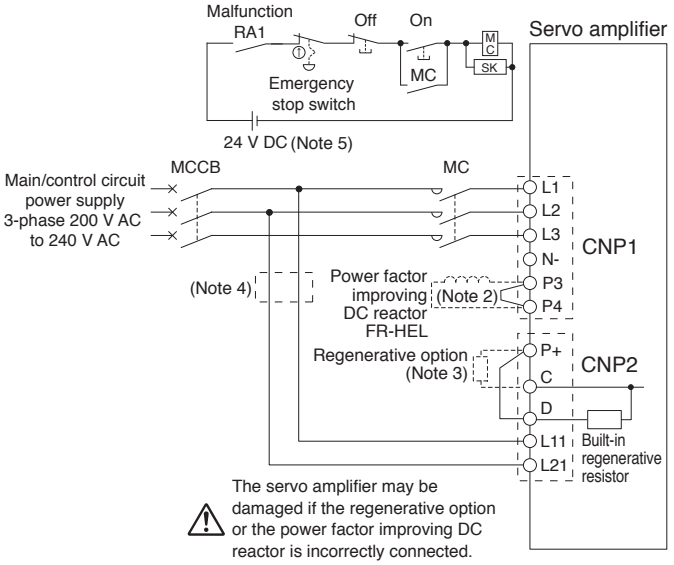
Main/Control Circuit Power Supply Connection Example (Note 6)

G G-RJ A A-RJ

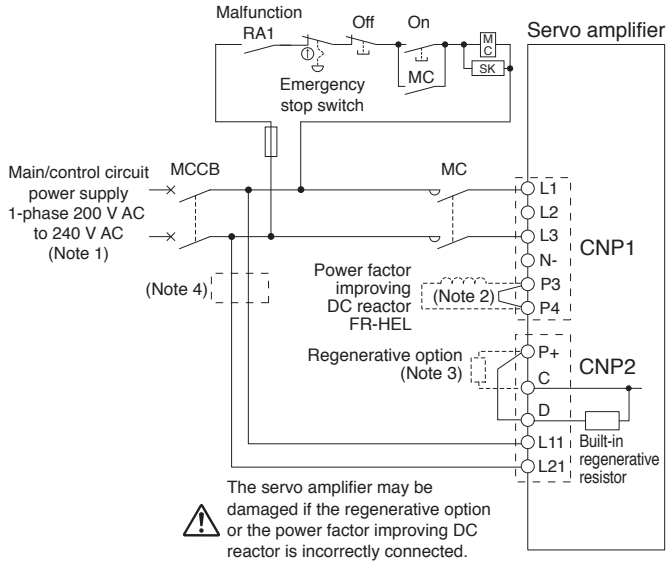
●For 3-phase 200 V AC and driving on/off of main circuit power supply with AC power supply



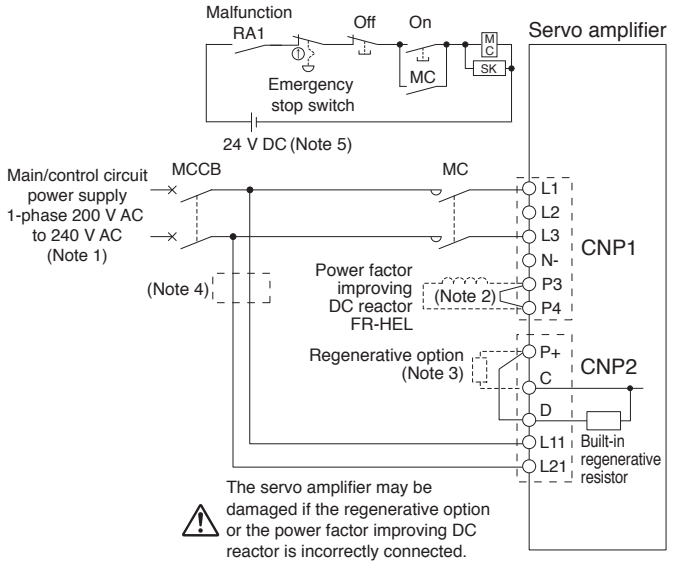
●For 3-phase 200 V AC and driving on/off of main circuit power supply with DC power supply



●For 1-phase 200 V AC and driving on/off of main circuit power supply with AC power supply



●For 1-phase 200 V AC and driving on/off of main circuit power supply with DC power supply



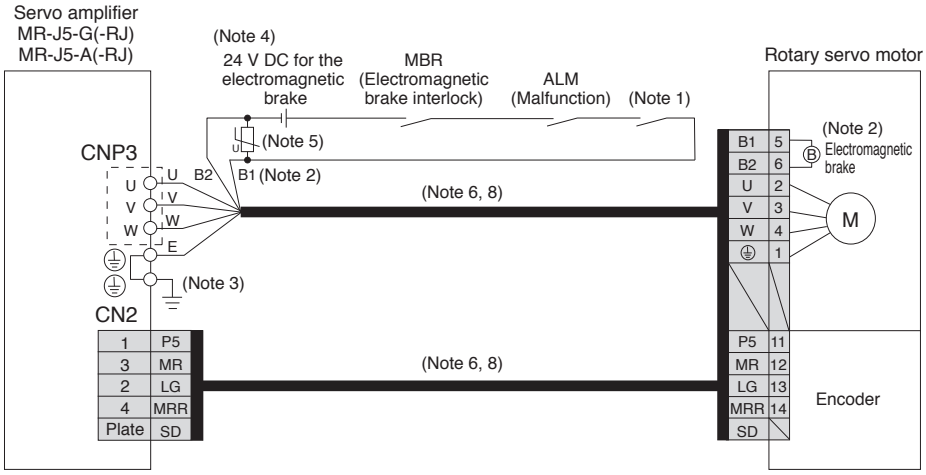
Notes: 1. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3 terminals. Do not connect anything to L2.
2. Disconnect a short-circuit bar between P3 and P4 when using the power factor improving DC reactor or the simple converter unit.
3. Disconnect a short-circuit bar between P+ and D when connecting the regenerative option externally.
4. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker or a fuse. Refer to "MR-J5 User's Manual" for details.
5. Do not use the 24 V DC interface power supply for the magnetic contactor. Provide a dedicated power supply to the magnetic contactor.
6. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".

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

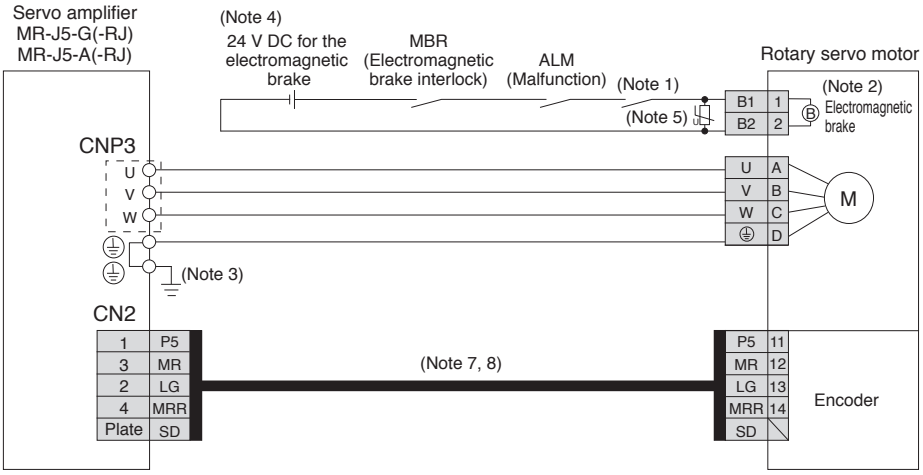
Servo Motor Connection Example (Rotary Servo Motor)

G G-RJ A A-RJ

●For HK-KT series



●For HK-ST series



Notes: 1. Create the circuit in order to shut off by being interlocked with the emergency stop switch.
2. This is for the servo motors with an electromagnetic brake. The electromagnetic brake terminals (B1, B2) do not have polarity.
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
4. Do not use the 24 V DC interface power supply for the electromagnetic brake. Provide a dedicated power supply to the electromagnetic brake.
5. Install a surge absorber between B1 and B2.
6. This is for using an option dual cable type. Single cable types are also available.
7. Encoder cables are available as an option.
8. Refer to "Rotary Servo Motor User's Manual" when fabricating the cables.

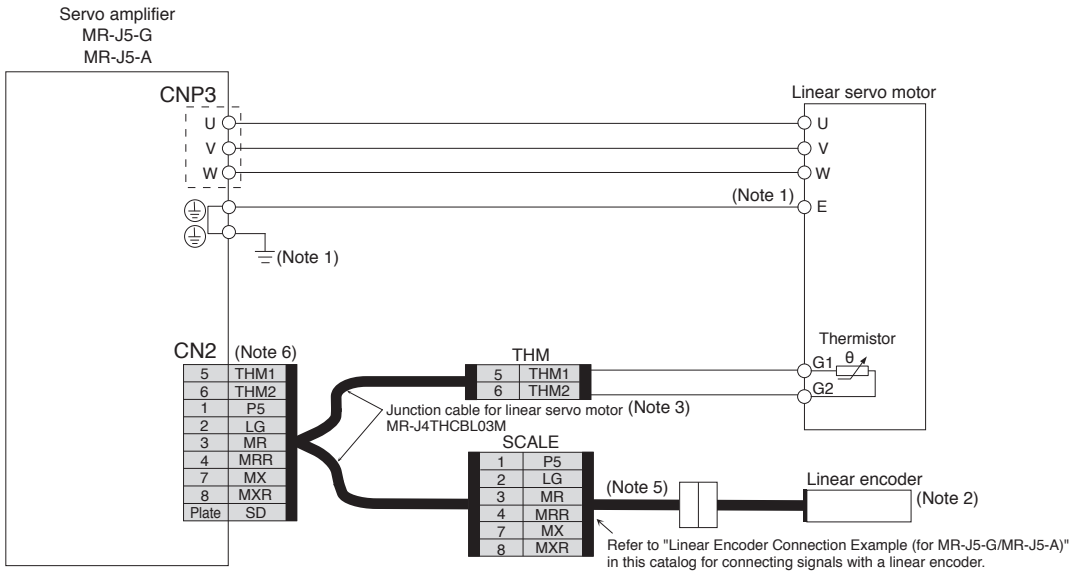
⚠ Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Linear Servo Motor)

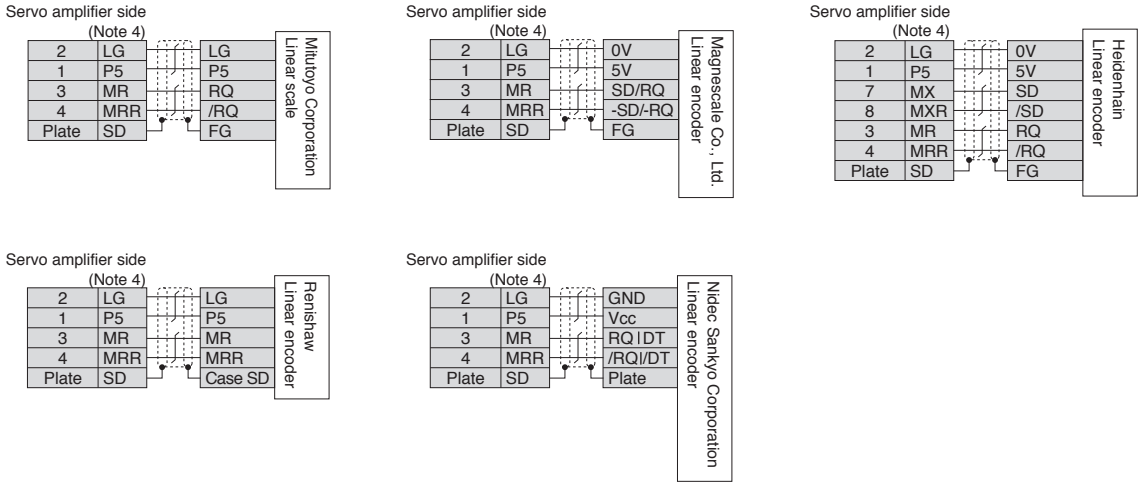
G A

Linear Servo System with MR-J5-G/MR-J5-A

●For LM-H3/LM-F/LM-K2/LM-U2 series



Linear Encoder Connection Example (for MR-J5-G/MR-J5-A)



Notes: 1. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
2. For linear encoders, refer to "List of Linear Encoders" 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 "MR-J5 Partner's Encoder User's Manual."
5. Necessary cables vary depending on the linear encoder. Refer to "MR-J5 Partner's Encoder User's Manual" for details.
6. When using a linear servo motor with MR-J5-G/MR-J5-A, connect MR-J4THCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.

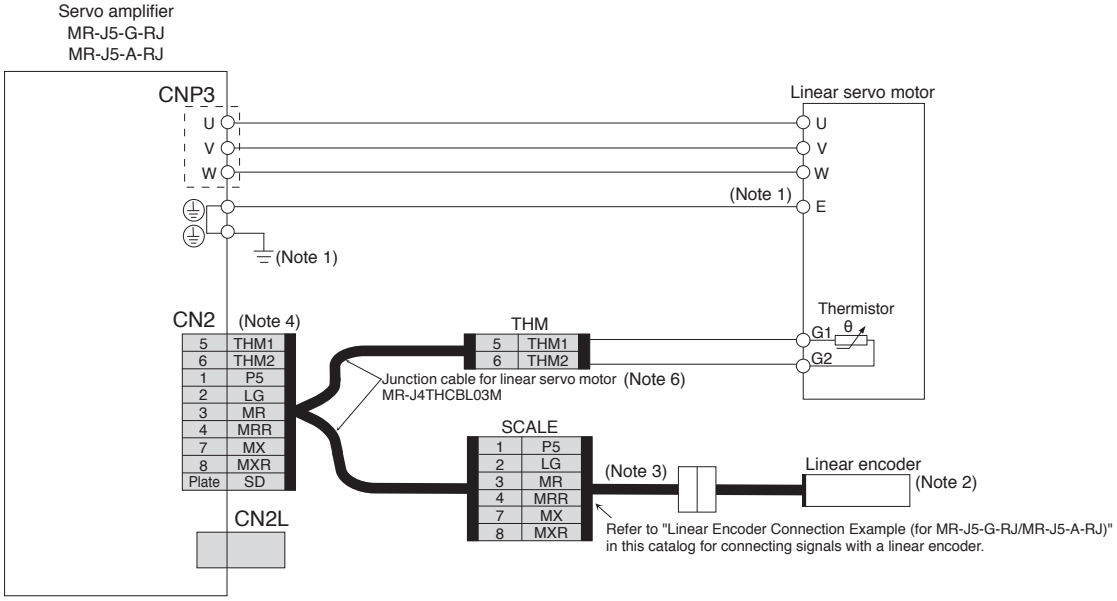
⚠ Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Linear Servo Motor)

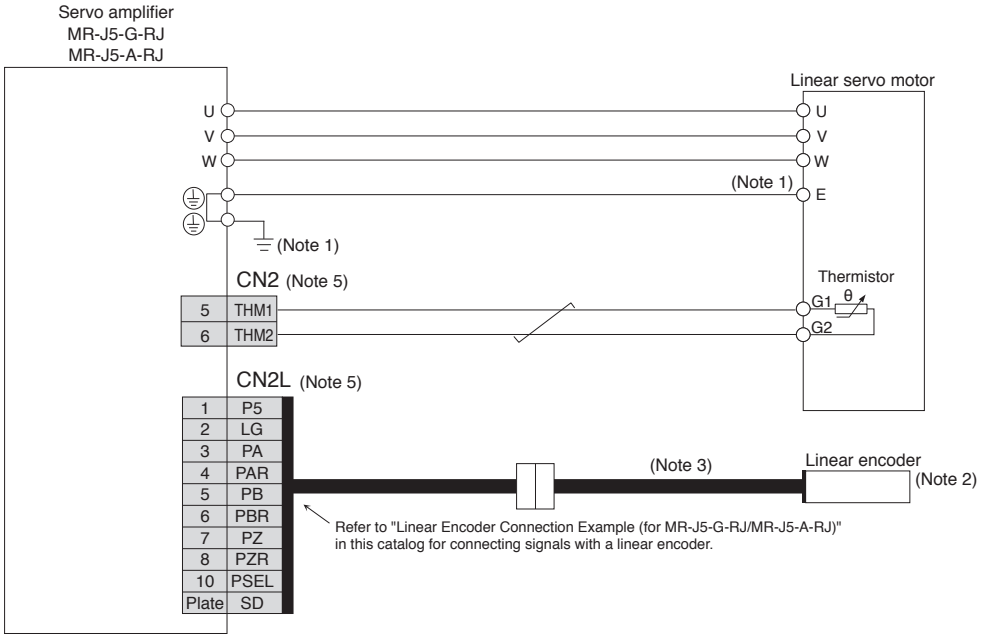
G-RJ A-RJ

Linear Servo System with MR-J5-G-RJ/MR-J5-A-RJ (LM-H3, LM-F, LM-K2, LM-U2)

●Connecting a serial linear encoder



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

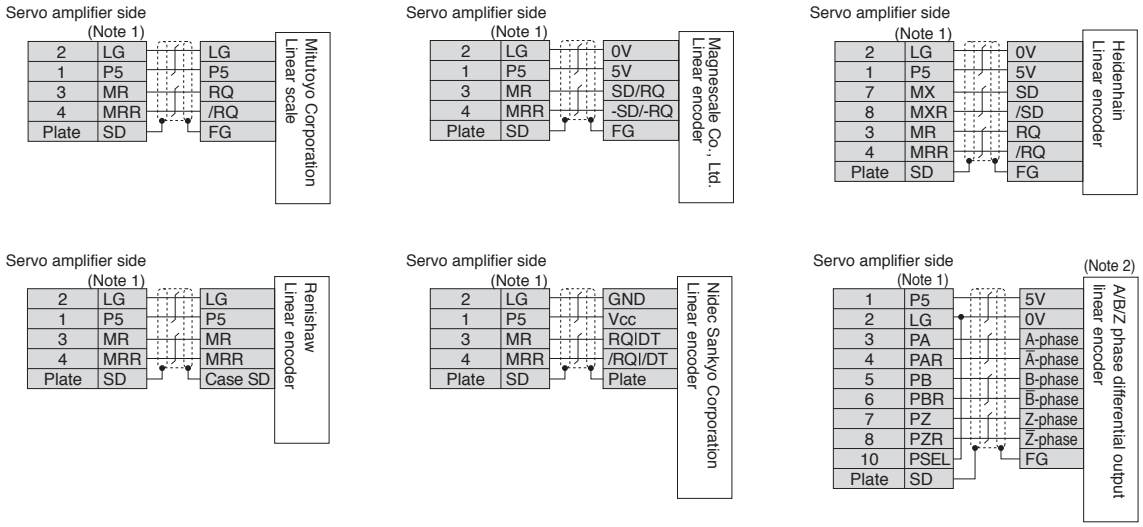


Notes: 1. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.
2. For linear encoders, refer to "List of Linear Encoders" in this catalog.
3. Necessary cables vary depending on the linear encoder. Refer to "MR-J5 Partner's Encoder User's Manual" for details.
4. When configuring a linear servo system with MR-J5-G-RJ/MR-J5-A-RJ servo amplifier and a serial linear encoder, connect MR-J4THCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set to CN2 connector.
5. When configuring a linear servo system with MR-J5-G-RJ/MR-J5-A-RJ and an A/B/Z-phase differential output type linear encoder, connect a thermistor to CN2 connector and the linear encoder to CN2L connector. Do not use MR-J4THCBL03M junction cable or a junction cable fabricated using MR-J3THMCN2 connector set.
6. MR-J4THCBL03M junction cable for linear servo motor is compatible with both two-wire and four-wire type linear encoders.

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

Linear Encoder Connection Example (for MR-J5-G-RJ/MR-J5-A-RJ)

G-RJ A-RJ



Notes: 1. For the number of the wire pairs for LG and P5, refer to "MR-J5 Partner's Encoder User's Manual."
2. If the encoder's current consumption exceeds 350 mA, supply power from an external source.

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

Encoder Connection Specifications

G G-RJ WG A A-RJ

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

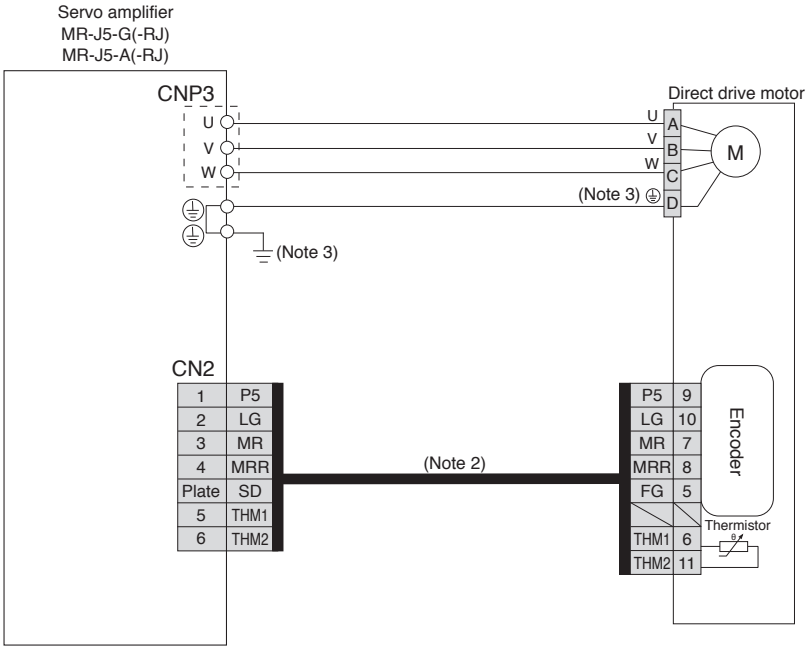
Operation mode	External encoder communication method	Connector to be connected with the external encoder					
		MR-J5-G	MR-J5-G-RJ	MR-J5-A	MR-J5-A-RJ	MR-J5W2-G	MR-J5W3-G
Linear servo system (Note 3)	Two-wire type	CN2 (Note 1)	CN2 (Note 1)	CN2 (Note 1)	CN2 (Note 1)	CN2A (Note 1) CN2B (Note 1)	CN2A (Note 1) CN2B (Note 1) CN2C (Note 1)
	Four-wire type						
	A/B/Z-phase differential output method		CN2L (Note 2)		CN2L (Note 2)		

Notes: 1. MR-J4THCBL03M junction cable is required.
2. Connect a thermistor to CN2 connector.
3. Refer to "Combinations of Linear Servo Motors and Servo Amplifiers" in this catalog for servo amplifiers that are compatible with linear servo motors.

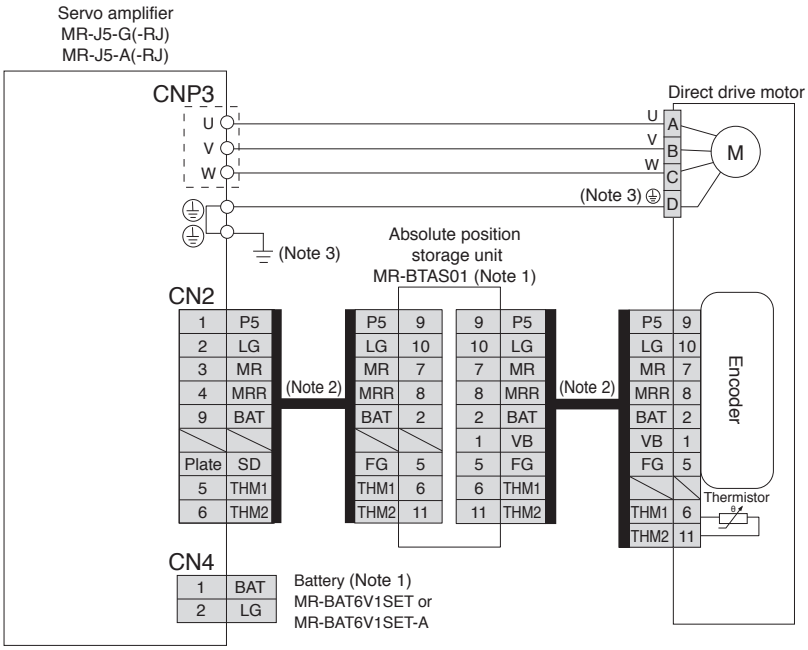
Servo Motor Connection Example (Direct Drive Motor)

G G-RJ A A-RJ

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



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



Notes: 1. An MR-BTAS01 absolute position storage unit, and MR-BAT6V1SET or MR-BAT6V1SET-A battery (sold as options) are required for absolute position detection system. Refer to "MR-J5 User's Manual" and "Direct Drive Motor User's Manual" for details of absolute position detection system.
2. Fabricate this encoder cable. Refer to "Direct Drive Motor User's Manual" for fabricating the encoder cable.
3. Connect the grounding wire to the cabinet protective earth (PE) terminal via the servo amplifier protective earth (PE) terminal for grounding.

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

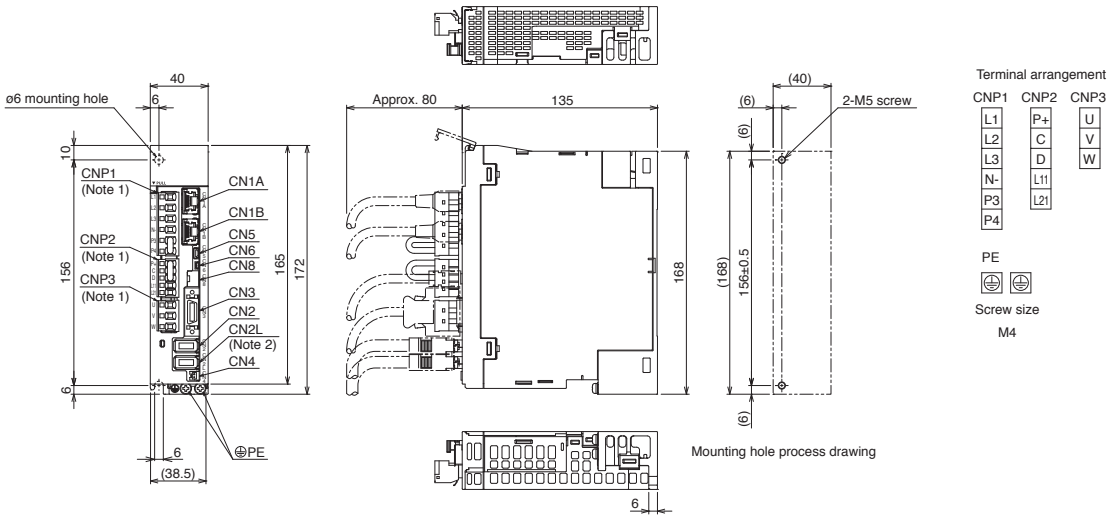
MR-J5-G/MR-J5-G-RJ Dimensions

G G-RJ

●MR-J5-10G, MR-J5-10G-RJ

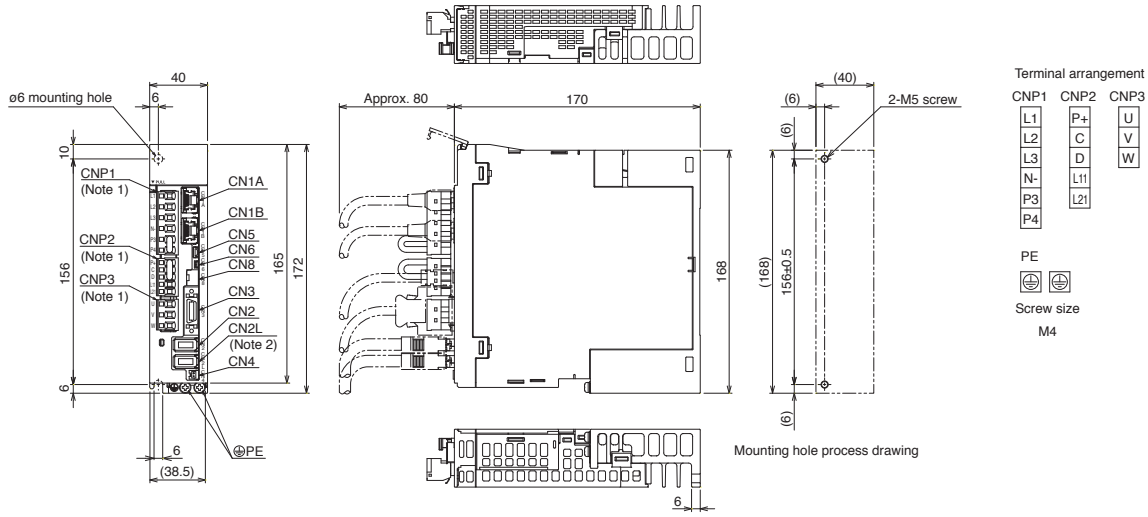
●MR-J5-20G, MR-J5-20G-RJ

●MR-J5-40G, MR-J5-40G-RJ



[Unit: mm]

●MR-J5-60G, MR-J5-60G-RJ



[Unit: mm]

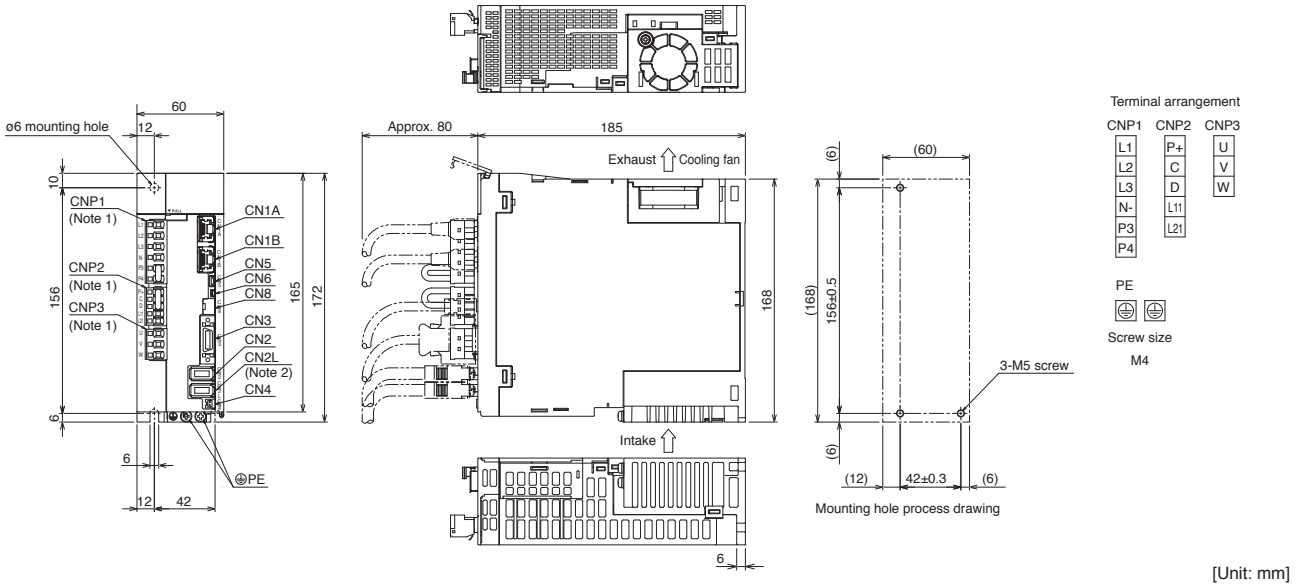
Notes: 1. CNP1, CNP2 and CNP3 connectors are supplied with the servo amplifier.
2. CN2L connector is not available for MR-J5-G servo amplifiers.

MR-J5-G/MR-J5-G-RJ Dimensions

G G-RJ

●MR-J5-70G, MR-J5-70G-RJ

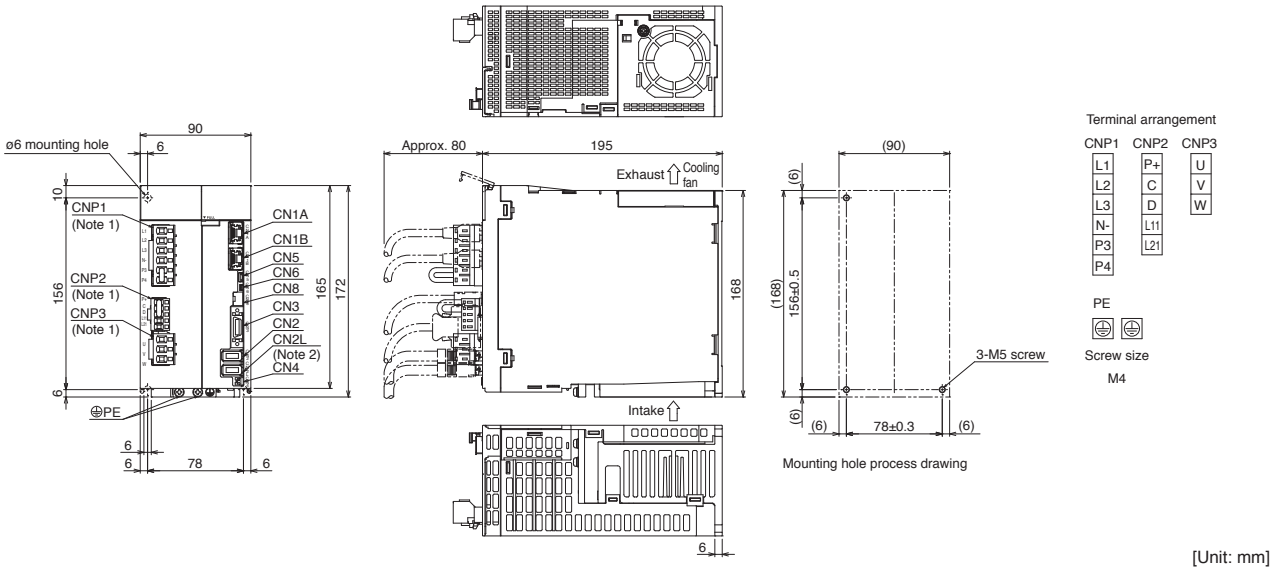
●MR-J5-100G, MR-J5-100G-RJ



[Unit: mm]

●MR-J5-200G, MR-J5-200G-RJ

●MR-J5-350G, MR-J5-350G-RJ



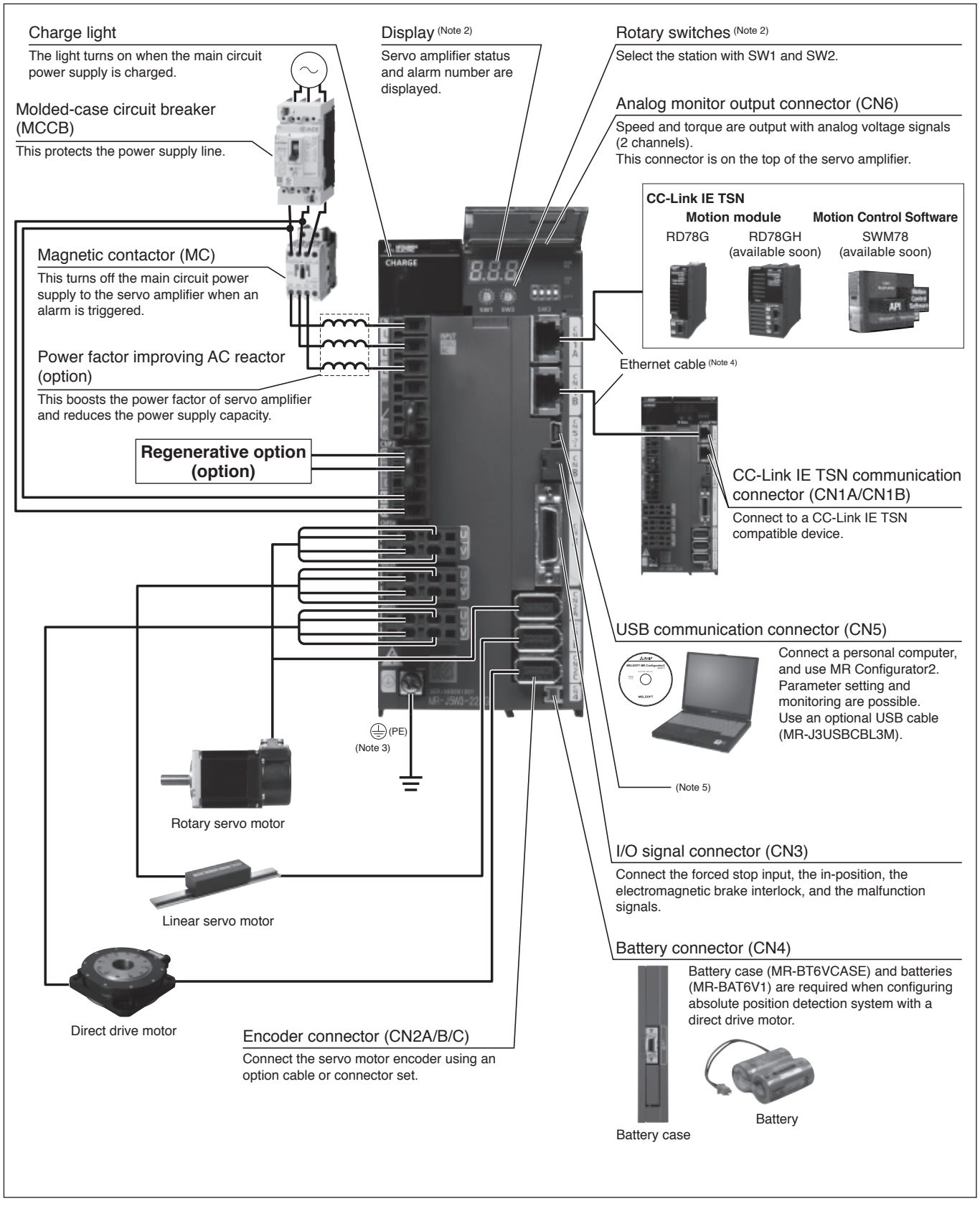
[Unit: mm]

Notes: 1. CNP1, CNP2 and CNP3 connectors are supplied with the servo amplifier.
2. CN2L connector is not available for MR-J5-G servo amplifiers.

MR-J5W2-G/MR-J5W3-G Connections with Peripheral Equipment (Note 1)

WG

Peripheral equipment is connected to MR-J5W2-G/MR-J5W3-G 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-J5W3-222G. CNP3C and CN2C connectors are not available on MR-J5W2-G. Refer to "MR-J5 User's Manual" for the actual connections of each 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).
4. For specifications of the Ethernet cable, refer to "Ethernet Cable Specifications" on p. 7-26 in this catalog.
5. Attach a short-circuit connector supplied with the servo amplifier.

MR-J5W2-G (2-axis, CC-Link IE TSN) Specifications

WG

Servo amplifier model MR-J5W2-			22G	44G	77G	1010G
Output	Voltage		3-phase 0 V AC to 240 V AC			
	Rated current (each axis) [A]		1.8	2.8	5.8	6.0
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 200 V AC to 240 V AC, 50 Hz/60 Hz
		DC input (Note 8)	283 V DC to 340 V DC			
	Rated current (Note 6) [A]		2.9	5.2	7.5	9.8
	Permissible voltage fluctuation	AC input	3-phase or 1-phase 170 V AC to 264 V AC			3-phase 170 V AC to 264 V AC
		DC input (Note 8)	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			
		DC input (Note 8)	283 V DC to 340 V DC			
	Rated current [A]		0.4			
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC			
		DC input (Note 8)	241 V DC to 374 V DC			
	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			
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3) [W]			20		100	
Dynamic brake (Note 4)			Built-in			
CC-Link IE TSN	Communication cycle (Note 5)		62.5 µs, 125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms			
	Authentication class		Class B			
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)			
Encoder output pulse			Compatible (A/B-phase pulse) (Note 9)			
Analog monitor			2 channels			
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, quick tuning, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function (including failure prediction), power monitoring function, lost motion compensation function			
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			
Structure (IP rating)			Natural cooling, open (IP20)	Force cooling, open (IP20)		
Close mounting			Possible (Note 7)			
Mass [kg]			1.5		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 drive system sizing software Motorizer.
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-J5 User's Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. The command communication cycle depends on the controller specifications and the number of axes connected.
6. This value is applicable when a 3-phase power supply is used.
7. 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.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. A/B-phase pulses are not output at a communication cycle of 62.5 µs.

MR-J5W3-G (3-axis, CC-Link IE TSN) Specifications

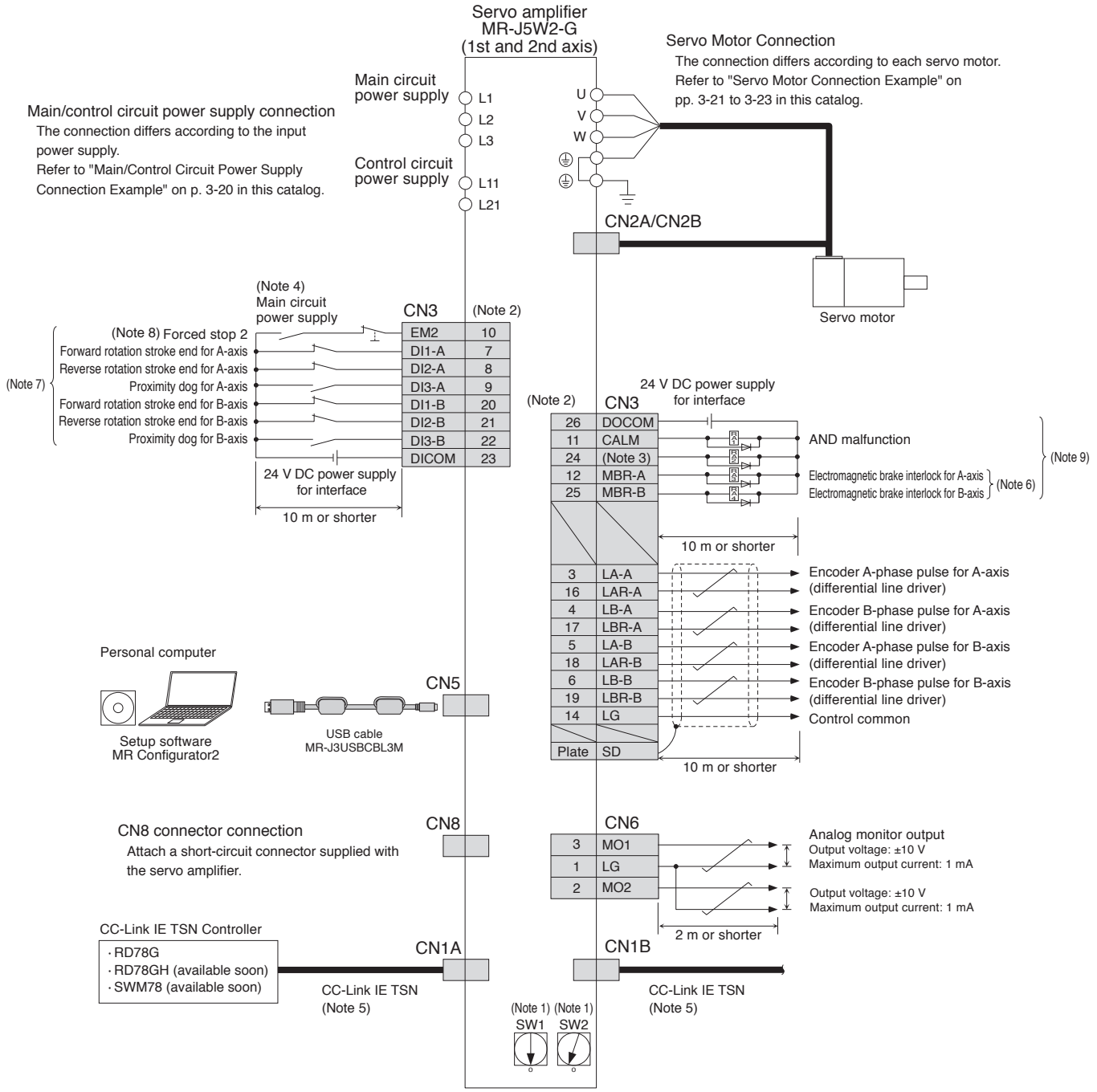
WG

Servo amplifier model MR-J5W3-			222G	444G
Output	Voltage		3-phase 0 V AC to 240 V AC	
	Rated current (each axis) [A]		1.8	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	
		DC input (Note 8)	283 V DC to 340 V DC	
	Rated current (Note 6) [A]		4.3	7.8
	Permissible voltage fluctuation	AC input	3-phase or 1-phase 170 V AC to 264 V AC	
		DC input (Note 8)	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	
		DC input (Note 8)	283 V DC to 340 V DC	
	Rated current [A]		0.4	
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC	
		DC input (Note 8)	241 V DC to 374 V DC	
	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	
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3) [W]			30	
Dynamic brake (Note 4)			Built-in	
CC-Link IE TSN	Communication cycle (Note 5)		125 µs, 250 µs, 500 µs, 1 ms, 2 ms, 4 ms	
	Authentication class		Class B	
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)	
Encoder output pulse			Compatible only with A-axis and B-axis (A/B-phase pulse) (Note 9)	
Analog monitor			2 channels	
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, quick tuning, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function (including failure prediction), power monitoring function, lost motion compensation function	
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	
Structure (IP rating)			Force cooling, open (IP20)	
Close mounting			Possible (Note 7)	
Mass [kg]			1.8	

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 drive system sizing software Motorizer.
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-J5 User's Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. The command communication cycle depends on the controller specifications and the number of axes connected.
6. This value is applicable when a 3-phase power supply is used.
7. 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.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. A/B-phase pulses are not output at a communication cycle of 125 µs.

MR-J5W2-G Standard Wiring Diagram Example

WG

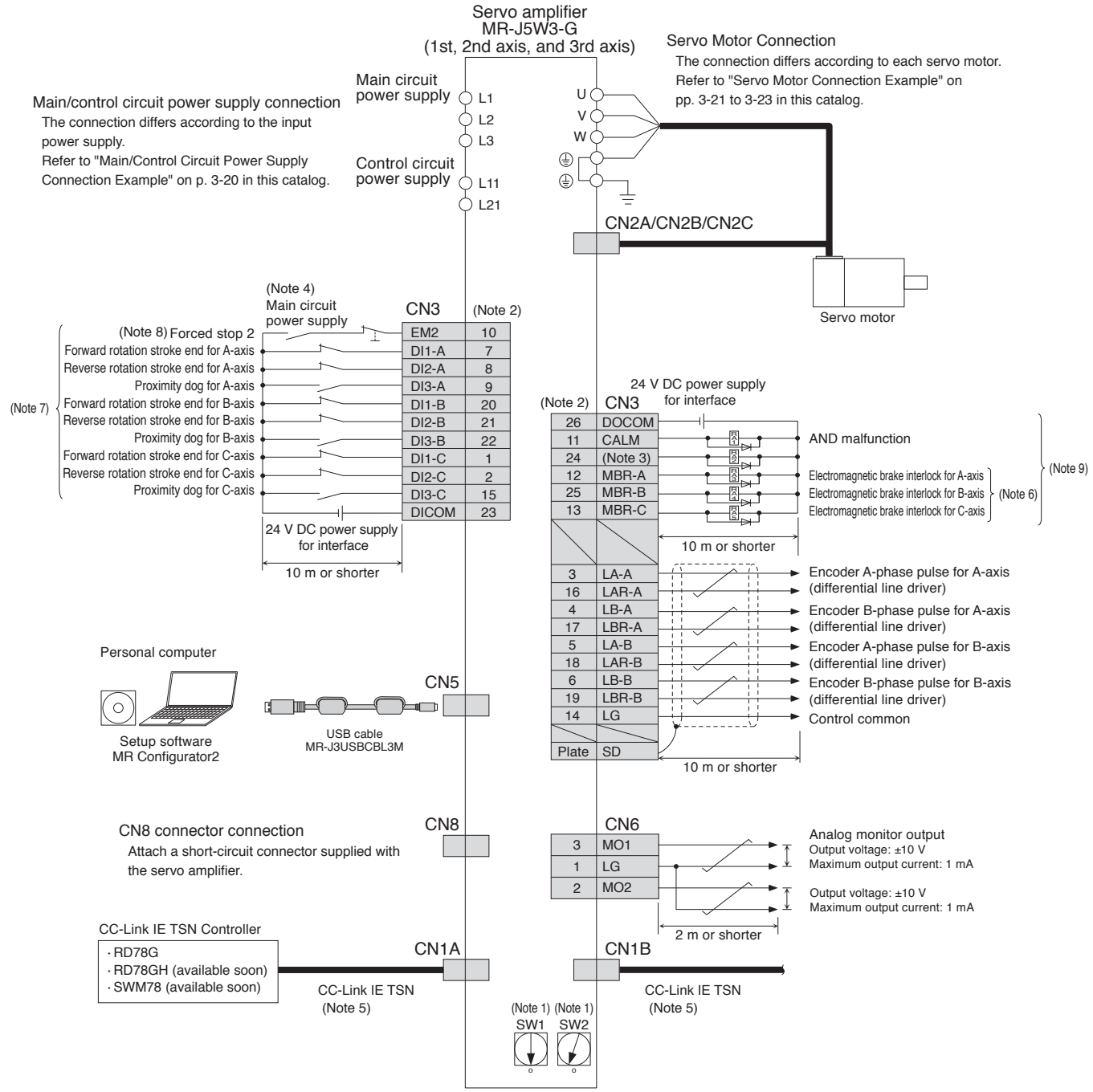


Notes:
1. Up to 254 stations are set with a combination of the rotary switches (SW1 and SW2). Note that the number of the connectable stations depends on the controller specifications.
2. This is for sink wiring. Source wiring is also possible.
3. CINP (AND in-position) is assigned to this pin as default. A device for this pin can be changed with [Pr. PD08].
4. 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.
5. When branching off CC-Link IE TSN (synchronous communication function) with a switching hub, use a switching hub (Class B) recommended by CC-Link Partner Association. When a switching hub (Class A) is used, there are restrictions on the topologies to be used. Refer to "MELSEC iQ-R Motion Module User's Manual" for details.
6. When using a linear servo motor or direct drive motor, use MBR (Electromagnetic brake interlock) for an external brake mechanism.
7. Devices can be assigned for DI1-A/B, DI2-A/B, and DI3-A/B with controller setting. Refer to User's Manuals of the controller for details on setting.
8. The forced stop signal is issued for two axes of the servo amplifier. For overall system, apply the emergency stop on the controller side.
9. Devices for these pins can be changed with [Pr. PD07] and [Pr. PD09].

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

MR-J5W3-G Standard Wiring Diagram Example

WG



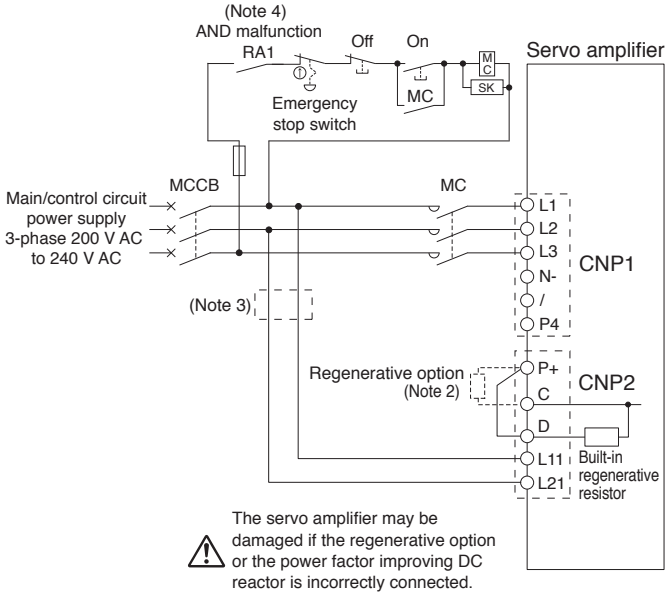
Notes:
1. Up to 254 stations are set with a combination of the rotary switches (SW1 and SW2). Note that the number of the connectable stations depends on the controller specifications.
2. This is for sink wiring. Source wiring is also possible.
3. CINP (AND in-position) is assigned to this pin as default. A device for this pin can be changed with [Pr. PD08].
4. 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.
5. When branching off CC-Link IE TSN (synchronous communication function) with a switching hub, use a switching hub (Class B) recommended by CC-Link Partner Association. When a switching hub (Class A) is used, there are restrictions on the topologies to be used. Refer to "MELSEC iQ-R Motion Module User's Manual" for details.
6. When using a linear servo motor or direct drive motor, use MBR (Electromagnetic brake interlock) for an external brake mechanism.
7. Devices can be assigned for DI1-A/B/C, DI2-A/B/C, and DI3-A/B/C with controller setting. Refer to User's Manuals of the controller for details on setting.
8. The forced stop signal is issued for three axes of the servo amplifier. For overall system, apply the emergency stop on the controller side.
9. Devices for these pins can be changed with [Pr. PD07] and [Pr. PD09].

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

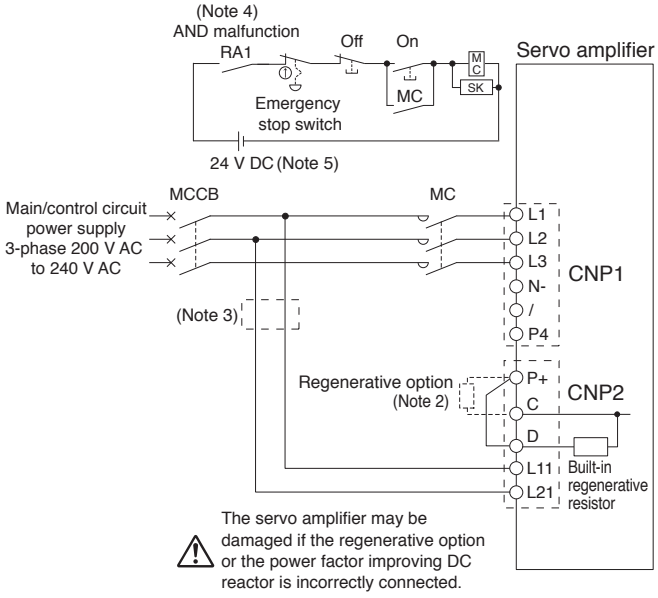
Main/Control Circuit Power Supply Connection Example (Note 6)

WG

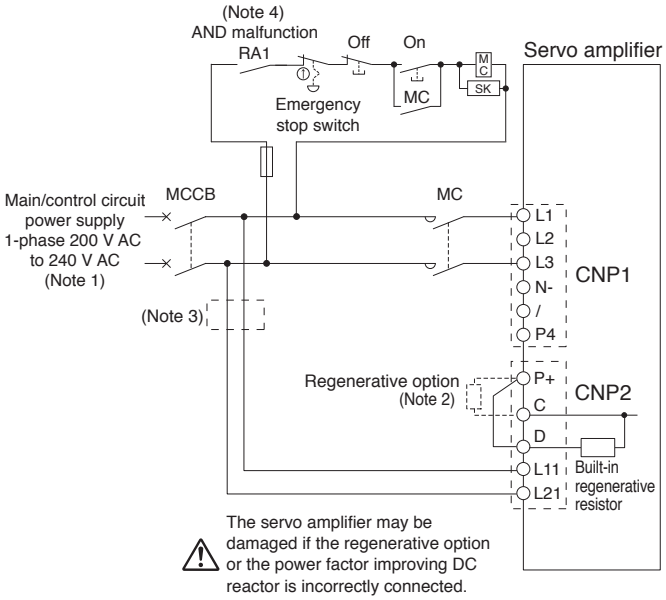
●For 3-phase 200 V AC and driving on/off of main circuit power supply with AC power supply



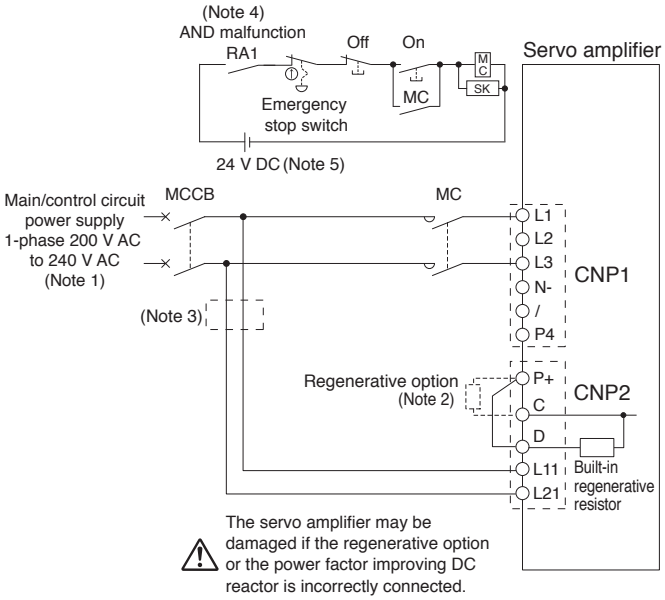
●For 3-phase 200 V AC and driving on/off of main circuit power supply with DC power supply



●For 1-phase 200 V AC and driving on/off of main circuit power supply with AC power supply



●For 1-phase 200 V AC and driving on/off of main circuit power supply with DC power supply

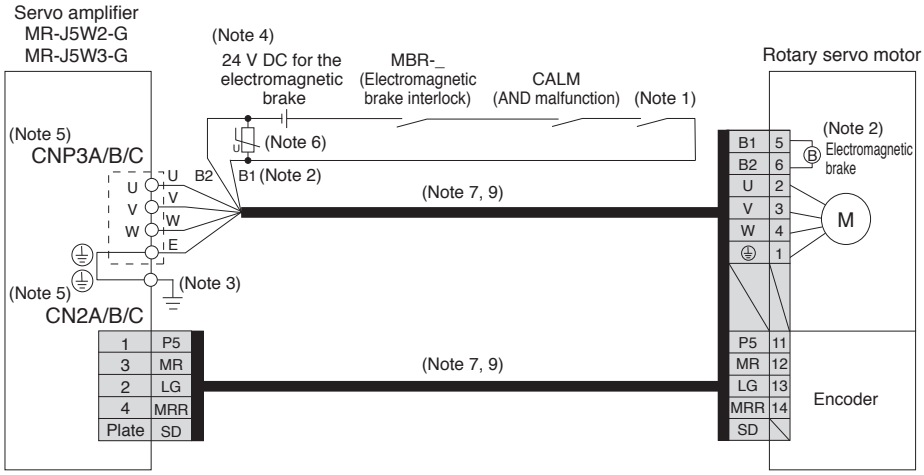


Notes: 1. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3 terminals. Do not connect anything to L2.
2. Disconnect a short-circuit bar between P+ and D when connecting the regenerative option externally.
3. When wires used for L11 and L21 are thinner than those for L1, L2, and L3, use a molded-case circuit breaker or a fuse. Refer to "MR-J5 User's Manual" for details.
4. Select either of the following functions for CALM (AND malfunction) with the 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.
5. Do not use the 24 V DC interface power supply for the magnetic contactor. Provide a dedicated power supply to the magnetic contactor.
6. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".

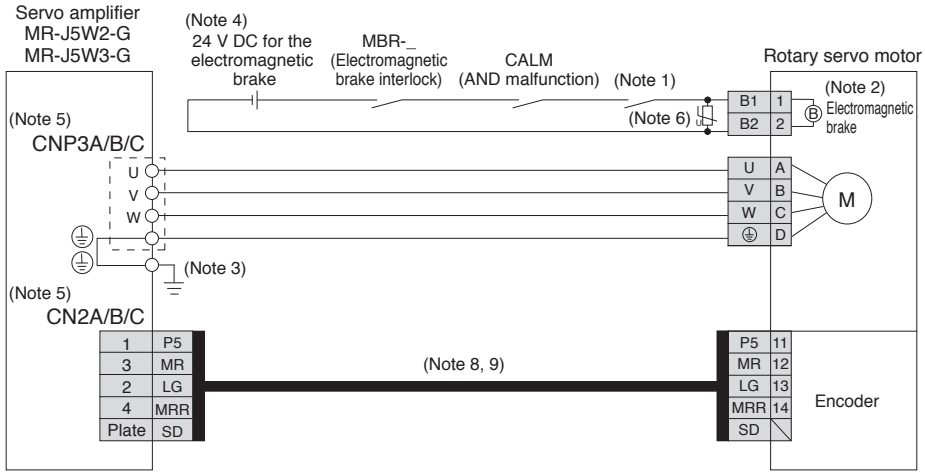
⚠ Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Rotary Servo Motor)

●For HK-KT series



●For HK-ST series



Notes: 1. Create the circuit in order to shut off by being interlocked with the emergency stop switch.
2. This is for the servo motors with an 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-J5W3-G servo amplifiers.
6. Install a surge absorber between B1 and B2.
7. This is for using an option dual cable type. Single cable types are also available.
8. Encoder cables are available as an option.
9. Refer to "Rotary Servo Motor User's Manual" when fabricating the cables.

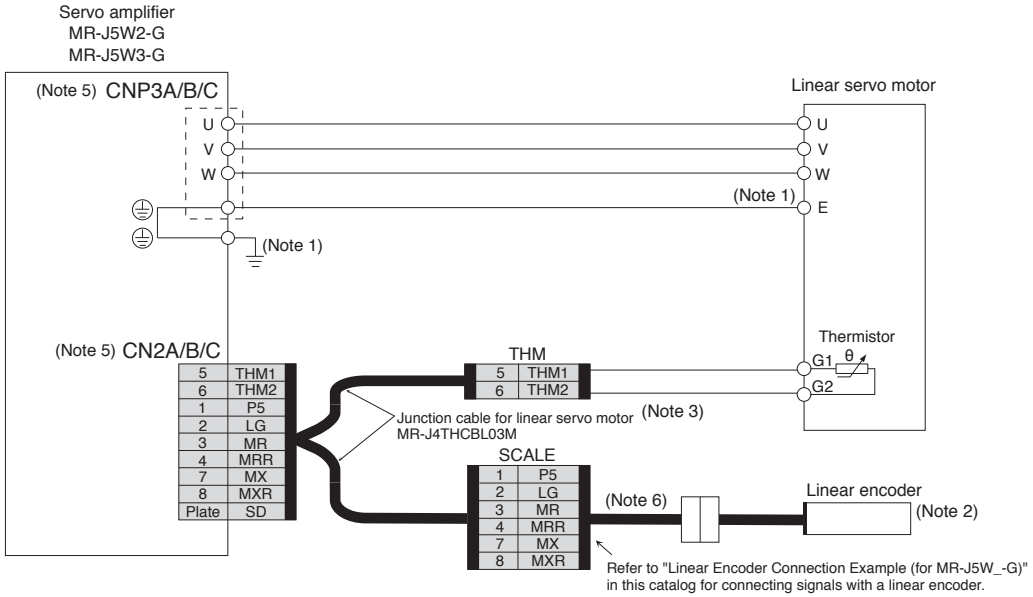
⚠ Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Linear Servo Motor)

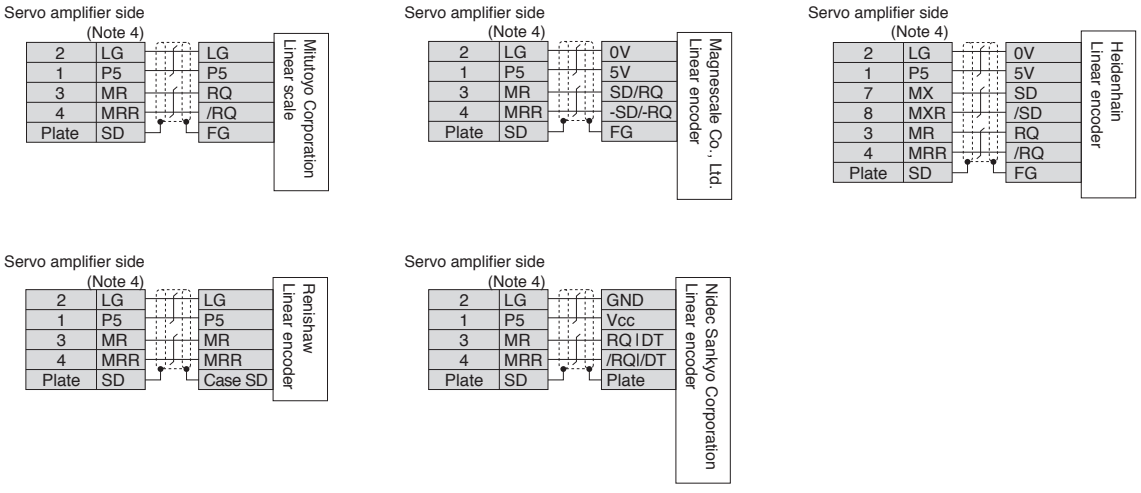
WG

Linear Servo System with MR-J5W2-G/MR-J5W3-G

●For LM-H3/LM-K2/LM-U2 series



Linear Encoder Connection Example (for MR-J5W_-G)

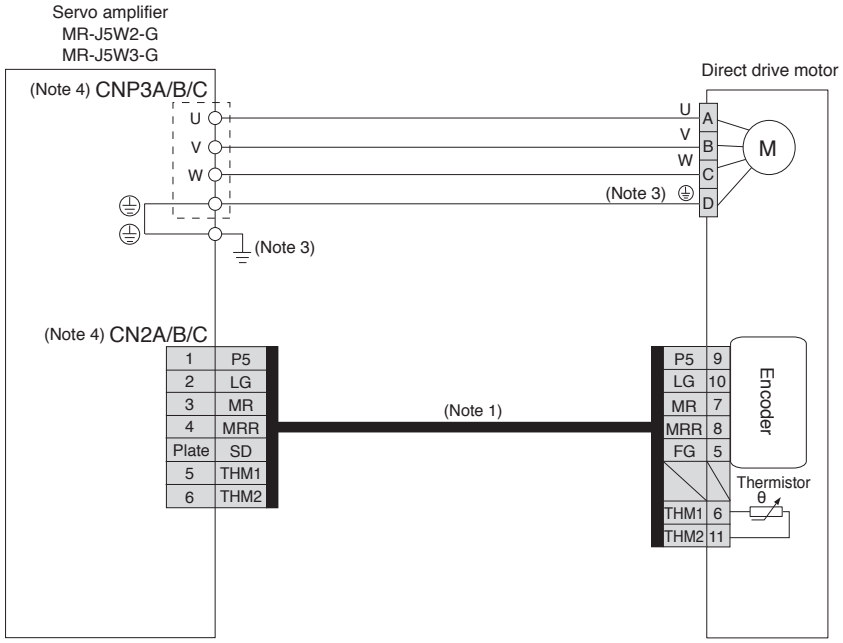


Notes: 1. Connect the grounding terminal of the servo motor to ⏚ of CNP3A, CNP3B, and CNP3C. Connect the protective earth (PE) terminal (⏚) located on the lower front of the servo amplifier to the cabinet protective earth (PE).
2. For linear encoders, refer to "List of Linear Encoders" in this catalog.
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 "MR-J5 Partner's Encoder User's Manual."
5. CNP3C and CN2C connectors are available for MR-J5W3-G servo amplifiers.
6. Necessary cables vary depending on the linear encoder. Refer to "MR-J5 Partner's Encoder User's Manual" for details.

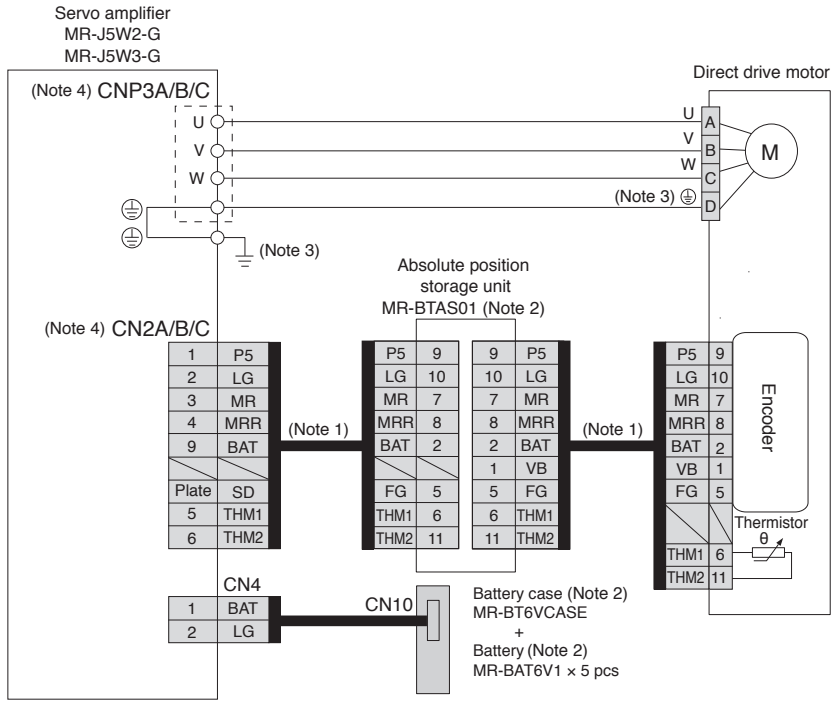
⚠ Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

Servo Motor Connection Example (Direct Drive Motor)

●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 "Direct Drive Motor User's 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 "MR-J5 User's Manual" and "Direct Drive Motor User's Manual" for details of absolute position detection system.
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-J5W3-G servo amplifiers.

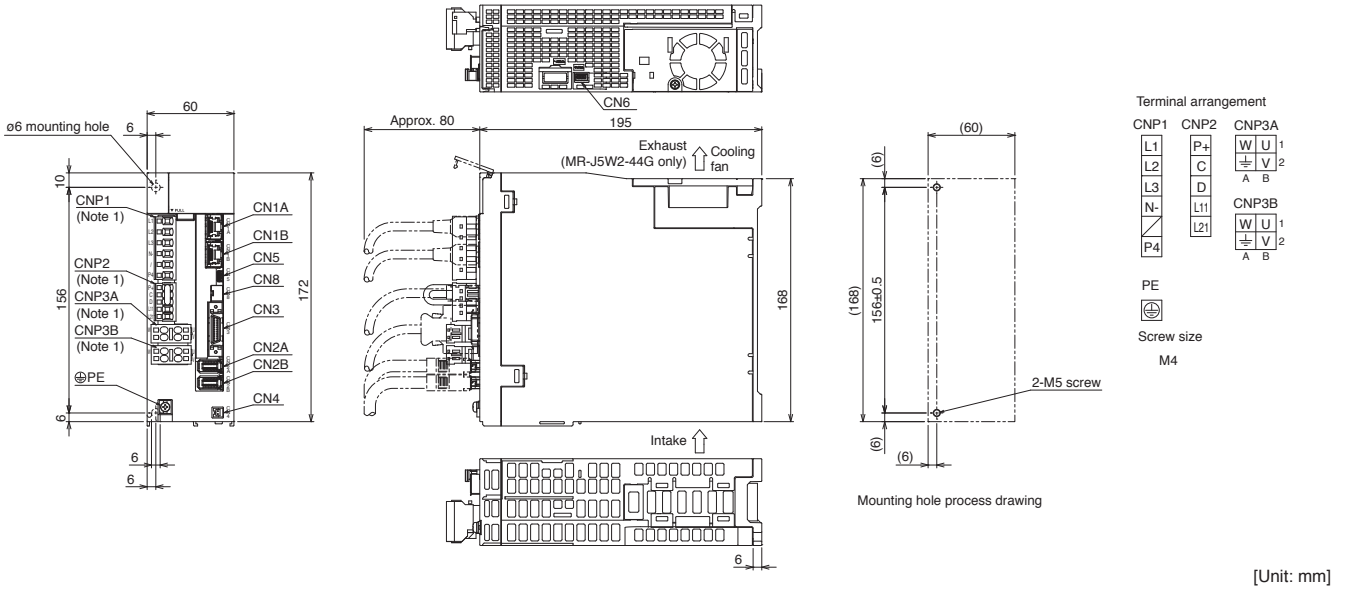
⚠ Be sure to read through User's Manual for the actual wiring and use. Use the equipment after you have a full knowledge of the equipment, safety information and instructions.

MR-J5W2-G Dimensions

WG

●MR-J5W2-22G

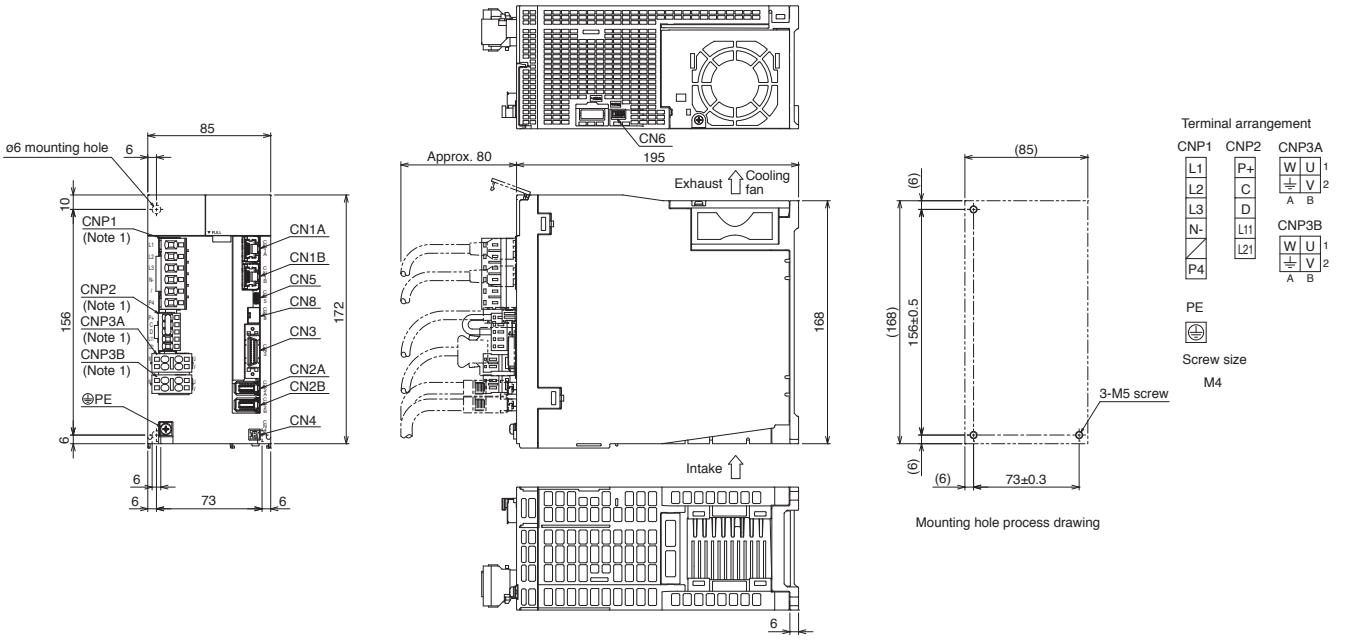
●MR-J5W2-44G



[Unit: mm]

●MR-J5W2-77G

●MR-J5W2-1010G



[Unit: mm]

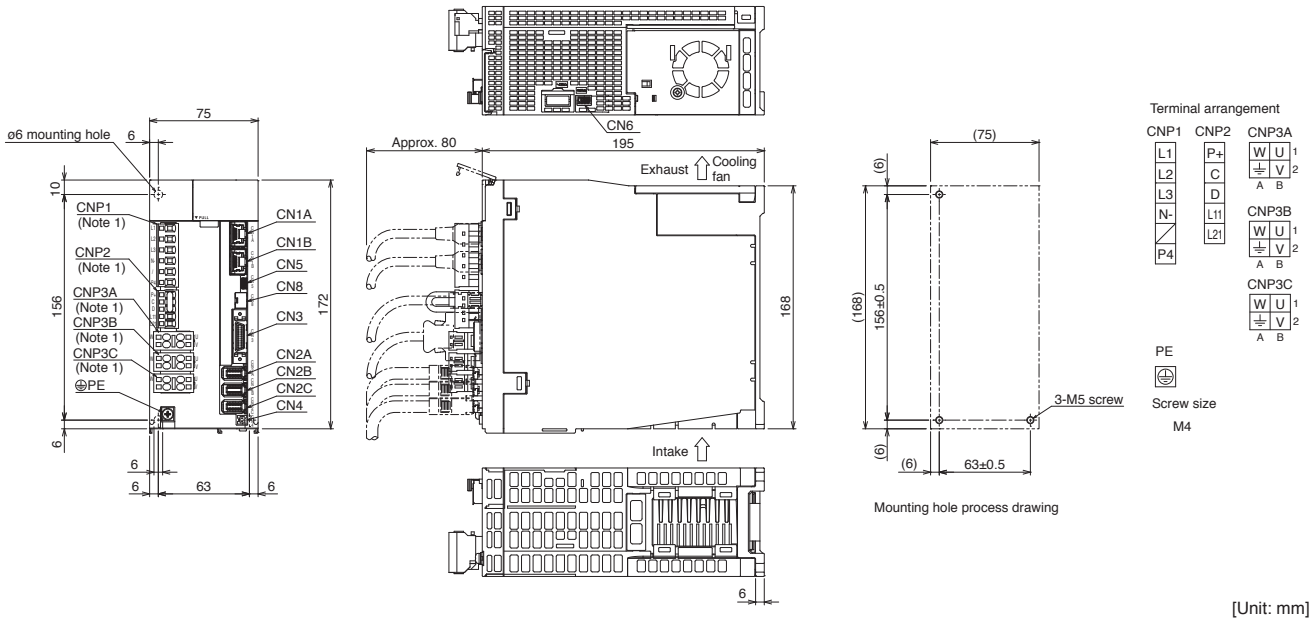
Notes: 1. CNP1, CNP2, CNP3A, and CNP3B connectors are supplied with the servo amplifier.

MR-J5W3-G Dimensions

WG

●MR-J5W3-222G

●MR-J5W3-444G



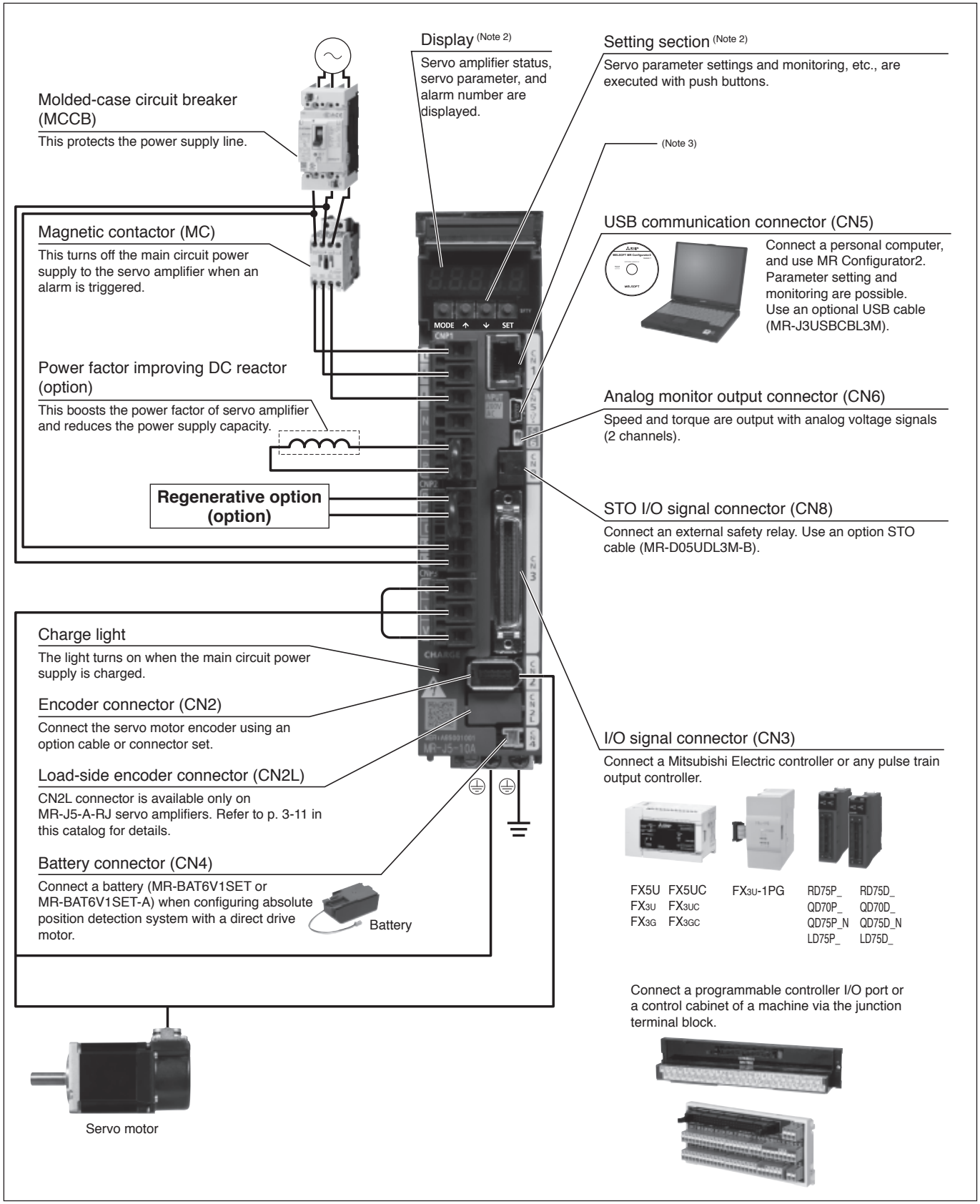
[Unit: mm]

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

MR-J5-A/MR-J5-A-RJ Connections with Peripheral Equipment (Note 1)

A A-RJ

Peripheral equipment is connected to MR-J5-A/MR-J5-A-RJ as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. Refer to "MR-J5 User's Manual" for the actual connections.
2. This picture shows when the display cover is open.
3. This is for manufacturer setting.

MR-J5-A/MR-J5-A-RJ (General-Purpose Interface) Specifications

A A-RJ

Servo amplifier model MR-J5-_(-RJ)			10A	20A	40A	60A	70A	100A	200A	350A
Output	Voltage		3-phase 0 V AC to 240 V AC							
	Rated current [A]		1.3	1.8	2.8	3.2	5.8	6.0	11.0	17.0
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 7)		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz
		DC input (Note 8)	283 V DC to 340 V DC							
	Rated current (Note 6) [A]		0.9	1.5	2.6	3.2	3.8	5.0	10.5	16.0
	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 7)		3-phase 170 V AC to 264 V AC
		DC input (Note 8)	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							
		DC input (Note 8)	283 V DC to 340 V DC							
	Rated current [A]		0.2							
	Permissible voltage fluctuation	AC input	1-phase 170 V AC to 264 V AC							
		DC input (Note 8)	241 V DC to 374 V DC							
	Permissible frequency fluctuation		±5 % maximum							
	Power consumption [W]		30							
Interface power supply			24 V DC ± 10 % (required current capacity: 0.5 A (including CN8 connector signals))							
Control method			Sine-wave PWM control/current control method							
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3) [W]			-	10			30		100	
Dynamic brake (Note 4)			Built-in							
Communication function	USB		Connect a personal computer (MR Configurator2 compatible)							
Encoder output pulse			Compatible (A/B/Z-phase pulse)							
Analog monitor			2 channels							
Position control mode	Maximum input pulse frequency		4 Mpulses/s (when using differential receiver), 200 kpulses/s (when using open collector)							
	Positioning feedback pulse		Encoder resolution: 26 bits							
	Command pulse multiplying factor		Electronic gear A/B multiple, A: 1 to 2147483647, B: 1 to 2147483647, 1/10 < A/B < 64000							
	In-position range setting		0 pulse to ±16777215 pulses (command pulse unit)							
	Error excessive		±3 rotations							
	Torque limit		Set by servo parameters or external analog input (0 V DC to +10 V DC/maximum torque)							
Speed control mode	Speed control range		Analog speed command 1:2000, internal speed command 1:5000							
	Analog speed command input		0 V DC to ±10 V DC/rated speed (Speed at 10 V is changeable with [Pr. PC12].)							
	Speed fluctuation rate		±0.01 % maximum (load fluctuation: 0 % to 100 %), 0 % (power fluctuation: ±10 %) ±0.2 % maximum (ambient temperature: 25 °C ± 10 °C) only when using analog speed command							
	Torque limit		Set by servo parameters or external analog input (0 V DC to +10 V DC/maximum torque)							
Torque control mode	Analog torque command input		0 V DC to ±8 V DC/maximum torque (input impedance: 10 kΩ to 12 kΩ)							
	Speed limit		Set by servo parameters or external analog input (0 V DC to ± 10 V DC/rated speed)							
Servo functions			Advanced vibration suppression control II, adaptive filter II, robust filter, quick tuning, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function (including failure prediction), power monitoring function, lost motion compensation function							
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)							

MR-J5-A/MR-J5-A-RJ (General-Purpose Interface) Specifications

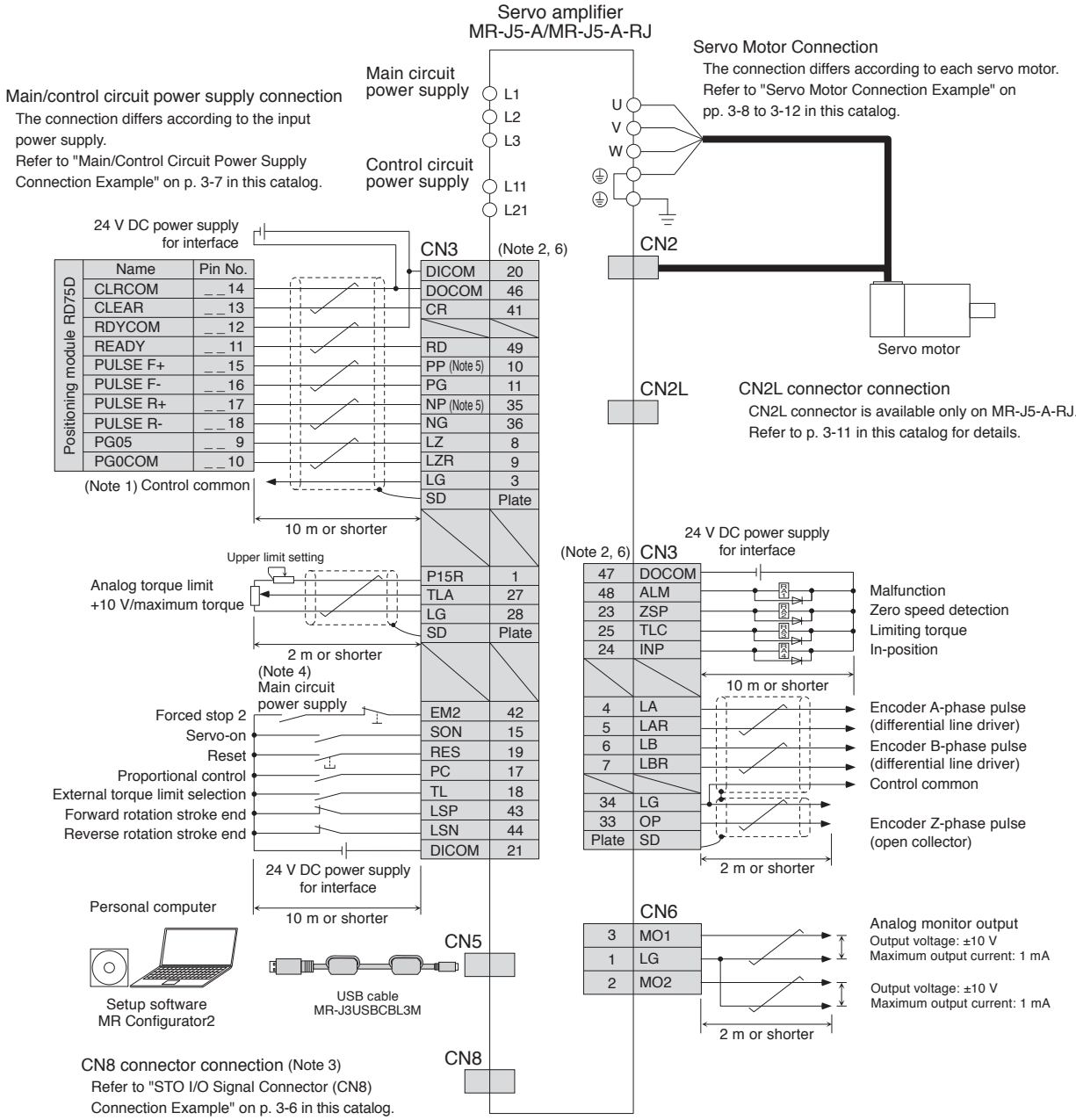
A A-RJ

Servo amplifier model MR-J5-_(-RJ)		10A	20A	40A	60A	70A	100A	200A	350A
Safety performance	Standards certified by CB (Note 9)	EN ISO 13849-1:2015 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 5)	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]							
Structure (IP rating)		Natural cooling, open (IP20)				Force cooling, open (IP20)			
Close mounting	3-phase power supply input	Possible (Note 10)							
	1-phase power supply input	Possible (Note 10)					Not possible		-
Mass [kg]		0.8			1.0	1.4		2.2	

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 drive system sizing software Motorizer.
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-J5 User's Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. 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.
6. This value is applicable when a 3-phase power supply is used.
7. 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.
8. For a connection example of power supply circuit with DC input, refer to "MR-J5 User's Manual".
9. 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-J5 User's Manual" for details.
10. 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.

MR-J5-A/MR-J5-A-RJ Standard Wiring Diagram Example: Position Control Operation A A-RJ

Connecting to RD75D

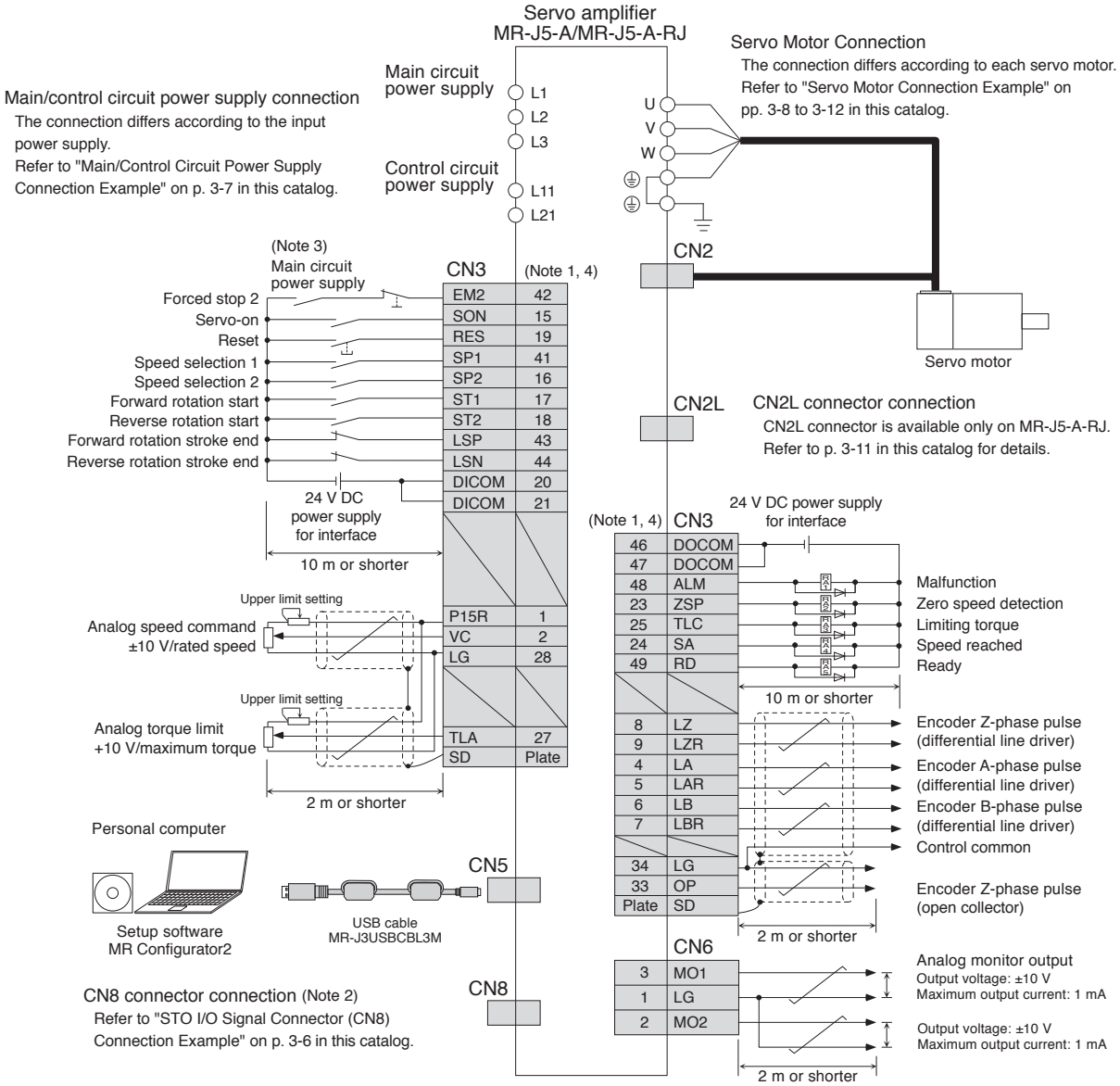


Notes:
1. This connection is not necessary for RD75D Positioning module. Note that the connection between LG and the control common terminal is recommended for some Positioning modules to improve noise tolerance.
2. This is for sink wiring. Source wiring is also possible.
3. Attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
4. 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.
5. Pulse train input is available with sink input and source input of open-collector type. When using the source input, use PP2 and NP2 terminals. Refer to "MR-J5 User's Manual" for details.
6. The pins with the same signal name are connected in the servo amplifier.

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

MR-J5-A/MR-J5-A-RJ Standard Wiring Diagram Example: Speed Control Operation

A A-RJ

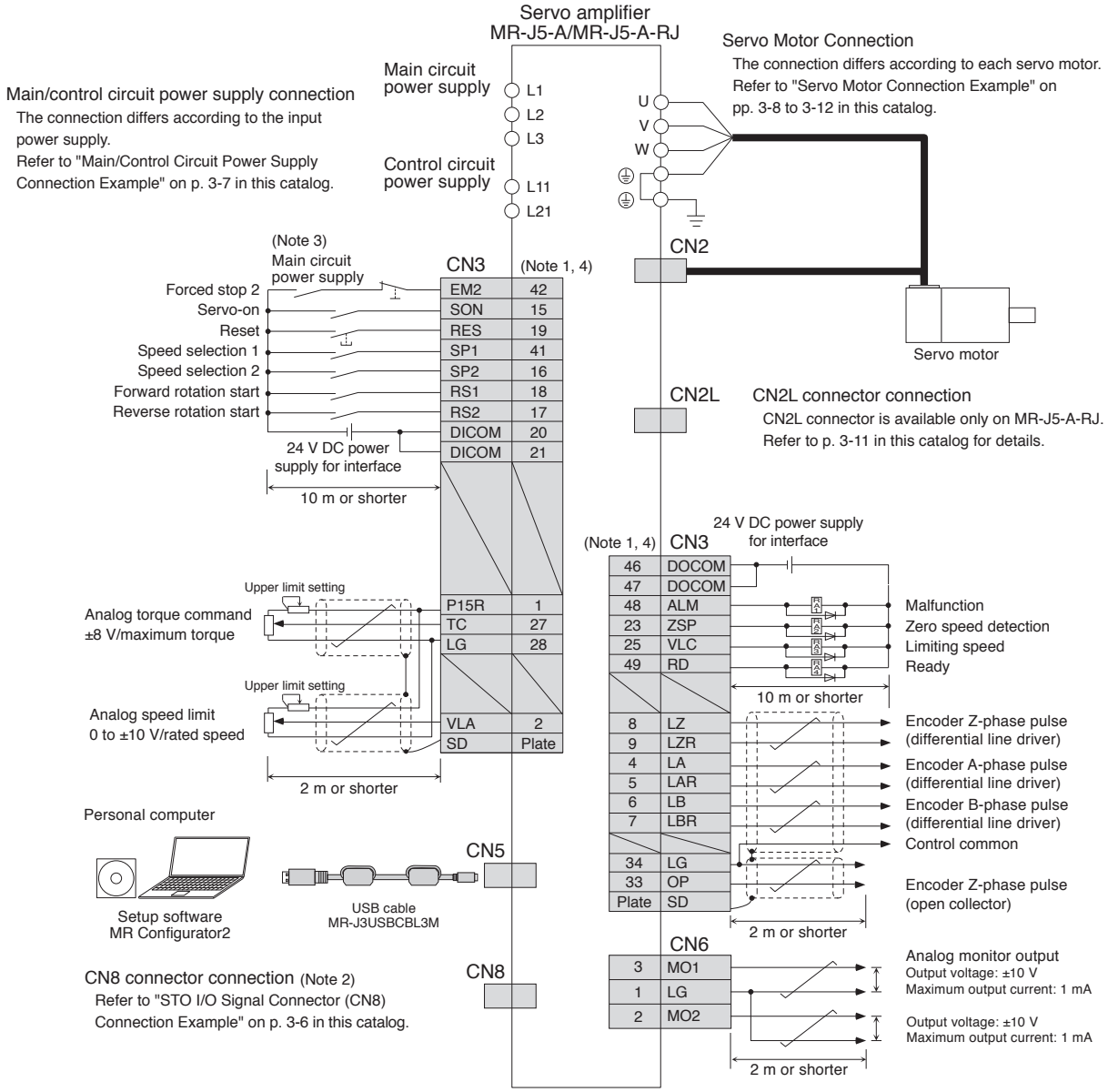


Notes: 1. This is for sink wiring. Source wiring is also possible.
2. Attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
3. To prevent an unexpected restart of the servo amplifier, create a circuit to turn off EM2 (Forced stop 2) when the main circuit power is turned off.
4. The pins with the same signal name are connected in the servo amplifier.

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

MR-J5-A/MR-J5-A-RJ Standard Wiring Diagram Example: Torque Control Operation

A A-RJ



Notes: 1. This is for sink wiring. Source wiring is also possible.
2. Attach a short-circuit connector supplied with the servo amplifier when the STO function is not used.
3. 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.
4. The pins with the same signal name are connected in the servo amplifier.

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

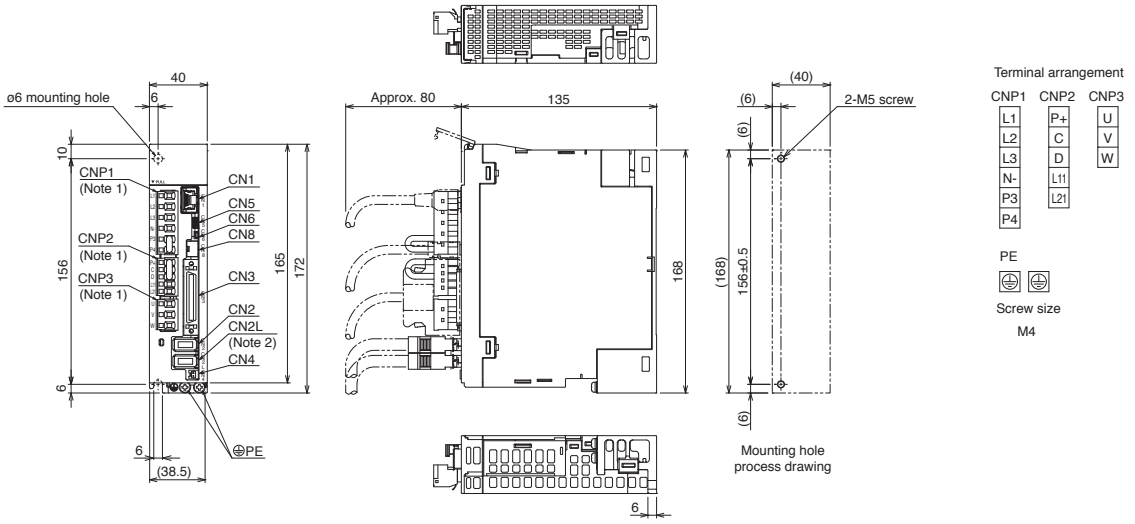
MR-J5-A/MR-J5-A-RJ Dimensions

A A-RJ

●MR-J5-10A, MR-J5-10A-RJ

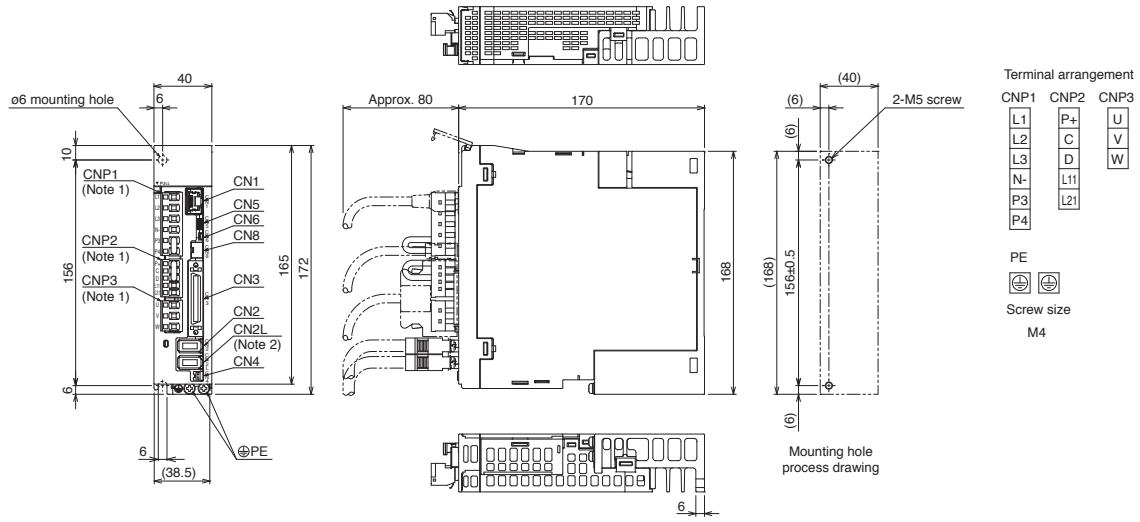
●MR-J5-20A, MR-J5-20A-RJ

●MR-J5-40A, MR-J5-40A-RJ



[Unit: mm]

●MR-J5-60A, MR-J5-60A-RJ



[Unit: mm]

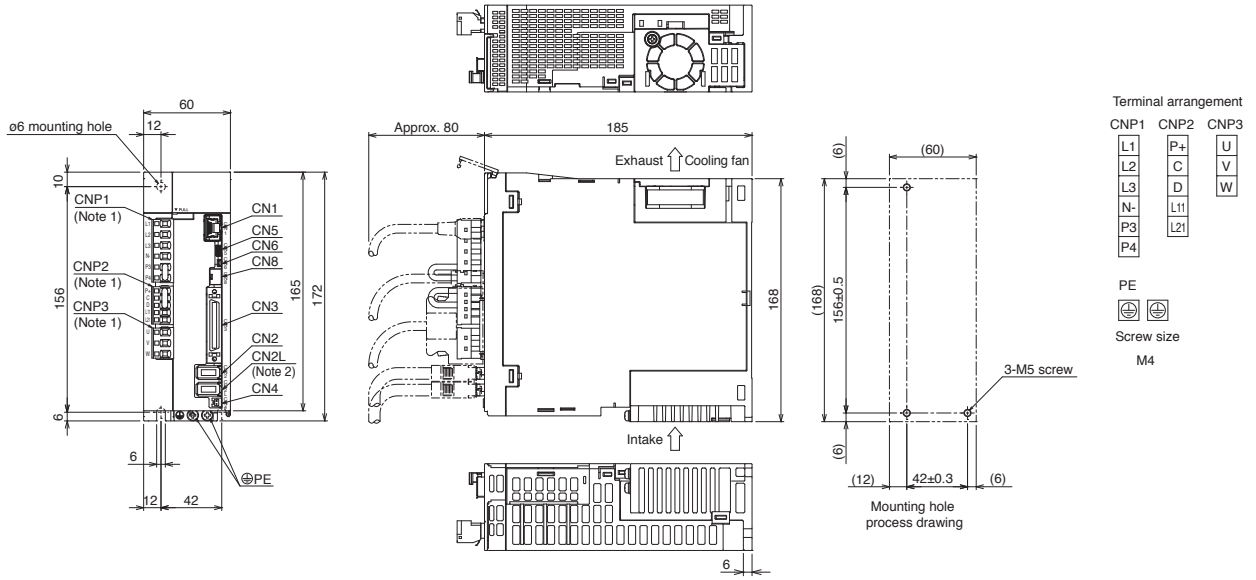
Notes: 1. CNP1, CNP2, and CNP3 connectors are supplied with the servo amplifier.
2. CN2L connector is not available for MR-J5-A servo amplifiers.

MR-J5-A/MR-J5-A-RJ Dimensions

A A-RJ

●MR-J5-70A, MR-J5-70A-RJ

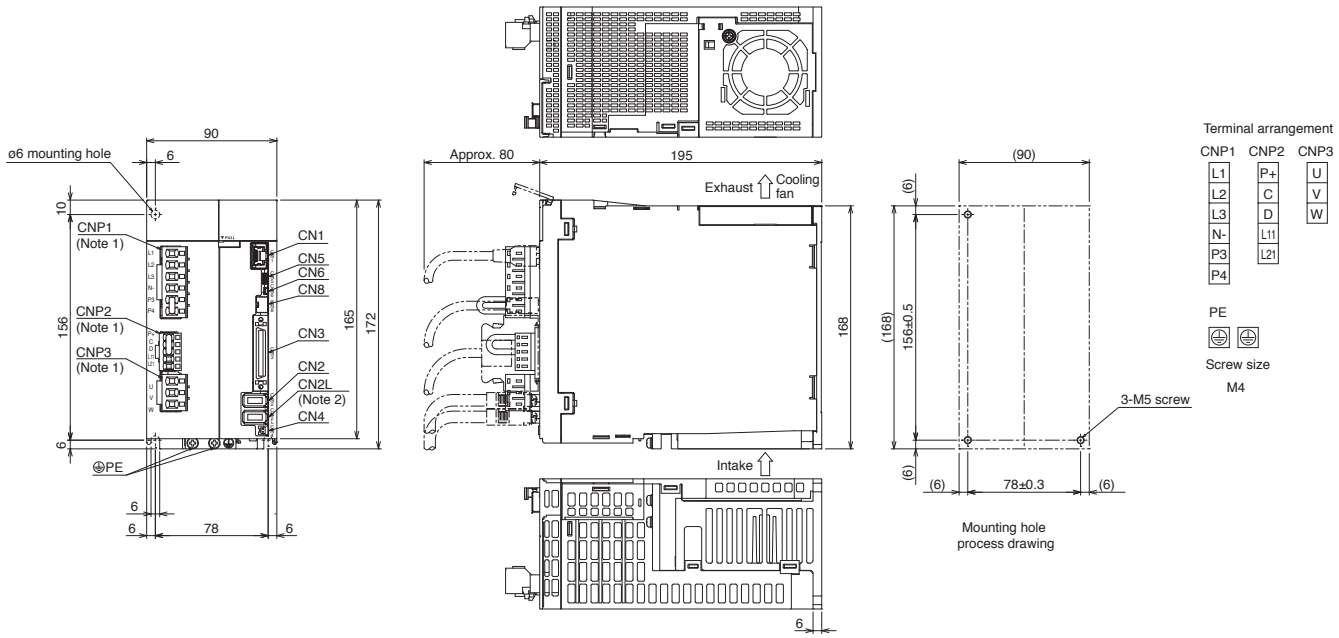
●MR-J5-100A, MR-J5-100A-RJ



[Unit: mm]

●MR-J5-200A, MR-J5-200A-RJ

●MR-J5-350A, MR-J5-350A-RJ



[Unit: mm]

Notes: 1. CNP1, CNP2, and CNP3 connectors are supplied with the servo amplifier.
2. CN2L connector is not available for MR-J5-A servo amplifiers.

TRAFFA
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