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## REFERENCE SPECIFICATIONS

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MODEL

Product Name : AC servo driver

Part Number : MINAS-A5NL, A5N9 Series

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Issued on  
Mar. 6<sup>th</sup>, 2012  
Revised on

Motor Business Unit, Appliances Company  
Panasonic Corporation

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# 1. Scope

The specifications are for AC servo driver MINAS-A5NL Series and MINAS-A5N9 Series made by Motor Business Unit, Appliances Company, Panasonic Corporation.

### <Software version>

This technical reference applies to the servo drivers compatible with software of the following version:

Ver.8.01 or later

For the software version, confirm it by the setup support software PANATERM or other function.

### <Related documents>

SX-DSV02309: Technical document - Functional specification -

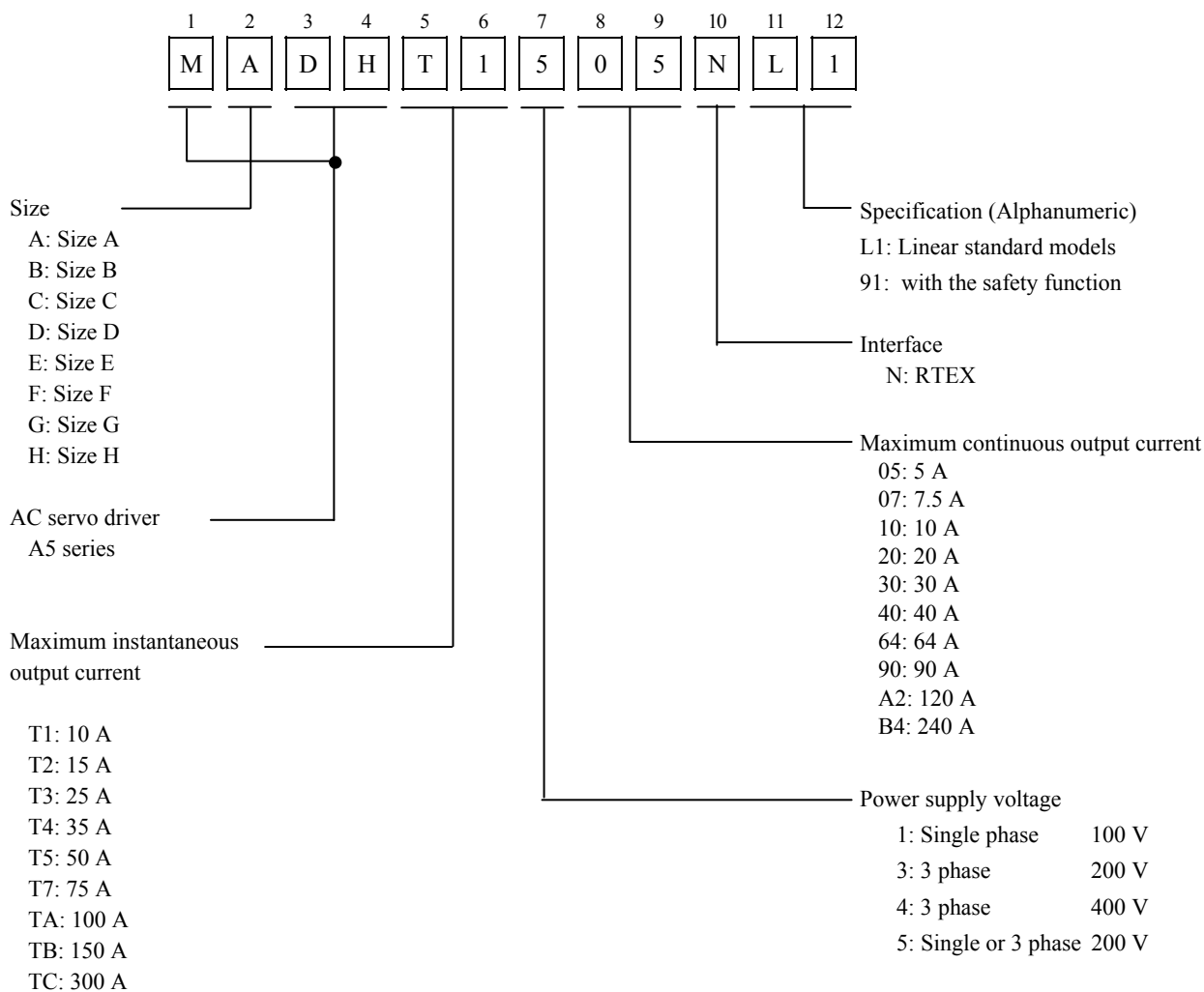
SX-DSV02310: Technical document - Realtime Express (RTEX) communication specification –

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# 2. Product number

The following shows how to interpret a product number.



## 3. Product Line-up

## ● MINAS-A5NL and A5N9 Series

Servo driver				Applicable motor (Note 2)		Applicable feedback scale (Note 2)	
Model No. (Note 1)		Frame mark	Power supply voltage	Default value) Of carrier frequency (Note 4)	Rated current [Ams]	Max. current [Ams]	Scale type
MINAS-A5NL Series (Linear standard models)	MINAS-A5N9 Series (With the safety function)						
MADHT1105NL1	MADHT1105N91	A	Single-phase AC100–120 V	12kHz	1.2	3.6	<ul style="list-style-type: none"> <li>● Linear type</li> <li>- A/B phase, differential origin signal input</li> <li>- Serial communication type</li> <li>● Rotary type</li> <li>- A/B phase, differential origin signal input</li> <li>- Serial communication type (Note 3)</li> </ul>
MADHT1107NL1	MADHT1107N91				1.7	5.1	
MADHT1505NL1	MADHT1505N91		Single/3-phase AC 200–240 V		1.2	3.6	
MADHT1507NL1	MADHT1507N91				1.6	4.8	
MBDHT2110NL1	MBDHT2110N91	B	Single-phase AC100–120 V	6kHz	2.5	7.5	
MBDHT2510NL1	MBDHT2510N91		Single/3-phase AC 200–240 V		2.6	7.8	
MCDHT3120NL1	MCDHT3120N91	C	Single-phase AC100–120 V		4.6	13.8	
MCDHT3520NL1	MCDHT3520N91		Single/3-phase AC 200–240 V		4.1	12.3	
MDDHT3530NL1	MDDHT3530N91	D	Single/3-phase AC 200–240 V		5.9	16.9	
MDDHT5540NL1	MDDHT5540N91				9.4	28.2	
MDDHT2407NL1	MDDHT2407N91		3-phase AC 380–480 V		1.5	4.5	
MDDHT2412NL1	MDDHT2412N91				2.9	8.7	
MDDHT3420NL1	MDDHT3420N91	4.7			14.1		
MEDHT7364NL1	MEDHT7364N91	E	3-phase AC 200–230 V		13.4	40.2	
MEDHT4430NL1	MEDHT4430N91		3-phase AC 380–480 V		6.7	19.7	
MFDHTA390NL1	MFDHTA390N91	F	3-phase AC 200–230 V		18.7	56.1	
MFDHTB3A2NL1	MFDHTB3A2N91				33	84.8	
MFDHT5440NL1	MFDHT5440N91		3-phase AC 380–480 V		9.4	28.2	
MFDHTA464NL1	MFDHTA464N91				16.5	42.4	
MGDHTC3B4NL1	MGDHTC3B4N91	G	3-phase AC 200–230 V		44	116.6	
MGDHTB4A2NL1	MGDHTB4A2N91		3-phase AC 380–480 V		22	58.7	
MHDHTC3B4NL1	MHDHTC3B4N91	H	3-phase AC 200–230 V		12kHz	66.1	167.2
MHDHTB4A2NL1	MHDHTB4A2N91		3-phase AC 380–480 V			33.1	83.7

(Note 1) MINAS-A5N9 Series are the models which are added the safety function to MINAS-A5NL series.

(Note 2) For the applicable motor and feedback scale, also refer to the technical document SX-DSV02309.

(Note 3) For the serial communication type of the rotary type, contact us.

(Note 4) When you change the carrier frequency, confirm the temperature of the servo driver and the motor.

## 4. Specifications

### 4-1 Basic Specifications

Item			Description	
Input power supply	100 V	Main circuit power	Single phase 100–120 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz	
		Control circuit power	Single phase 100–120 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz	
	200 V	Main circuit power	A–D	Single/3 phase 200–240 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz
			E–H	3 phase 200–230 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz
		Control circuit power	A–D	Single phase 200–240 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz
			E–H	Single phase 200–230 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz
	400 V	Main circuit power	D-H	3 phase 380–480 V ac $\begin{matrix} +10\% \\ -15\% \end{matrix}$ 50/60 Hz
		Control circuit power		24 V dc +/- 15%
Insulation voltage			Resistant to 1,500 V AC between primary power supply and ground for a minute (Sensed current: 20 mA) * Excluding control circuit power supply part (24 V dc) of 400 V models.	
Operation conditions	Temperature		Operation temperature: 0–55 degrees C Storage temperature: -20–65 degrees C	
	Humidity		Operation and storage humidity 90%RH or less (no condensation)	
	Height above the sea		Height above the sea level: 1,000 meters or less	
	Vibration		5.88 m/s <sup>2</sup> or less, 10–60 Hz (Continuous operation at resonance point is not allowed)	

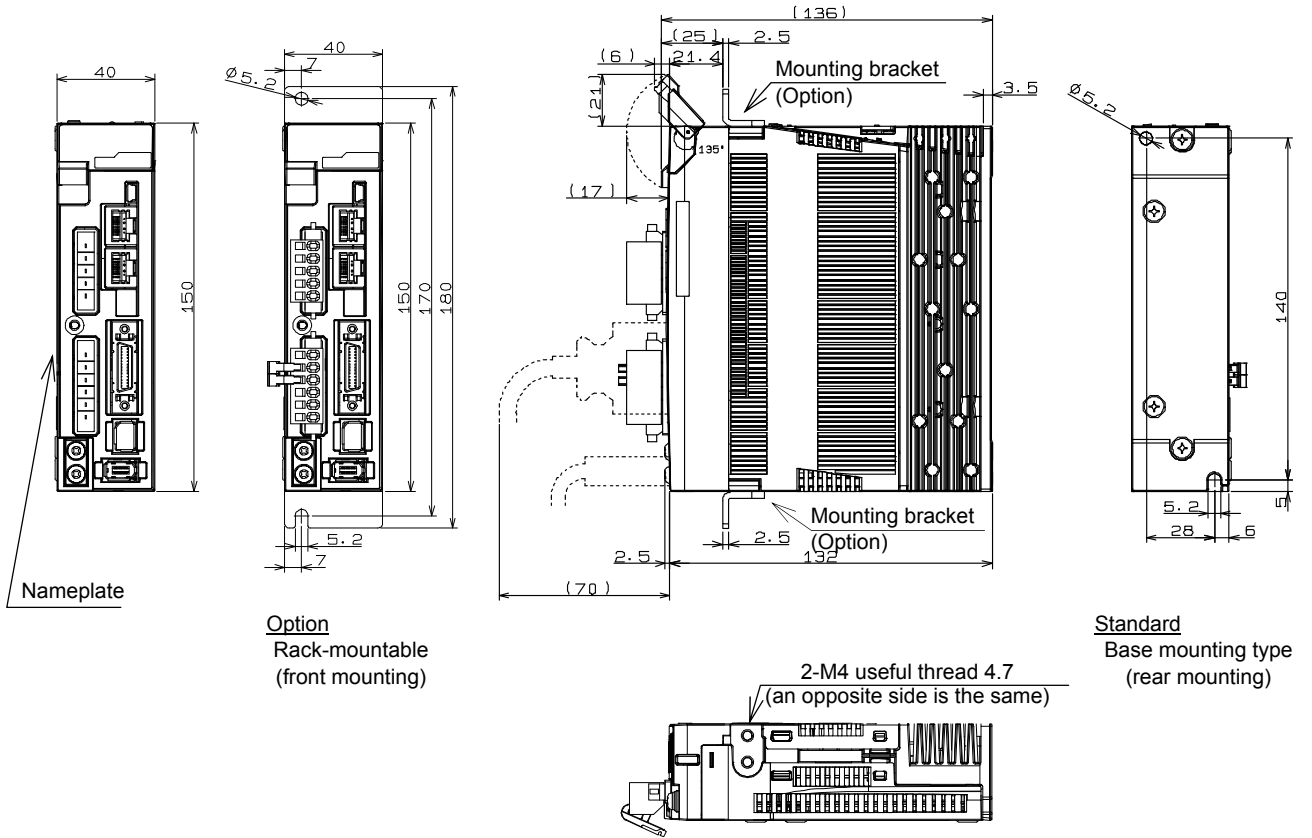
### 4-2 Compatible Standard (Under Contemplation)

Item		Description
EC Directive	EMC directive	EN55011 (CISPR11), EN61000-6-2, EN61800-3
	Low voltage directive	EN61800-5-1
UL		UL508C
CSA		CSA22.2 No.14
KC		KN11 , KN61000-4-2,34,5,6,8,11

### 5. Dimensions

- MINAS-A5NL and A5N9 Series

Size A 100 V/200 V

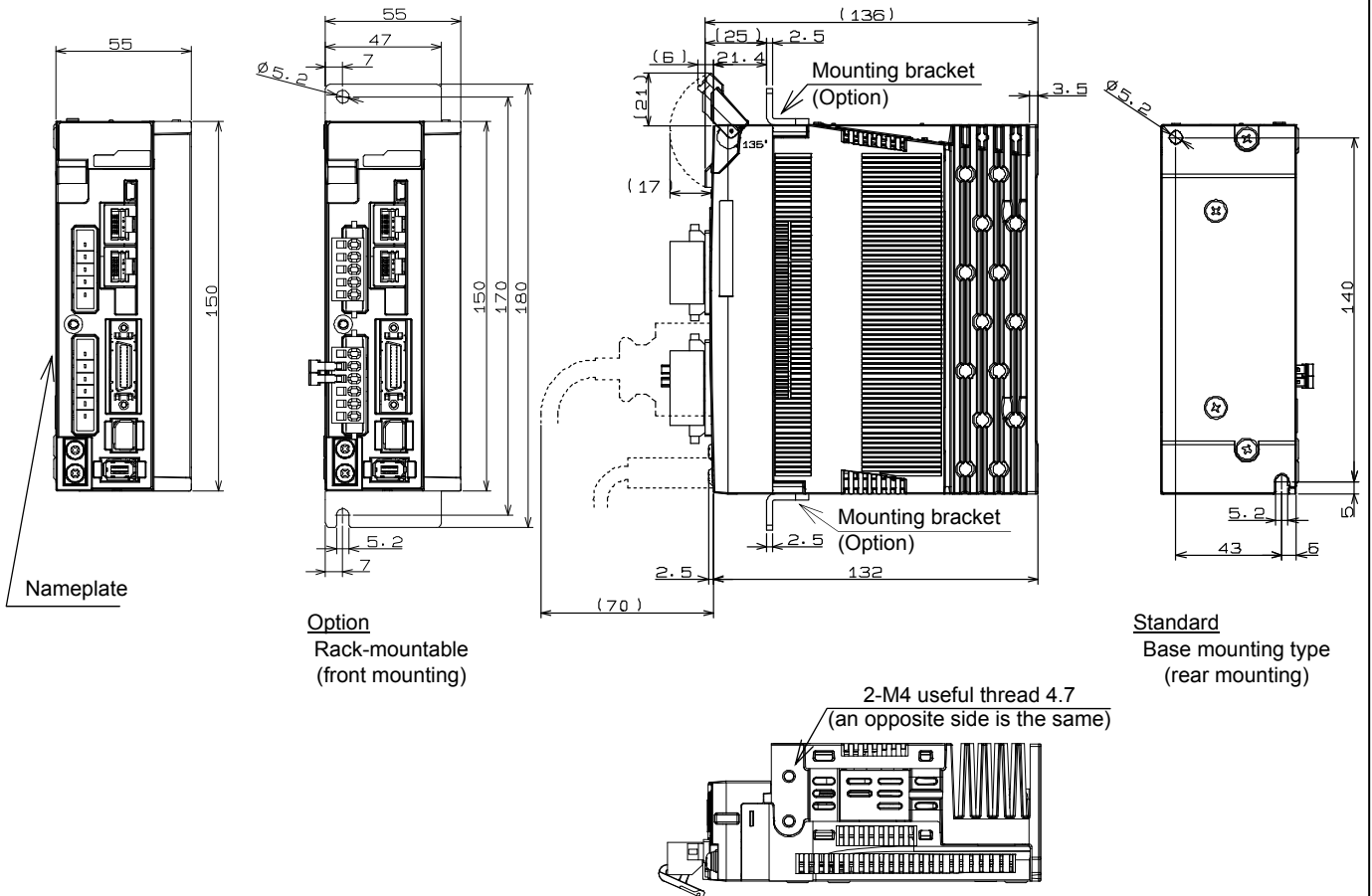


[Front mounting bracket Optional part number]

	Part number
For frame A	DV0PM20027



Size B 100 V/200 V

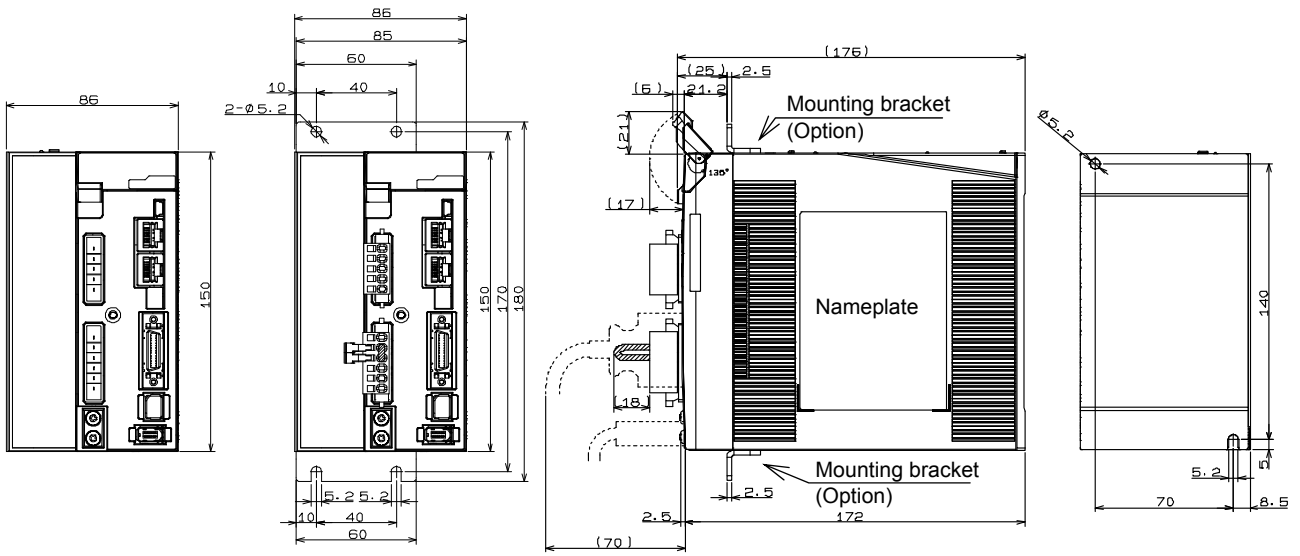


[Front mounting bracket Optional part number]

	Part number
For frame B	DV0PM20028



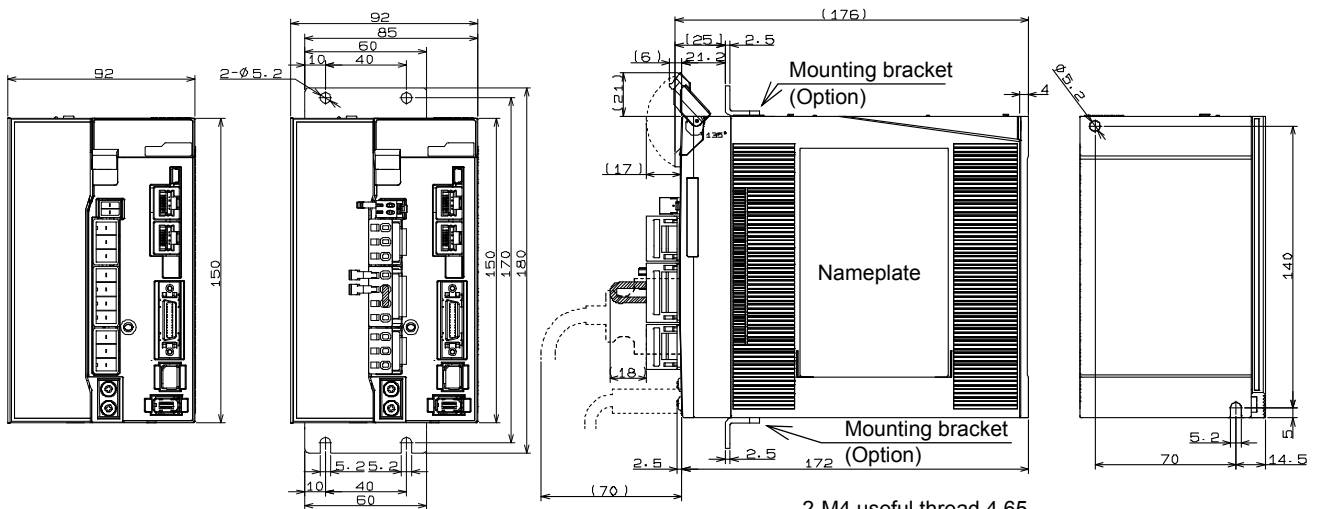
Size D 200 V



Option  
Rack-mountable  
(front mounting)

Standard  
Base mounting type  
(rear mounting)

Size D 400 V



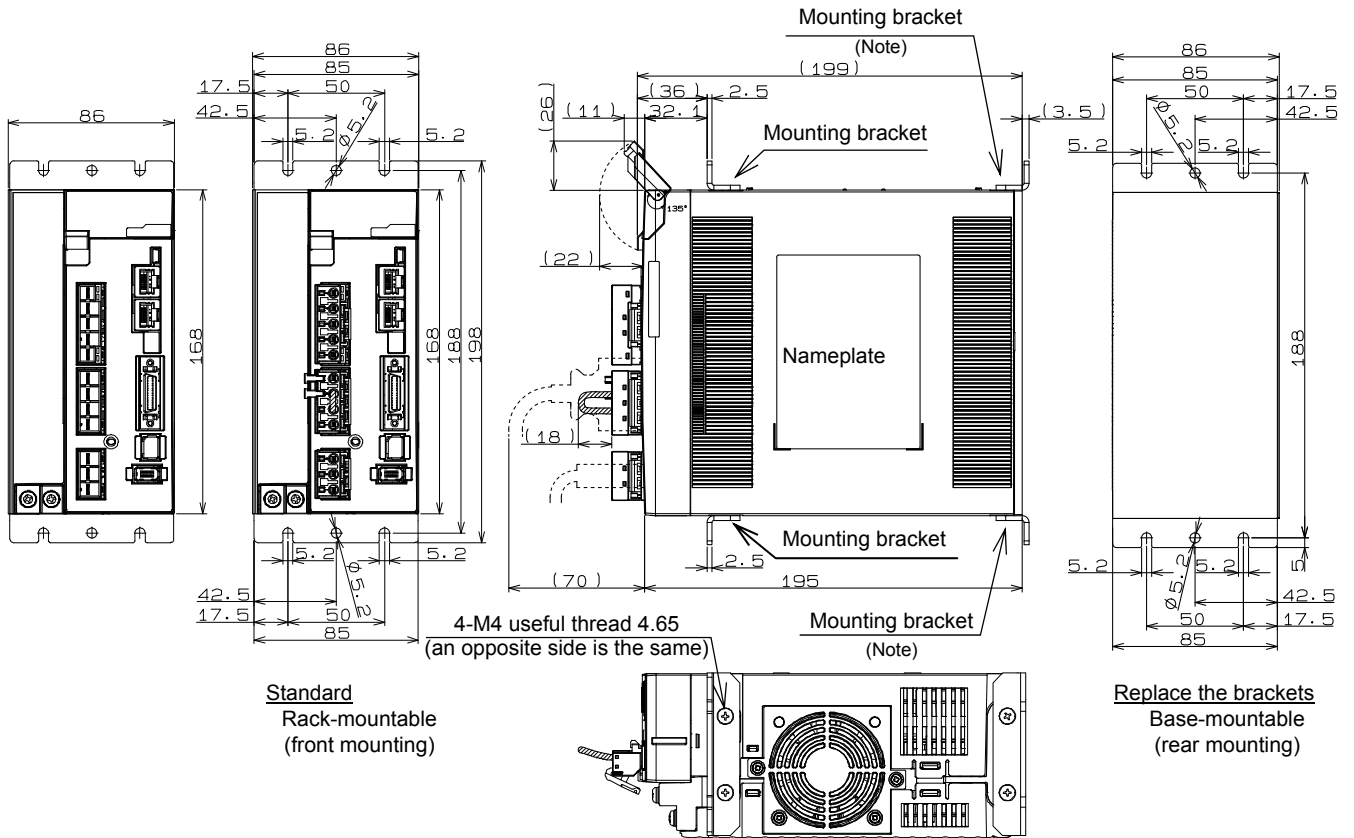
Option  
Rack-mountable  
(front mounting)

Standard  
Base mounting type  
(rear mounting)

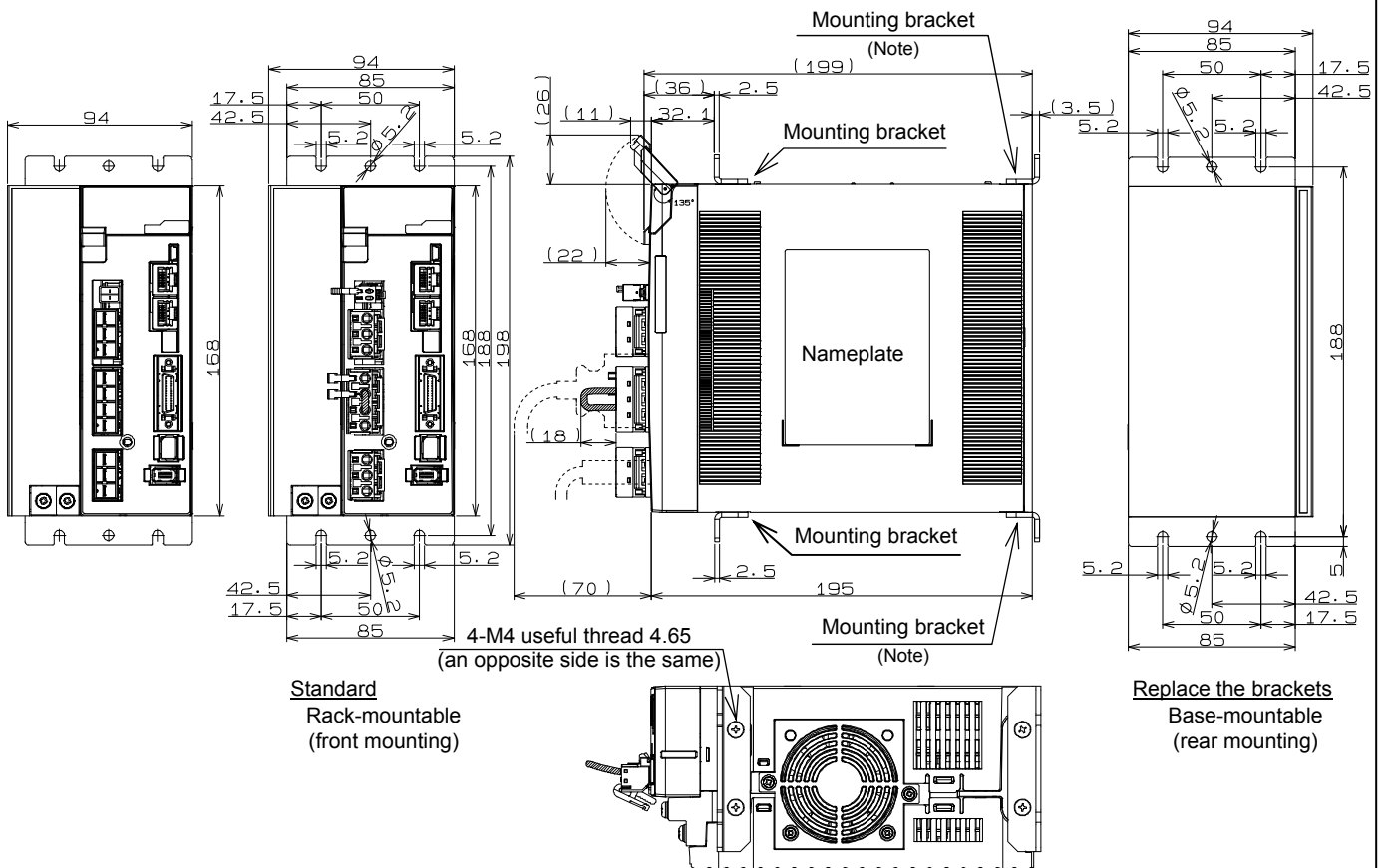
[Front mounting bracket Optional part number]

	Part number
For frame D	DV0PM20030

Size E 200 V

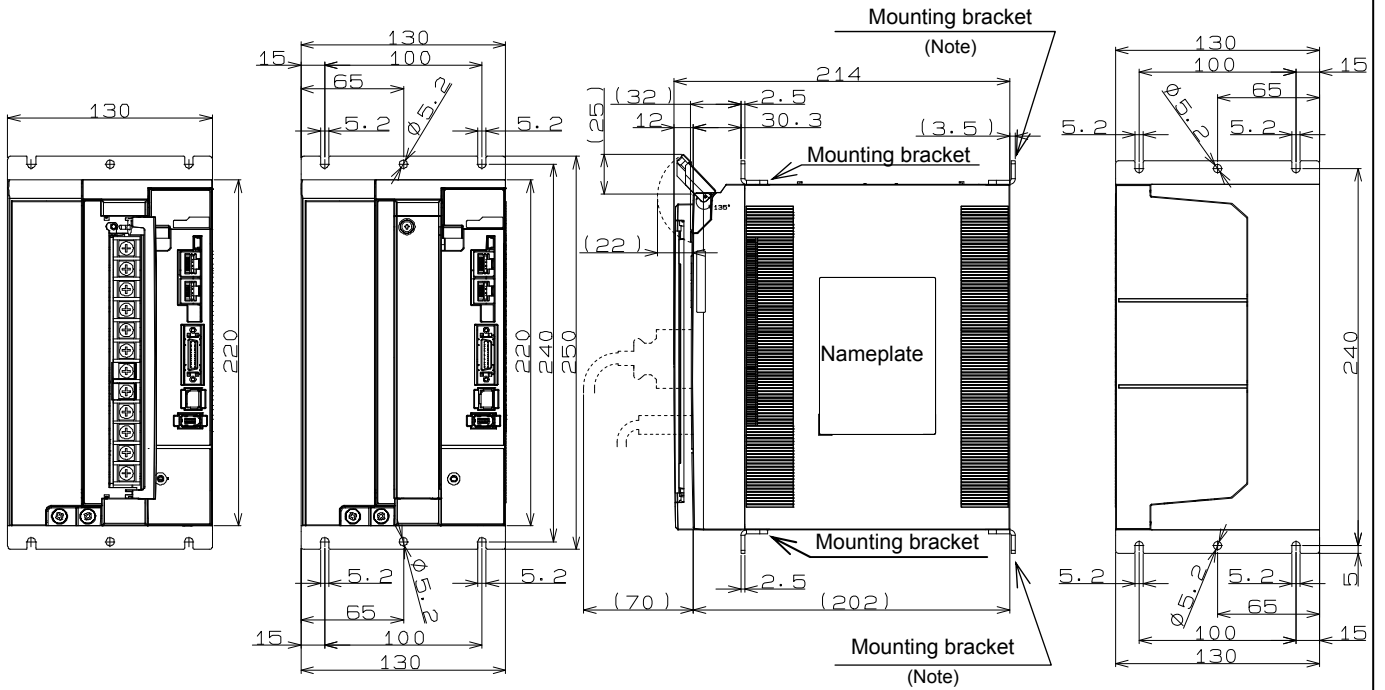


Size E 400 V

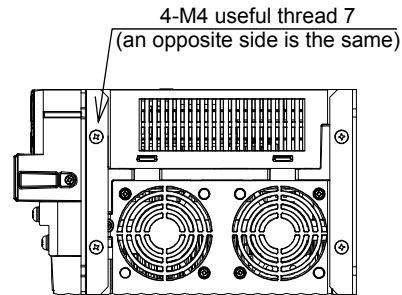


Note: For base mounting type (rear mounting type), attach the mounting bracket to the rear surface. Although the above figure shows brackets attached to both the front and rear surfaces, the unit is shipped out with the bracket attached to only the front.

Size F 200 V/400 V



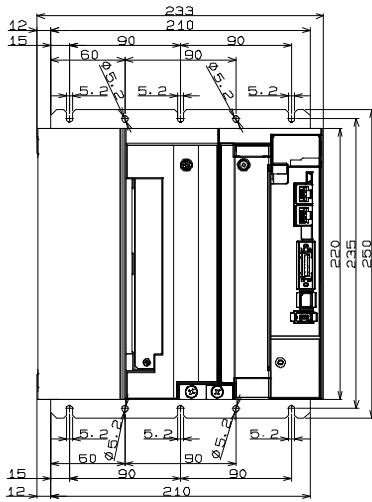
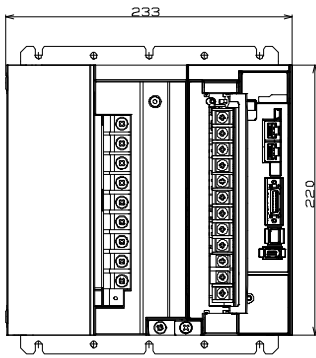
Standard  
 Rack-mountable  
 (front mounting)



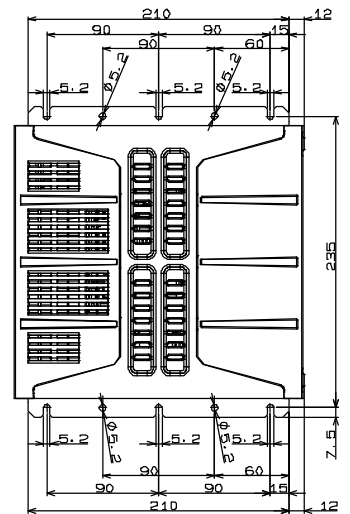
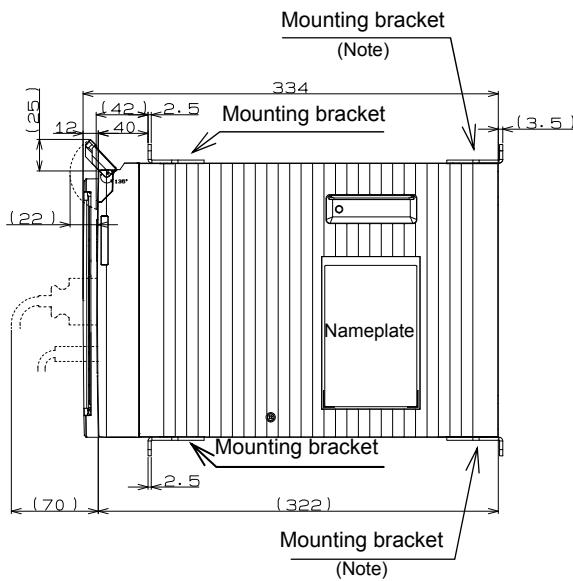
Replace the brackets  
 Base-mountable  
 (rear mounting)

Note: For base mounting type (rear mounting type), attach the mounting bracket to the rear surface. Although the above figure shows brackets attached to both the front and rear surfaces, the unit is shipped out with the bracket attached to only the front.

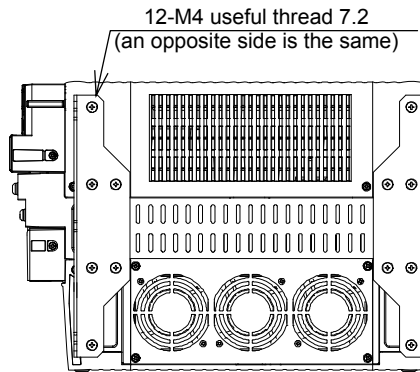
Size G 200 V/400 V



Standard  
Rack-mountable  
(front mounting)

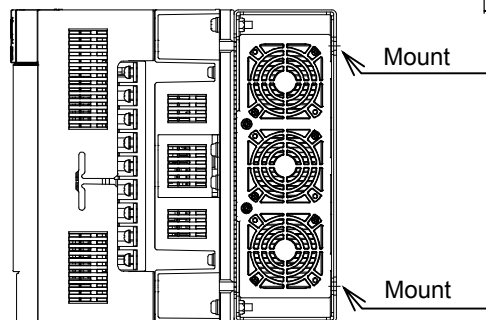
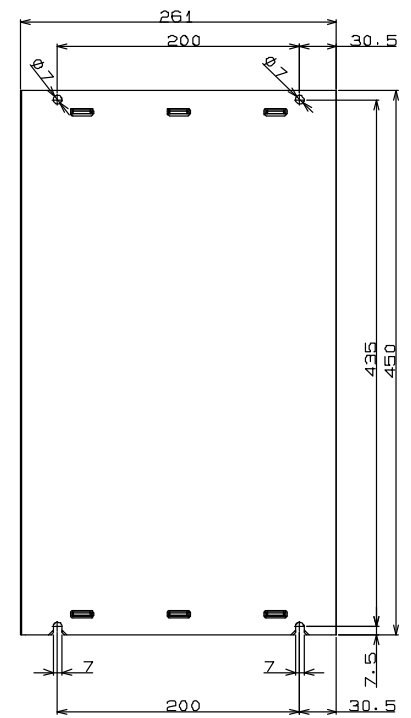
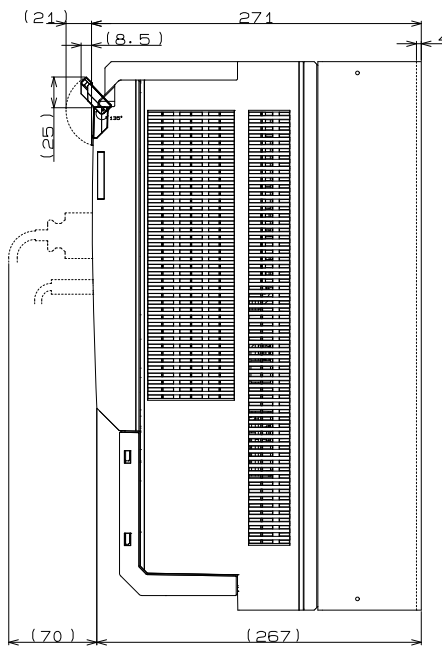
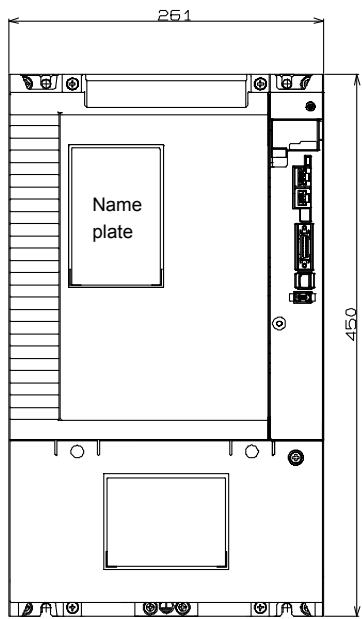
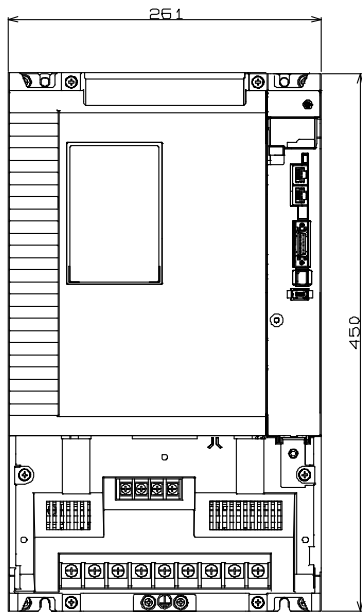


Replace the brackets  
Base-mountable  
(rear mounting)



Note: For base mounting type (rear mounting type), attach the mounting bracket to the rear surface. Although the above figure shows brackets attached to both the front and rear surfaces, the unit is shipped out with the bracket attached to only the front.

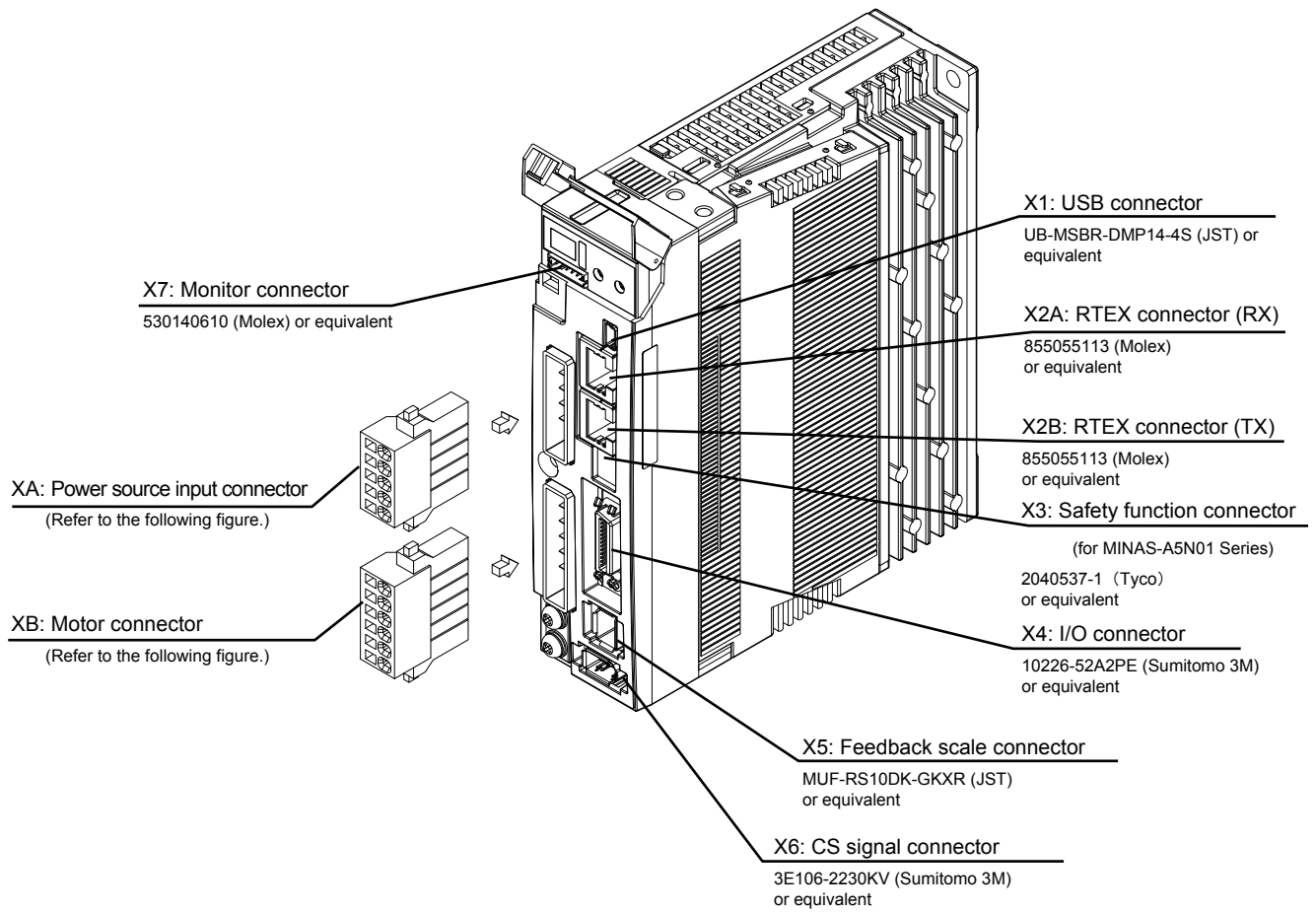
Size H 200 V/400 V



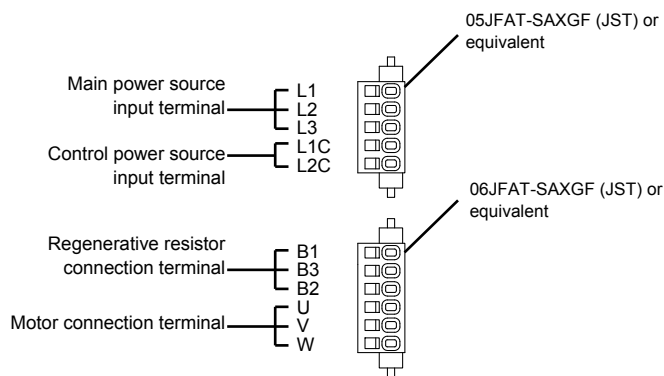
Base mounting type  
(rear mounting)

## 6. Appearance and Part Names

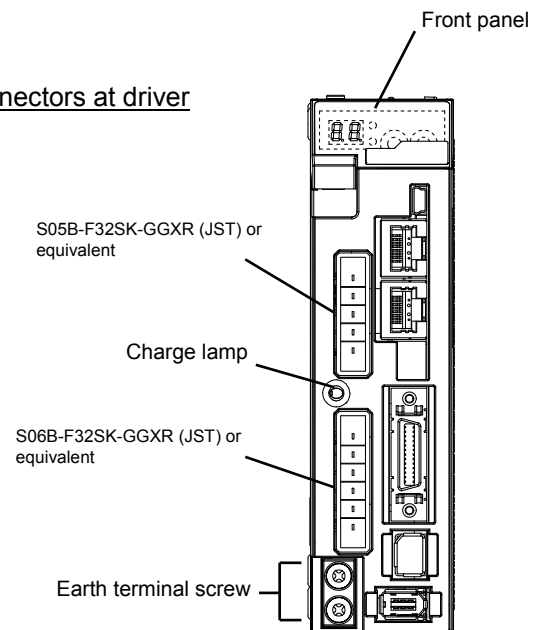
Size A, B 100 V/200 V



### Cable side connectors

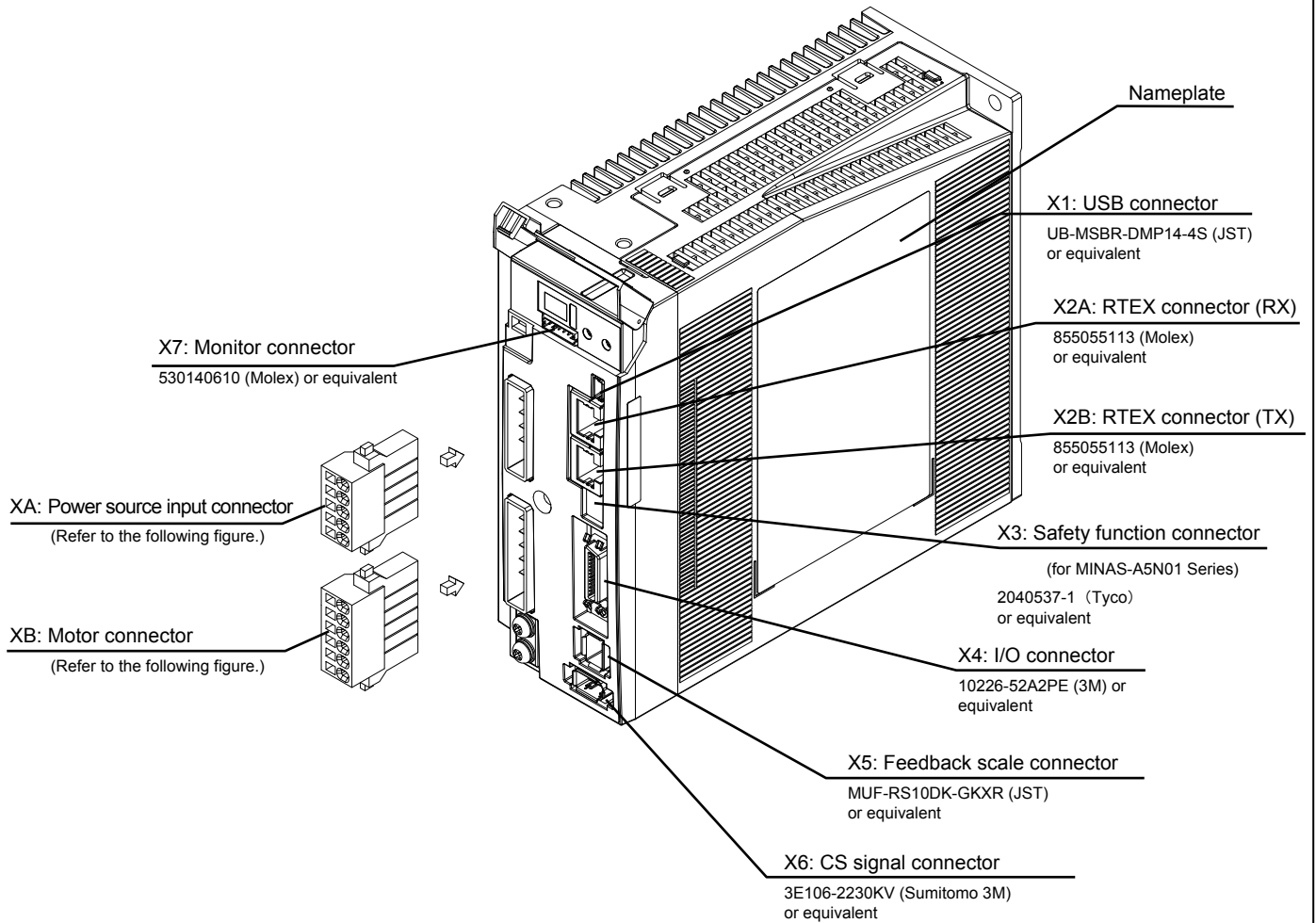


### Connectors at driver

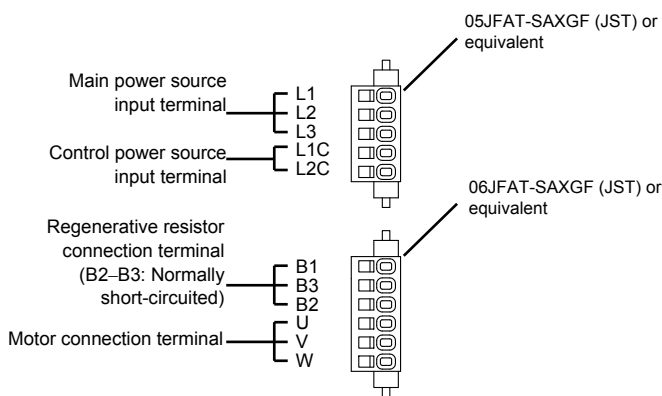




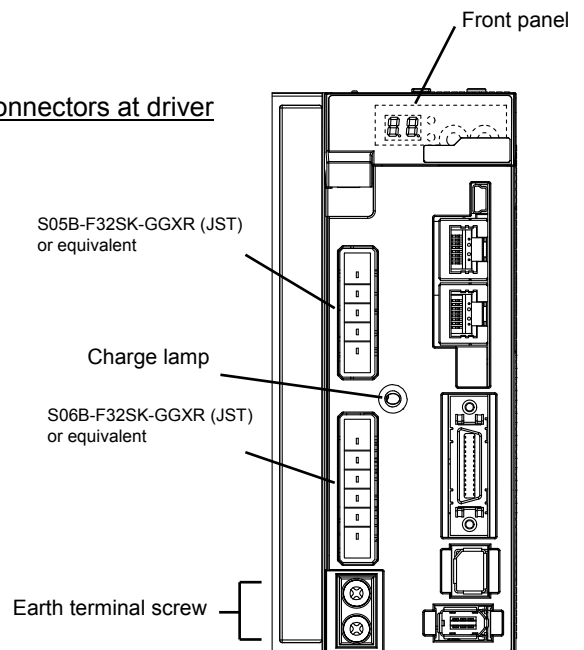
Size C, D 100 V/200 V



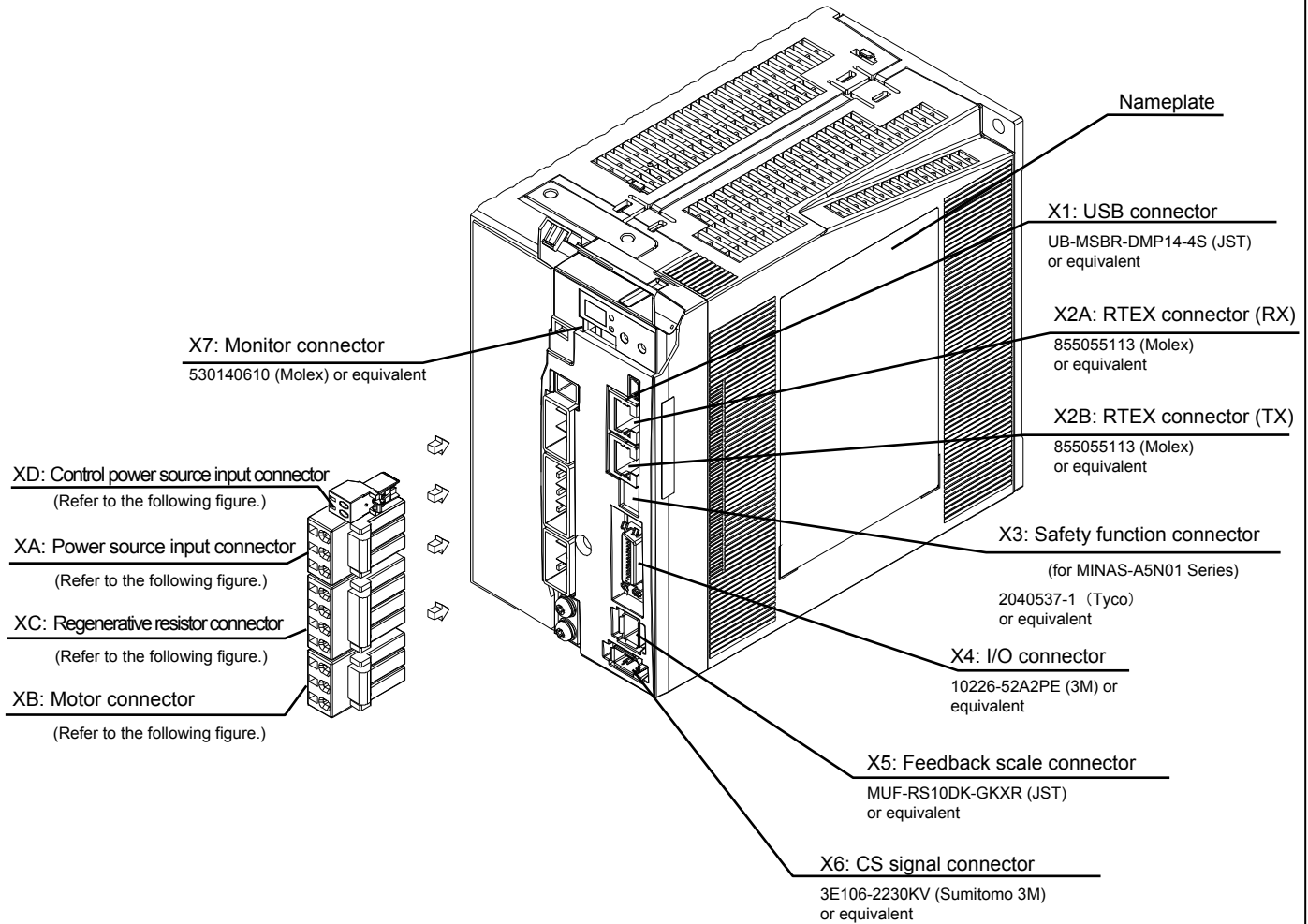
Cable side connectors



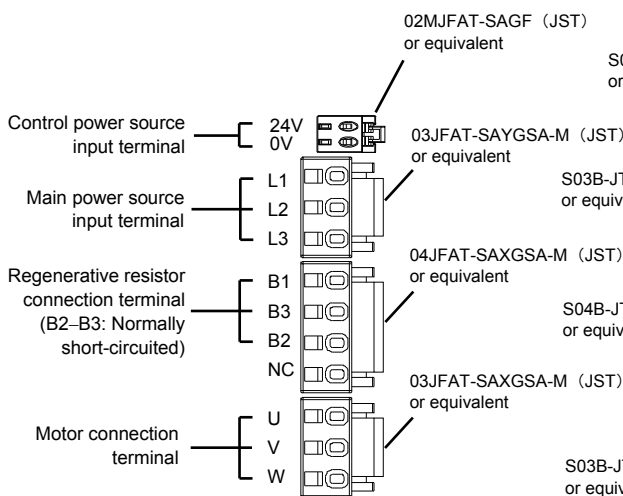
Connectors at driver



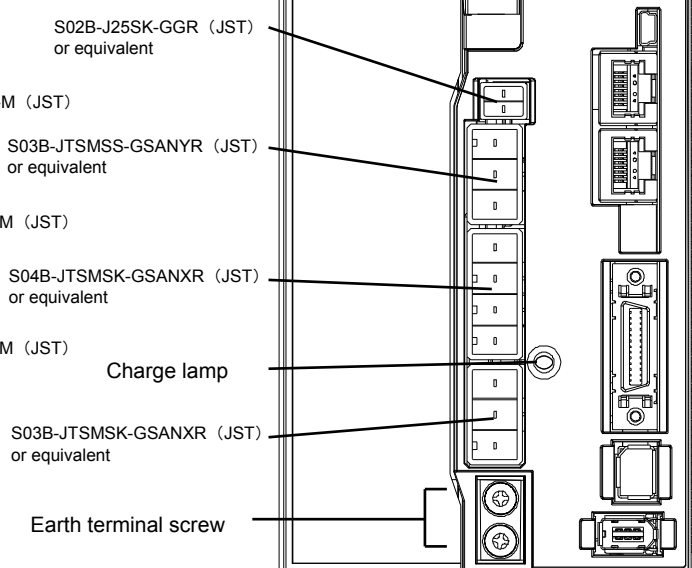
Size D 400 V



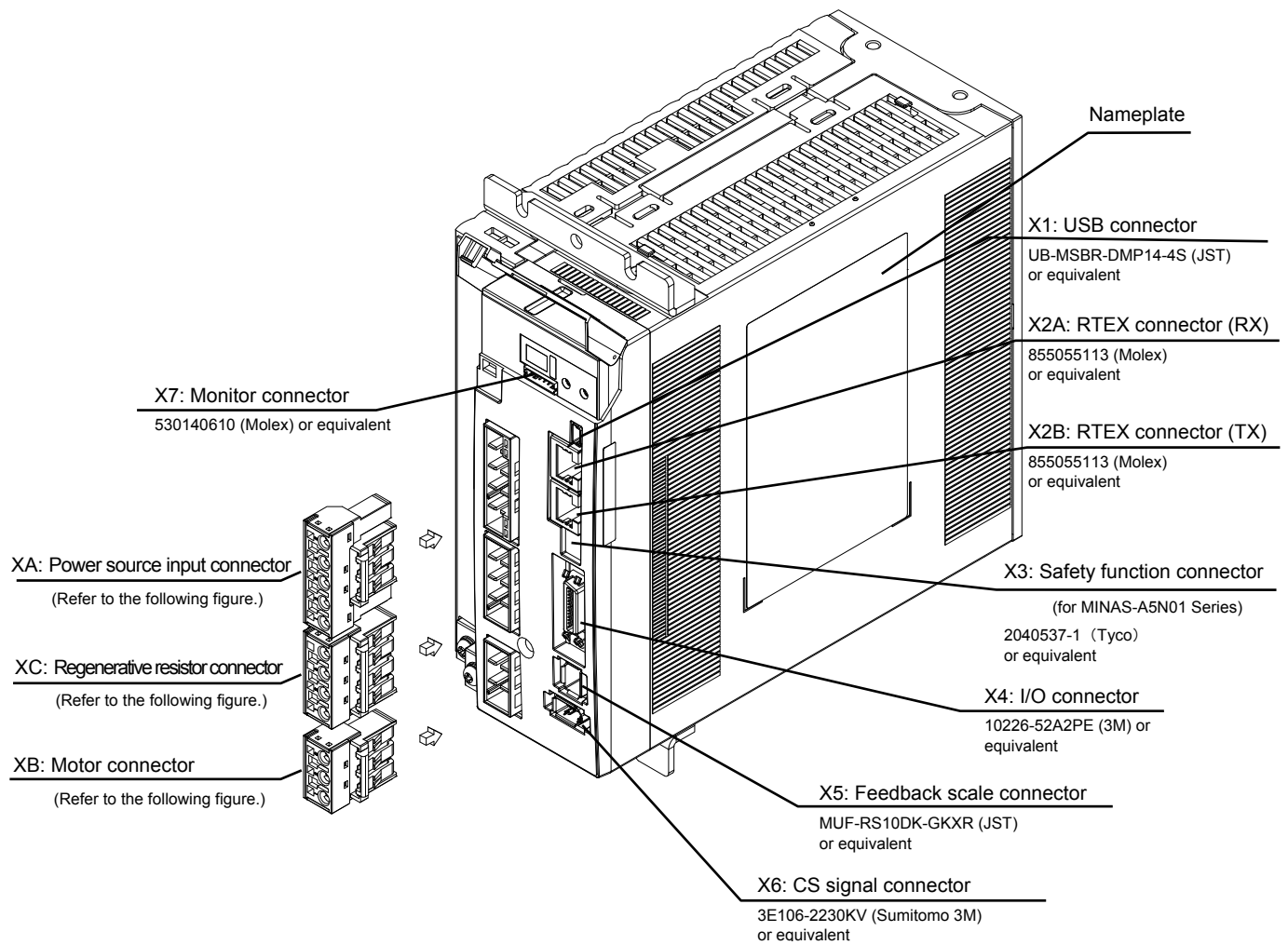
**Cable side connectors**



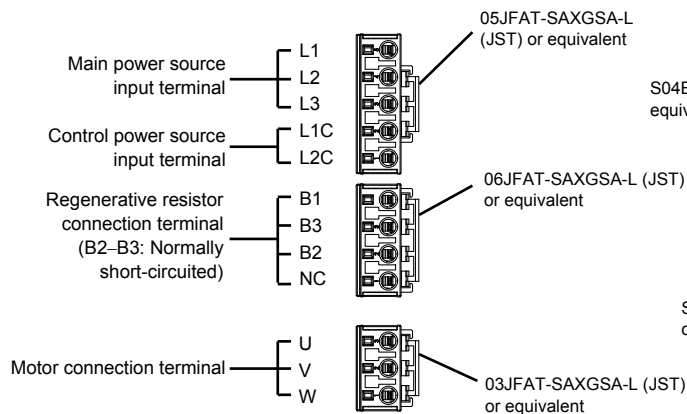
**Connectors at driver**



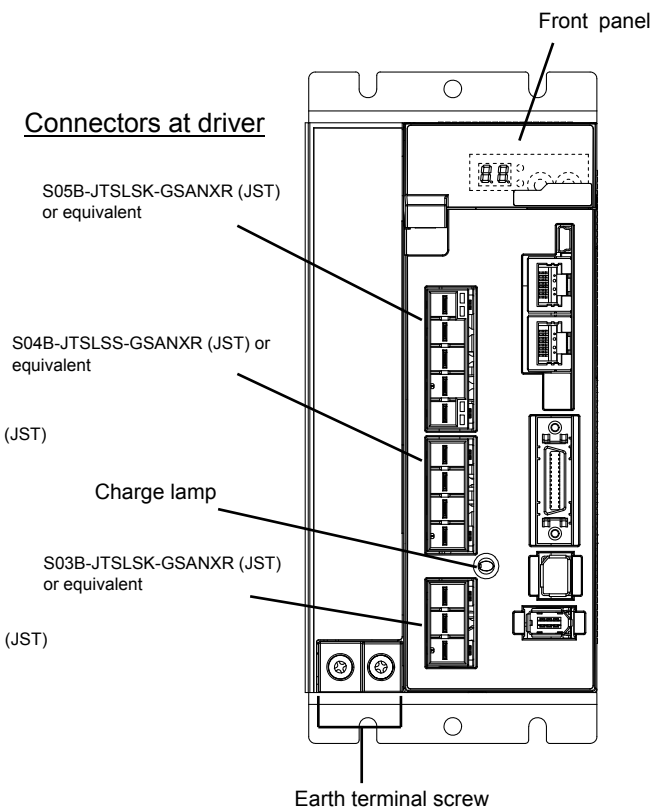
Size E 200 V



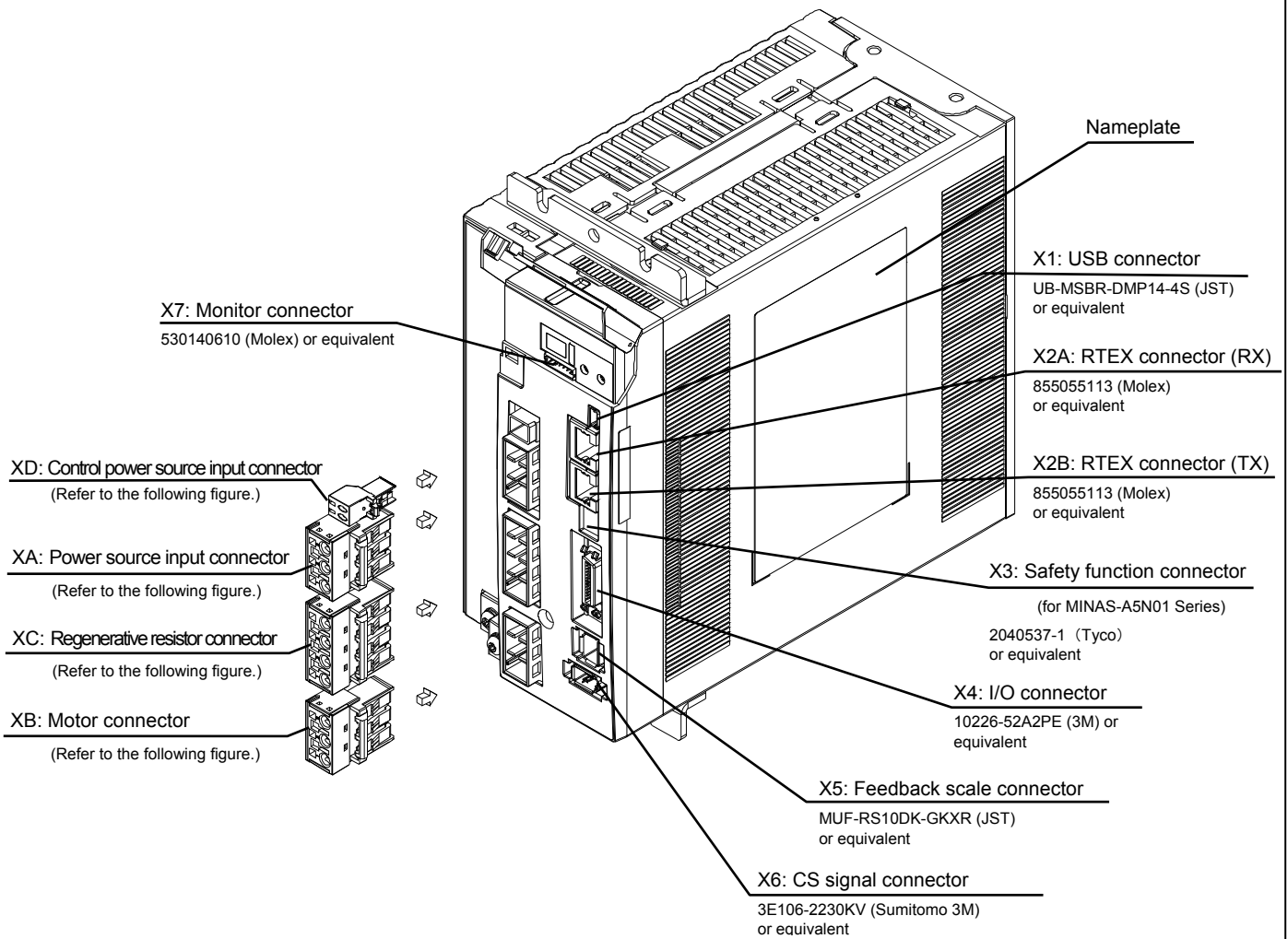
Cable side connectors



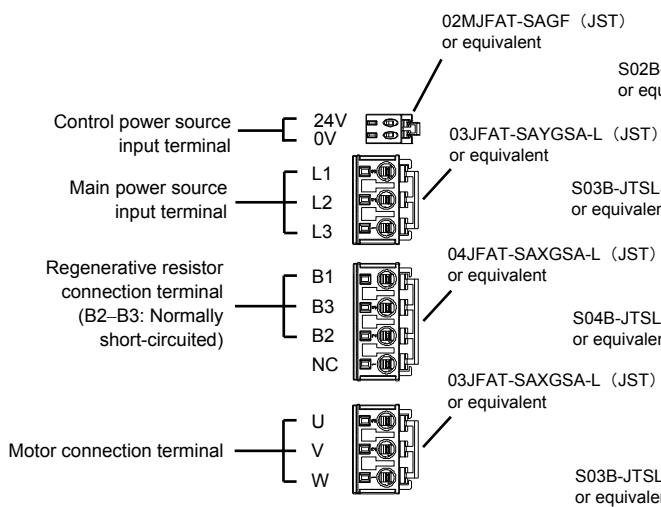
Connectors at driver



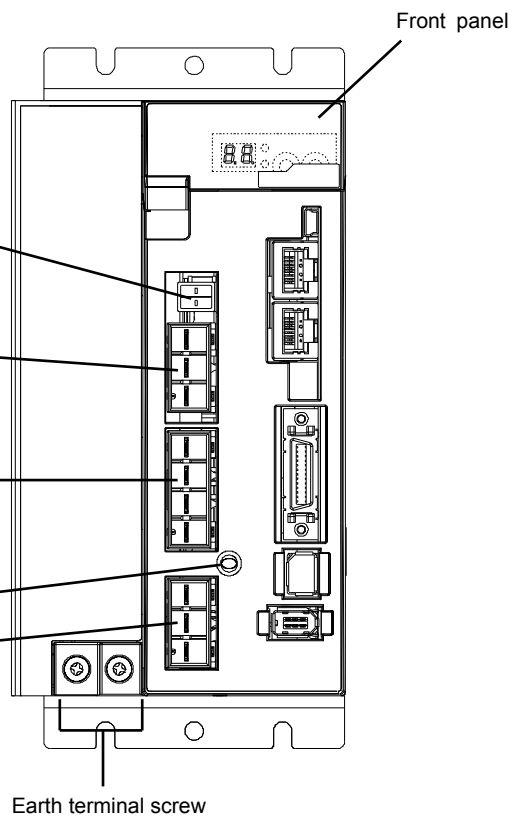
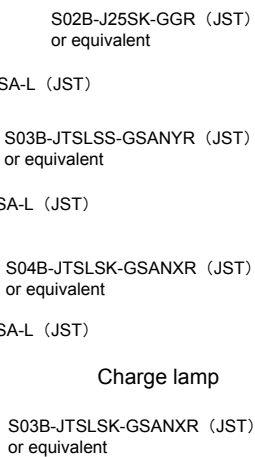
Size E 400 V



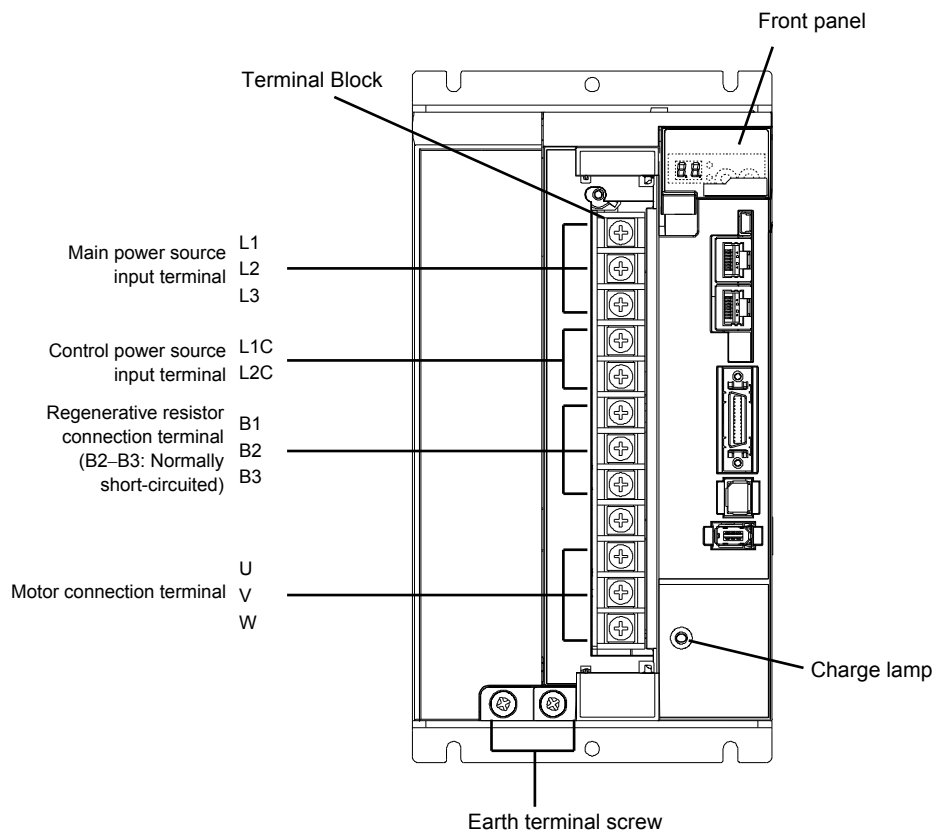
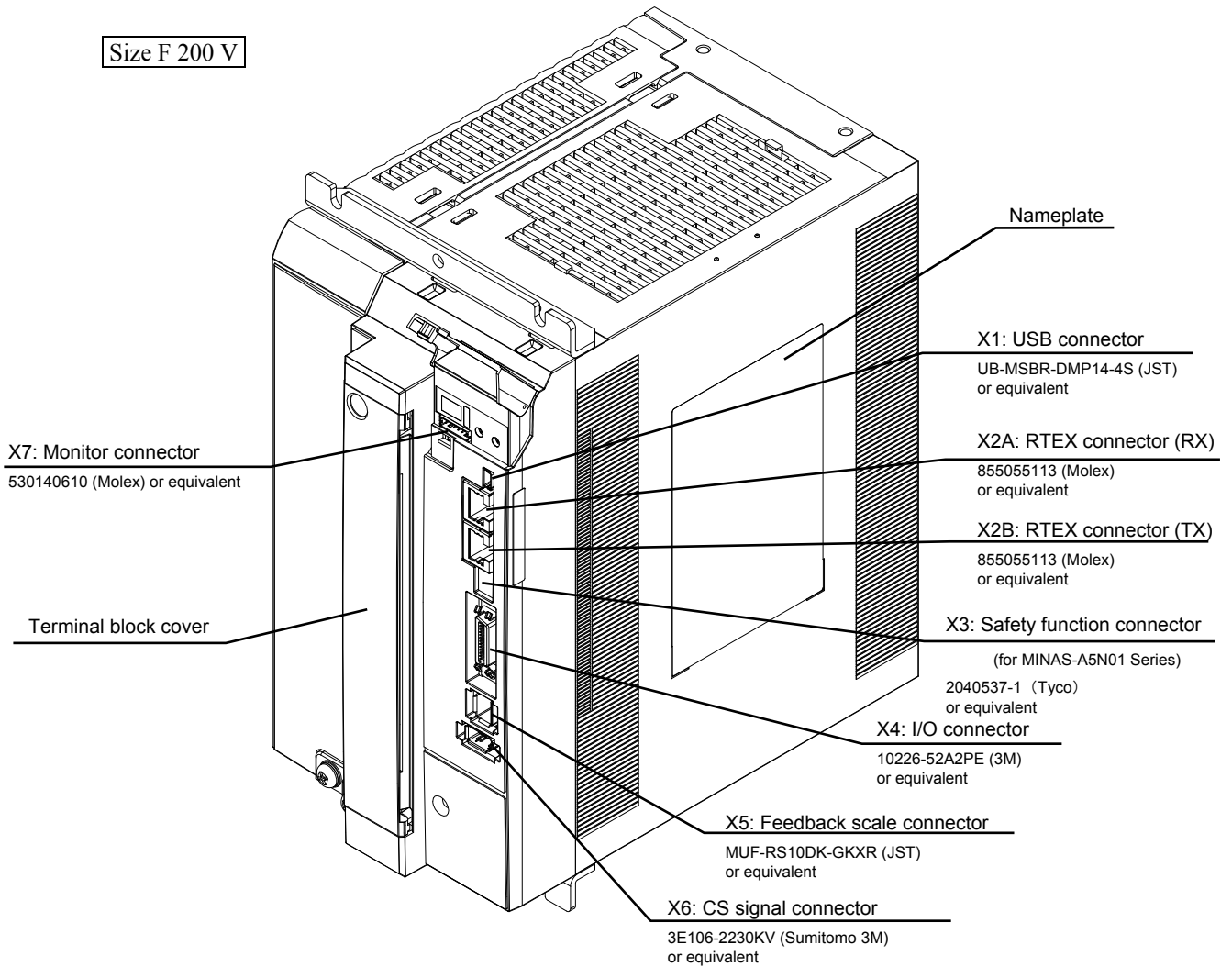
**Cable side connectors**



**Connectors at driver**

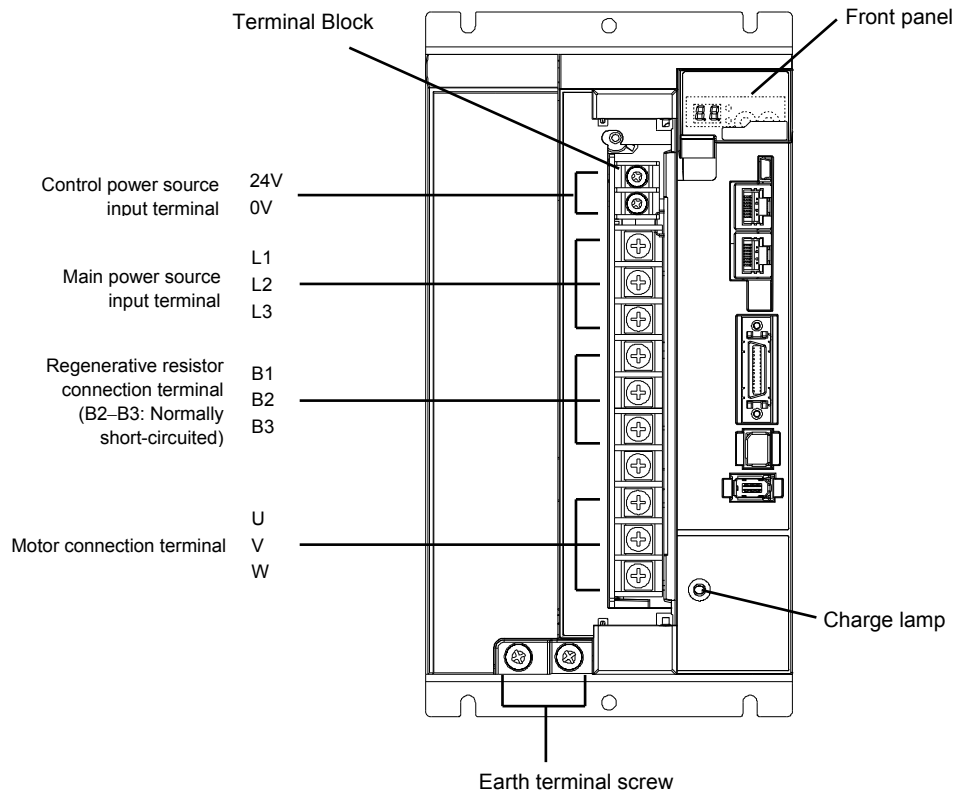
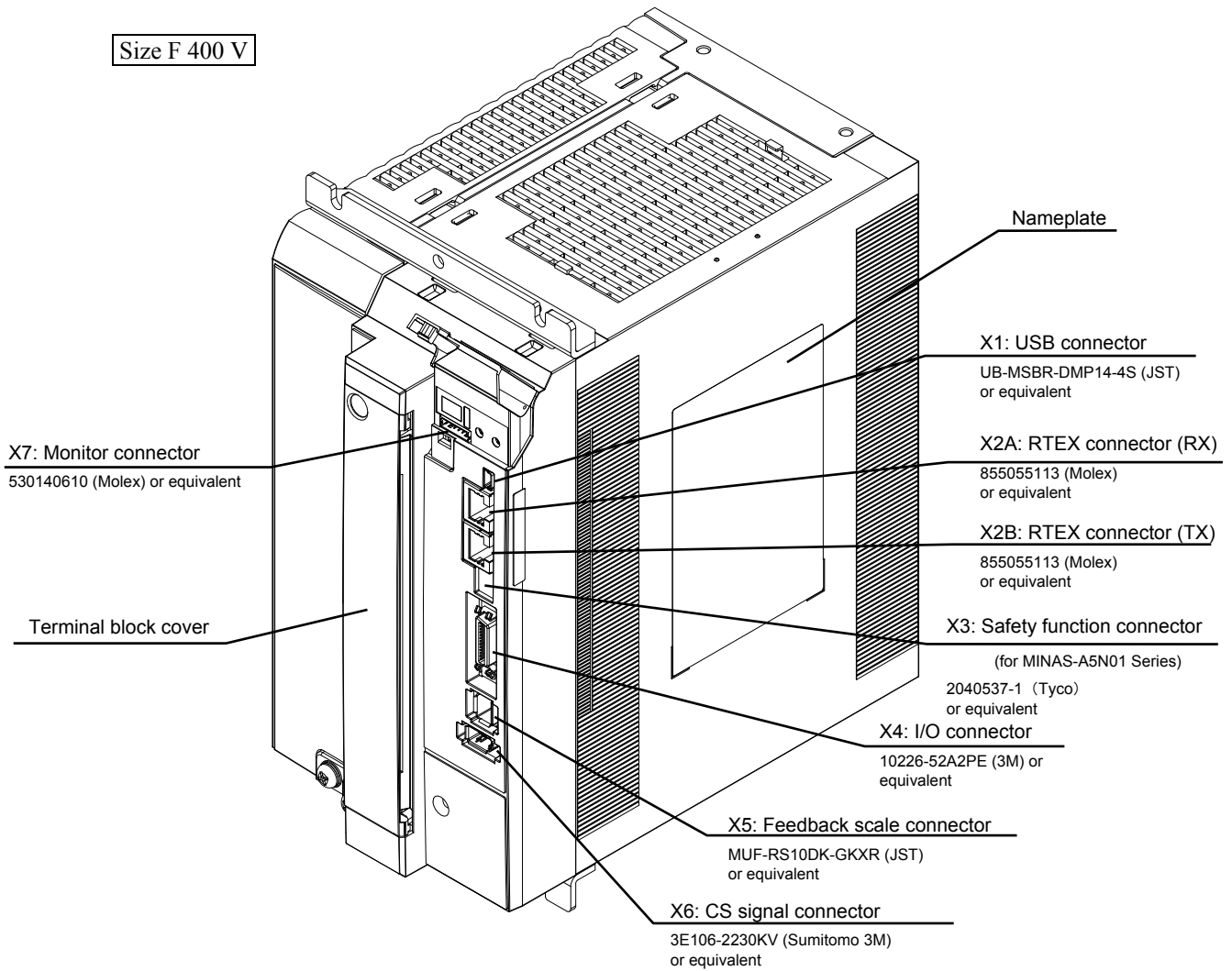


Size F 200 V



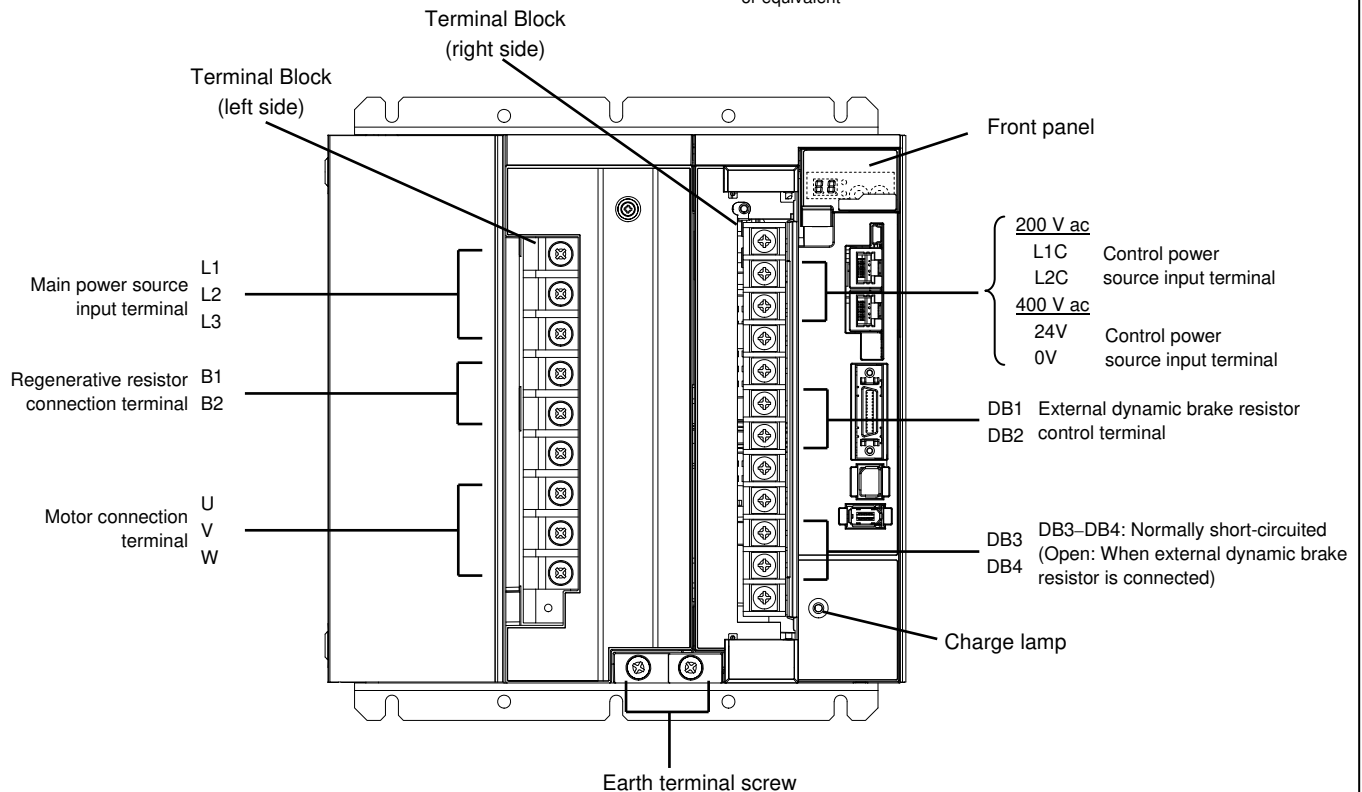
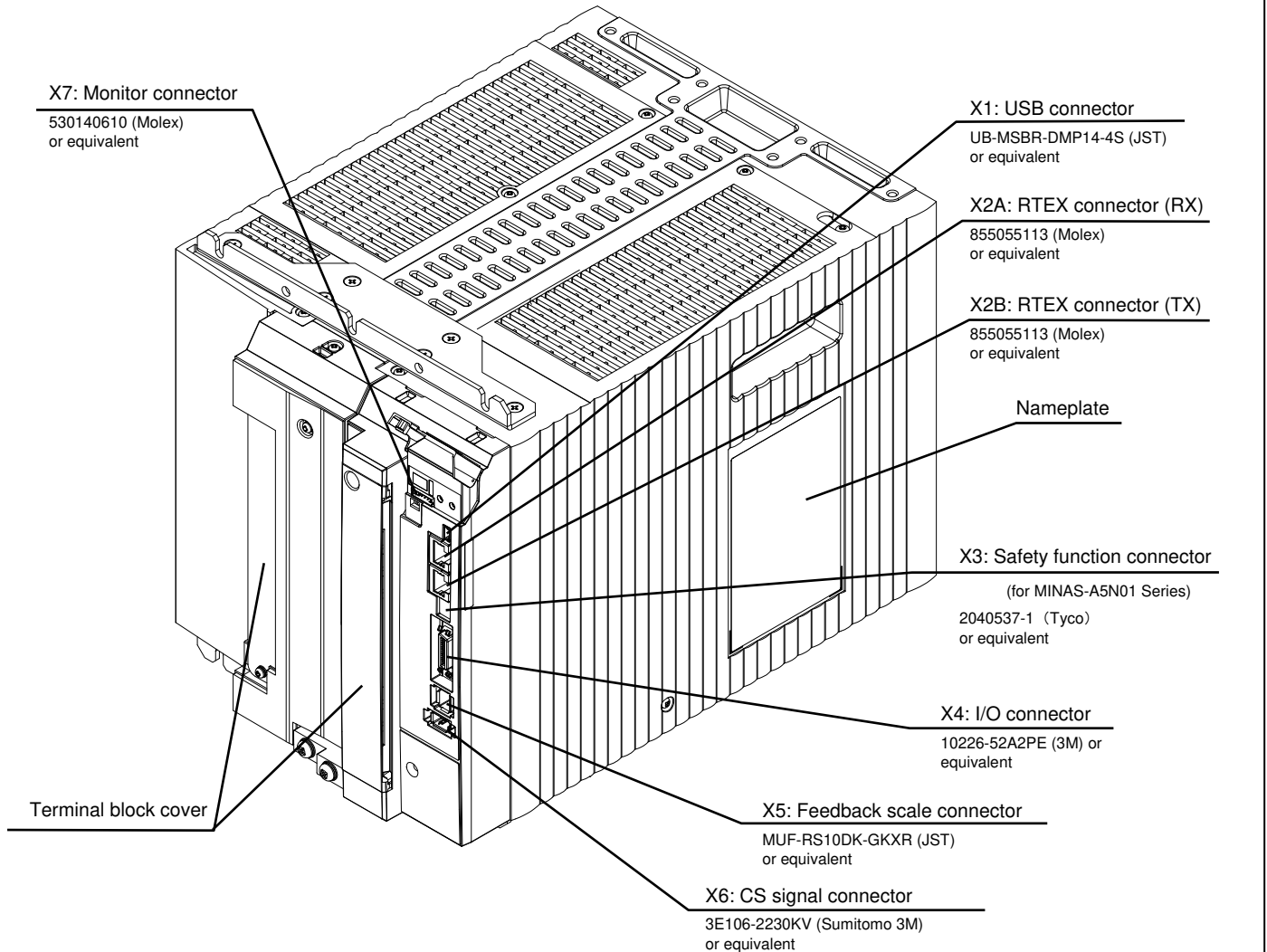
Note: Terminal block with the cover removed

Size F 400 V



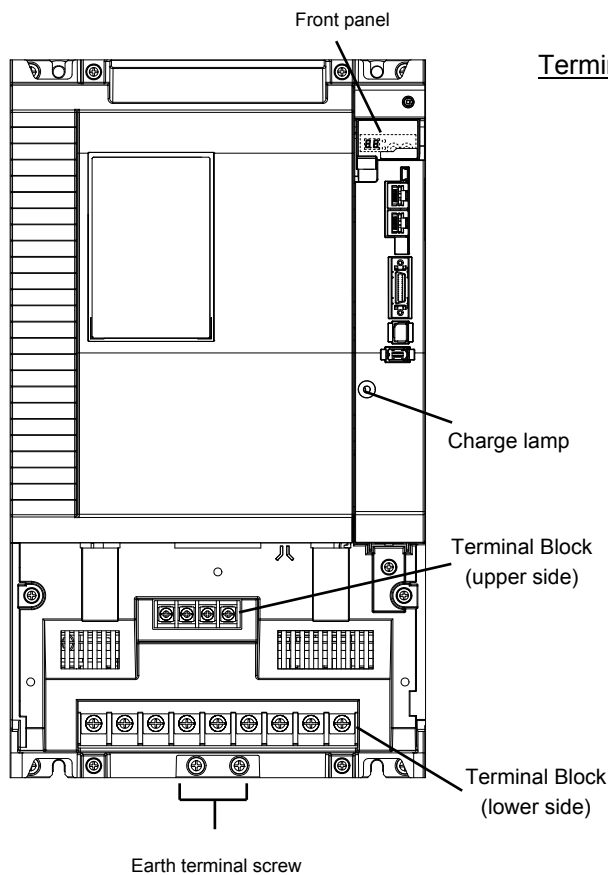
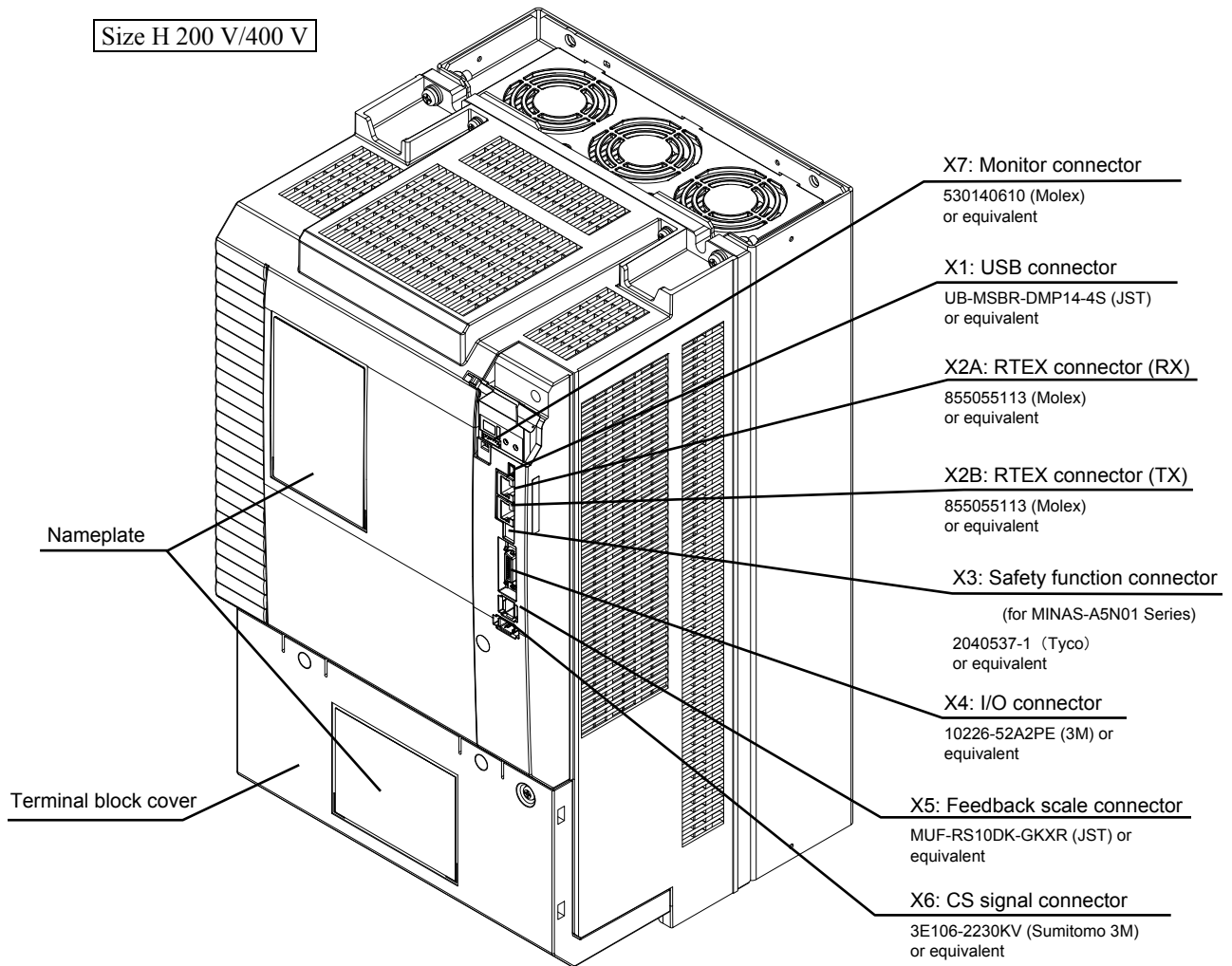
Note: Terminal block with the cover removed

Size G 200 V/400 V

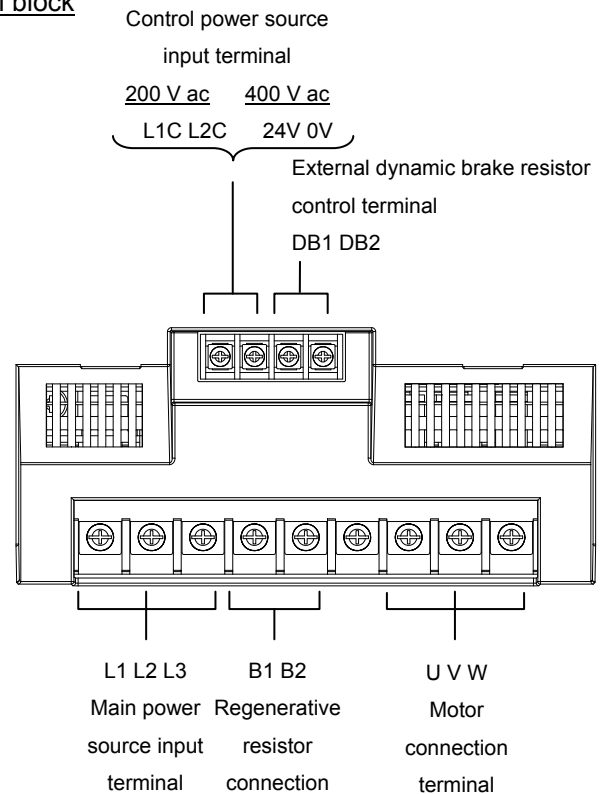


Note: Terminal block with the cover removed

Size H 200 V/400 V



**Terminal block**




Note: Terminal block with the cover removed



## 7. Configuration of Connectors and Terminal Blocks


7-1 Power Connector **XA**, **XB**, **XC**, **XD** and Terminal Block

[1] Sizes A, B, C, D of 100 V and 200 V System

Name	Terminal symbol	Connector pin no.	Description		
XA	Main power supply input	L1	5	100 V	Single phase 100–120 V $+10\%$ $-15\%$ 50/60 Hz input Use L1 and L3 terminal.
		L2	4	200 V	Single or 3 phase 200–240 V $+10\%$ $-15\%$ 50/60 Hz input Use L1 and L3 terminal for single phase input
		L3	3		
	Control power supply input	L1C	2	100 V	Single phase 100–120 V $+10\%$ $-15\%$ 50/60 Hz input
		L2C	1	200 V	Single phase 200–240 V $+10\%$ $-15\%$ 50/60 Hz input
XB	Regen resistor connection	B1	6	<ul style="list-style-type: none"> <li>Normally, open the circuit between B2 and B3. (Sizes A, B)</li> <li>Normally, short out the circuit between B2 and B3. (Sizes C, D)</li> <li>When a trip happens due to a regenerative load protection error, connect an external regenerative resistor (prepared by customer) between B1 and B2.</li> </ul>	
		B3	5		
		B2	4		
	Motor connection	U	3		Connect each phase of the motor winding. U: U phase V: V phase W: W phase
		V	2		
		W	1		
Earth		–	There are 2 grounding terminals. Connect the one terminal to ground, and the other to the E terminal of a motor. Do not connect more than one wire to a grounding terminal.		


- Refer to section 9-3 for the tightening torque of the screw.

[2] Size E of 200 V System

Name	Terminal symbol	Connector pin no.	Description		
XA	Main power supply input	L1	5	200 V	3 phase 200–230 V $+10\%$ $-15\%$ 50/60 Hz input
		L2	4		
		L3	3		
	Control power supply input	L1C	2	200 V	Single phase 200–230 V $+10\%$ $-15\%$ 50/60 Hz input
		L2C	1		
XC	Regen resistor connection	B1	4	Normally, short out the circuit between B2 and B3. When a trip happens due to a regenerative load protection error, connect an external regenerative resistor (prepared by customer) between B1 and B2. Note: Keep NC terminal unconnected.	
		B3	3		
		B2	2		
		NC	1		
XB	Motor connection	U	3	Connect each phase of the motor winding. U: U phase V: V phase W: W phase	
		V	2		
		W	1		
Earth		–	There are 2 grounding terminals. Connect the one terminal to ground, and the other to the E terminal of a motor. Do not connect more than one wire to a grounding terminal.		


- Refer to section 9-3 for the tightening torque of the screw.

## [3] Size D and E of 400 V System

	Name	Terminal symbol	Connector pin no.	Description
XA	Main power supply input	L1	3	3 phase 380–480 V + 10% 50/60 Hz input - 15%
		L2	2	
		L3	1	
XD	Control power supply input	24V	2	24 V dc +/- 15%
		0V	1	
XC	Regen resistor connection	B1	4	Normally, short out the circuit between B2 and B3. When a trip happens due to a regenerative load protection error, connect an external regenerative resistor (prepared by customer) between B1 and B2. Note: Keep NC terminal unconnected.
		B3	3	
		B2	2	
		NC	1	
XB	Motor connection	U	3	Connect each phase of the motor winding. U: U phase V: V phase W: W phase
		V	2	
		W	1	
	Earth		–	There are 2 grounding terminals. Connect the one terminal to ground, and the other to the E terminal of a motor. Do not connect more than one wire to a grounding terminal.

- Refer to section 9-3 for the tightening torque of the screw.

## [4] Size F of 200 V System

	Name	Terminal symbol	Terminal no. (upper to bottom)	Description
Terminal block	Main power supply input	L1	1	3 phase 200–230 V + 10% 50/60 Hz input - 15%
		L2	2	
		L3	3	
Terminal block	Control power supply input	L1C	4	Single phase 200–230 V + 10% 50/60 Hz input - 15%
		L2C	5	
Terminal block	Regen resistor connection	B1	6	Normally, short out the circuit between B2 and B3. When a trip happens due to a regenerative load protection error, open the circuit between B2 and B3 and connect an external regenerative resistor (prepared by customer) between B1 and B2. Note: Keep NC terminal unconnected.
		B3	7	
		B2	8	
		NC	9	
Terminal block	Motor connection	U	10	Connect each phase of the motor winding. U: U phase V: V phase W: W phase
		V	11	
		W	12	
	Earth		–	There are 2 grounding terminals. Connect the one terminal to ground, and the other to the E terminal of a motor. Do not connect more than one wire to a grounding terminal.

- Refer to section 9-3 for the tightening torque of the screw.
- Tighten the fixing screw of the terminal block cover with a torque 0.2 N•m or lower.