

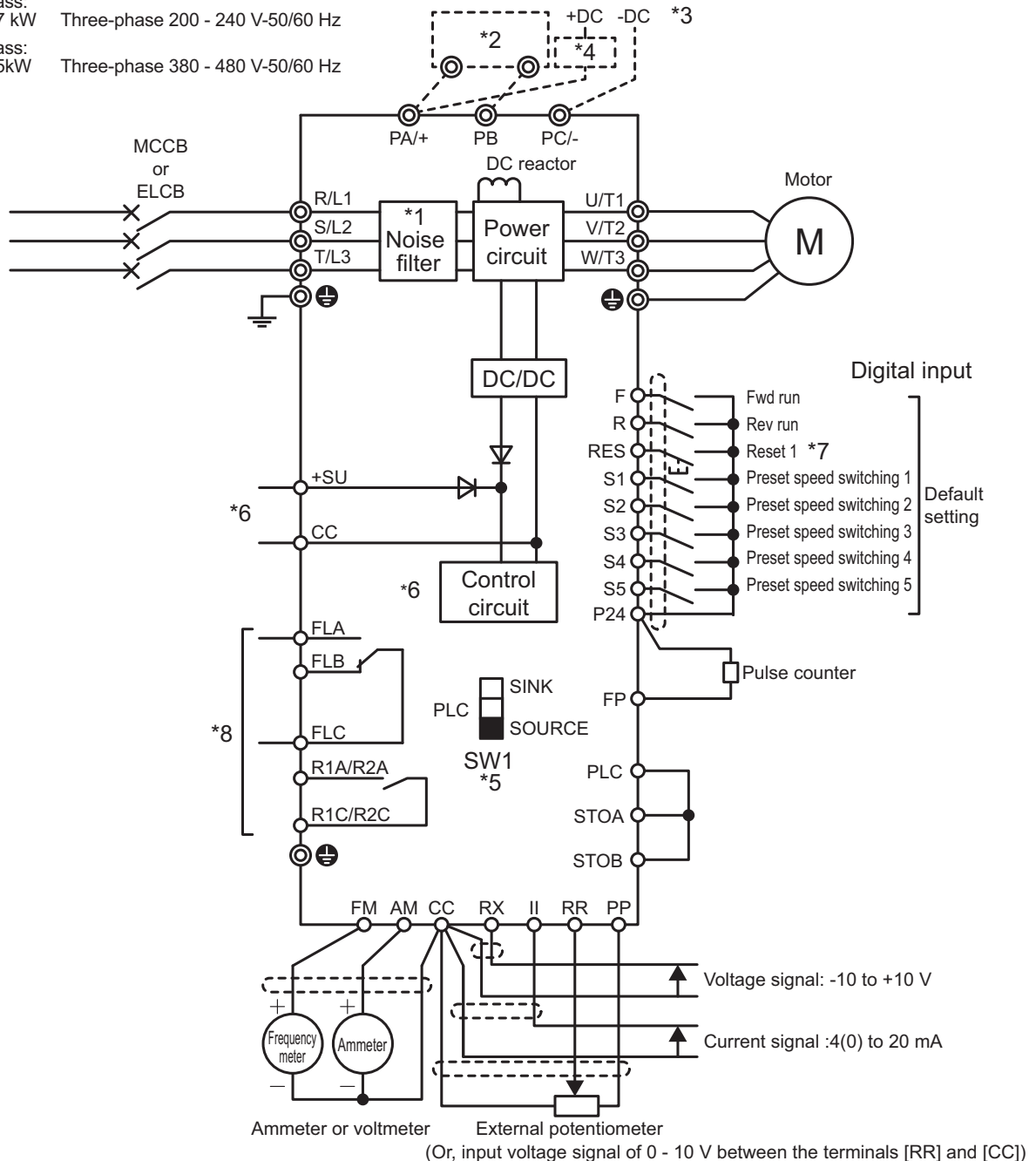
[Standard connection diagram - Source]

This diagram shows an example of a standard connection for 240 V class, 0.4 to 37 kW and 480 V class, 0.4 to 75 kW (frame size A1 to A5).

Power supply

240 V class:  
0.4 - 37 kW Three-phase 200 - 240 V-50/60 Hz

480 V class:  
0.4 - 75kW Three-phase 380 - 480 V-50/60 Hz



- \*1 EMC filter is built in 480 V class.
- \*2 External braking resistor (option).
- \*3 To input DC power, connect the inverter between the terminals [PA/+] and [PC/-].  
When your inverter is VFAS3-2110P to VFAS3-2370P or VFAS3-4220PC to VFAS3-4750PC, a circuit to suppress an inrush current is required. For detail refer to application manual "DC power supply connect to inverter" (E6582156).
- \*5 For the switch function, refer to [2. 3. 5].
- \*6 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply.  
Set <F647: Control power option failure detection> to back up the control power supply.  
For details, refer to [6. 30. 20].
- \*7 The reset signal is activated by ON→OFF trigger input.
- \*8 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

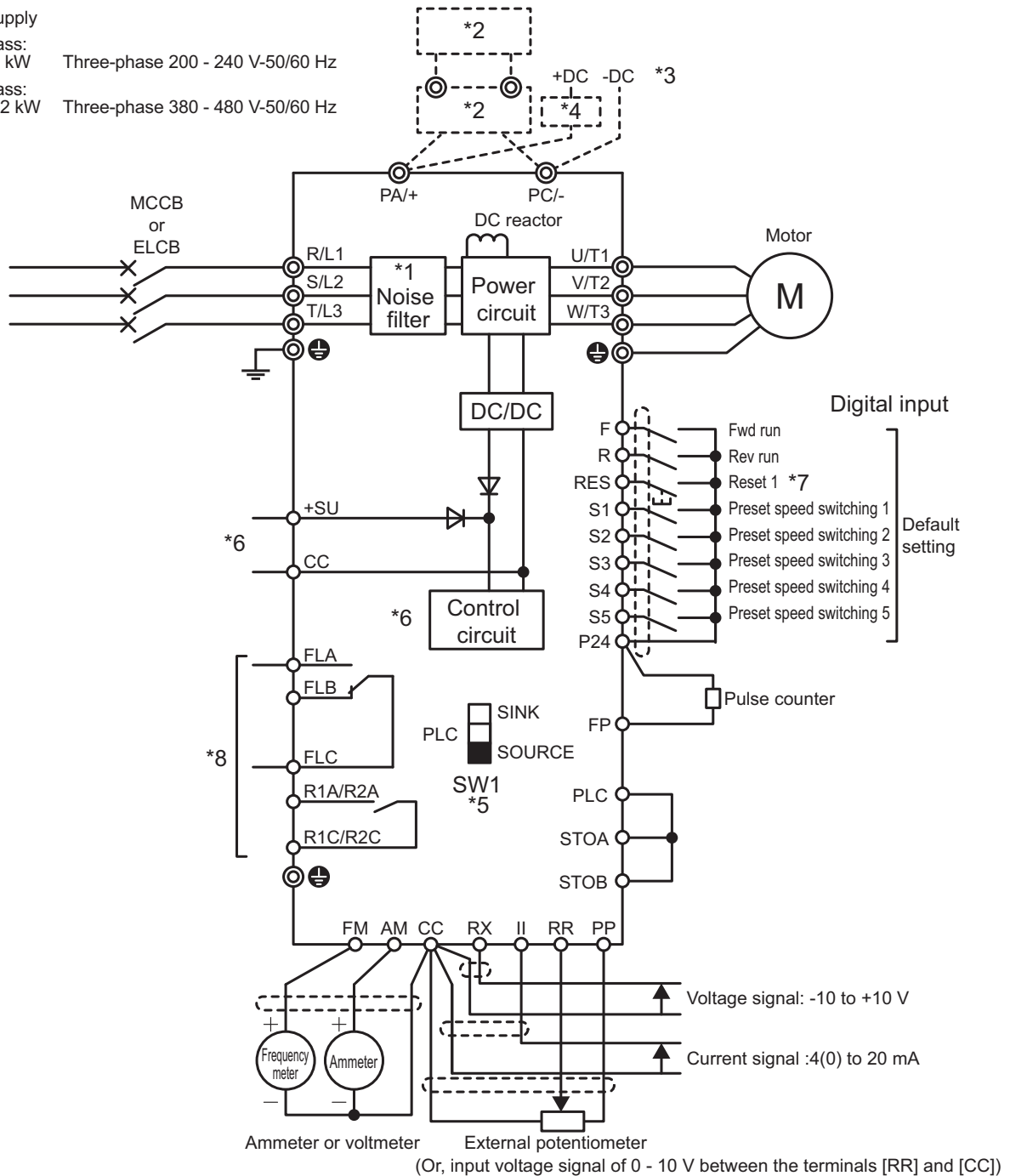
[Standard connection diagram - Source]

This diagram shows an example of a standard connection for 240 V class, 45 to 55 kW and 480 V class, 90 to 132 kW (frame size A6).

Power supply

240 V class:  
45 - 55 kW Three-phase 200 - 240 V-50/60 Hz

480 V class:  
90 - 132 kW Three-phase 380 - 480 V-50/60 Hz



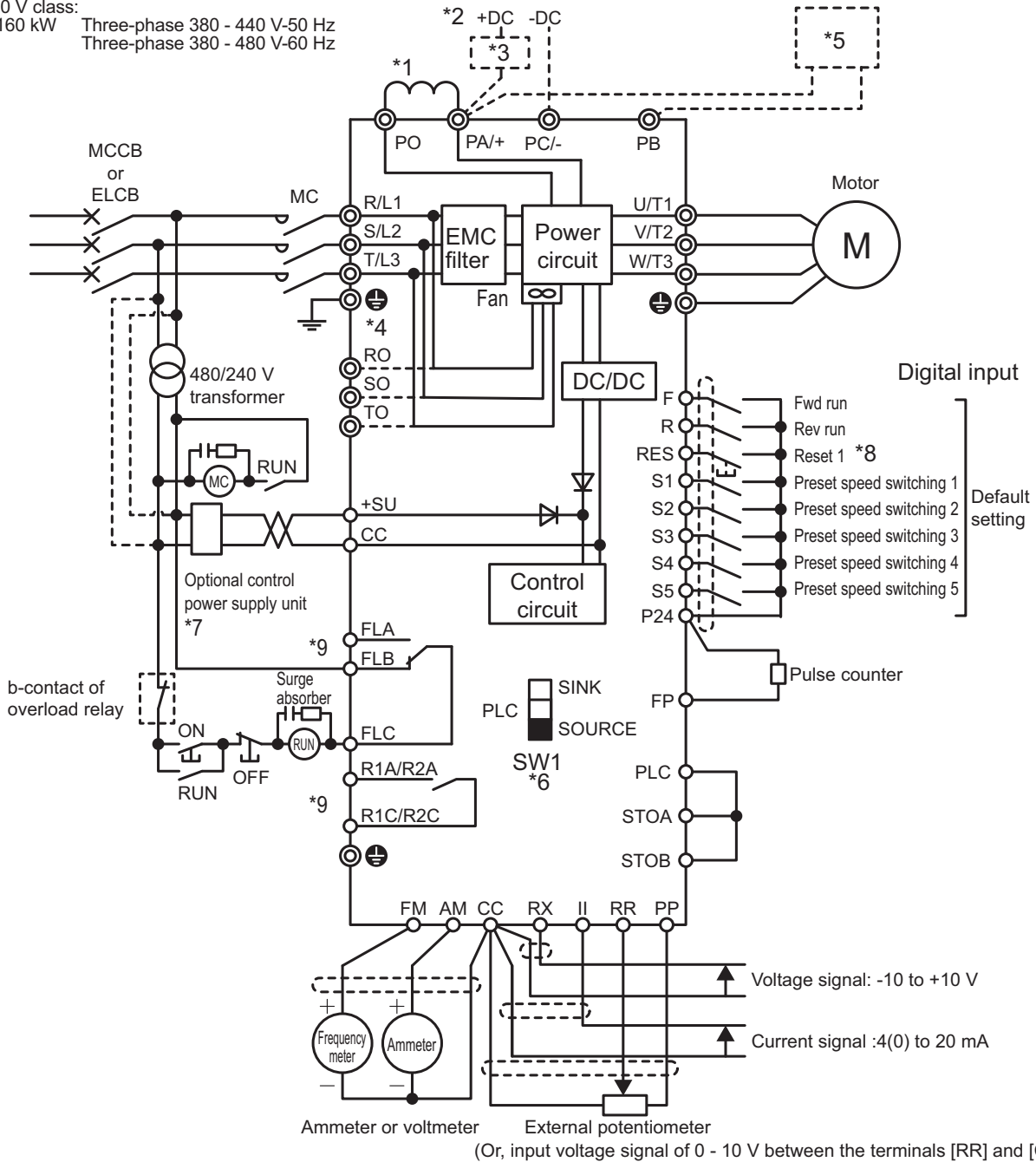
- \*1 EMC filter is built in 480 V class.
- \*2 When a braking resistor (optional) is mounted, a braking unit (optional) is also required.
- \*3 To input DC power, connect the inverter between the terminals [PA/+] and [PC/-].
- \*4 When the inverter is used with a DC power supply, a circuit to suppress an inrush current is required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- \*5 For the switch function, refer to [2. 3. 5].
- \*6 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- \*7 The reset signal is activated by ON→OFF trigger input.
- \*8 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

[Standard connection diagram - Source]

This diagram shows an example of a standard connection for 480 V class, 160 kW (frame size A7).

Power supply

480 V class:  
 160 kW Three-phase 380 - 440 V-50 Hz  
 Three-phase 380 - 480 V-60 Hz



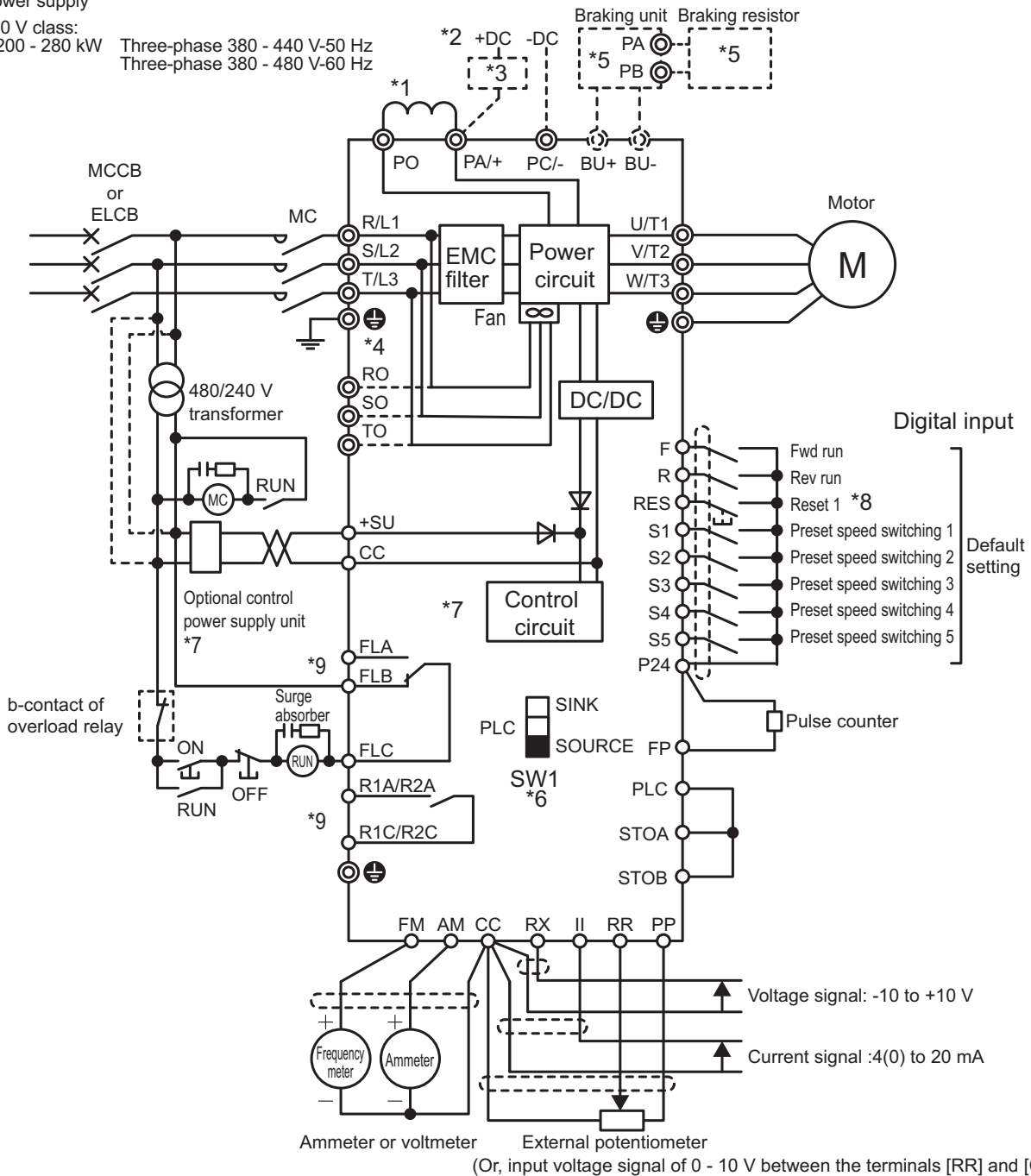
- \*1 Be sure to mount the DC reactor. A circuit between the terminals [PA/+] and [PO] is not short circuited (at the time of shipping).
- \*2 To input DC power, connect the inverter between the terminals [PA/+] and [PC/-].
- \*3 When the inverter is used with a DC power, a circuit to suppress an inrush current should be required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- \*4 When the inverter is used with a DC power supply, three-phase power input for cooling fan driving is required separately. For details, refer to application manual "DC power supply connect to inverter" (E6582156).
- \*5 External braking resistor (option)
- \*6 For the switch function, refer to [2. 3. 5].
- \*7 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply. Set <F647: Control power option failure detection> to back up the control power supply. For details, refer to [6. 30. 20].
- \*8 The reset signal is activated by ON→OFF trigger input.
- \*9 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

[Standard connection diagram - Source]

This diagram shows an example of a standard connection for 480 V class, 200 to 280 kW (frame size A8).

Power supply

480 V class:  
200 - 280 kW Three-phase 380 - 440 V-50 Hz  
Three-phase 380 - 480 V-60 Hz




- \*1 Be sure to mount the DC reactor. It is not required for DC power input terminal. A circuit between the terminals [PA+] and [PO] is not short circuited (at the time of shipping).
- \*2 To input DC power, connect the inverter between the terminals [PA+] and [PC-]. It is not used in conjunction with the DC reactor option DCL1.
- \*3 When the inverter is used with a DC power supply, a circuit to suppress an inrush current is required. For detail, refer to application manual "DC power supply connect to inverter" (E6582156).
- \*4 When the inverter is used with a DC power supply, three-phase power input for cooling fan driving is required separately. For details, refer to application manual "DC power supply connect to inverter" (E6582156).
- \*5 If a braking resistor (optional) is mounted, a braking unit (optional) is also required.
- \*6 For the switch function, refer to [2. 3. 5].
- \*7 To supply control power from an external power supply for backing up the control power supplied from the inverter, an optional control power supply unit (CPS002Z) is required. In this case, it is used in conjunction with the inverter internal power supply.
- \*8 The reset signal is activated by ON→OFF trigger input.
- \*9 Connect to power to comply with OVC2 (Over Voltage Category 2). Isolation transformer is necessary when connecting to power supply (OVC3).

### 2. 3. 3 Power terminals

The power terminals are connected to the power supply (primary side) and the motor (secondary side).

■ Functions of power terminals

Terminal symbol	Function	Applicable frame size
	Grounding terminal for inverter case. There are 3 terminals in cooling fin or mounting part of EMC plate.	All frame sizes
[PE]	Grounding terminal.	Frame size A4, A5, and A6
[R/L1] [S/L2] [T/L3]	Connected to an AC power supply. 240 V class: Three-phase 200 - 240 V-50/60 Hz 480 V class: VFAS3-4004PC to 4132KPC : Three-phase 380 - 480 V-50/60 Hz VFAS3-4160KPC to 4280KPC : Three-phase 380 - 440 V- 50 Hz Three-phase 380 - 480 V- 60 Hz	All frame sizes
[U/T1] [V/T2] [W/T3]	Connected to a three-phase motor.	All frame sizes
[PA/+] [PB]	Connected to a braking resistor. Change the parameters <F304: Dynamic braking, OLr trip>, <F308: Braking resistance>, and <F309: Braking resistor capacity> if necessary.	Frame size A1, A2, A3, A4, A5, and A7
[BU+] [BU-]	Inside the inverter. Connected to a braking unit (optional). Braking resistor (optional) is connected to a braking unit terminals [PA] and [PB].	Frame size A8
[PA/+] [PC/-]	A DC power can be input. For models of VFAS3-2110P to 2550P and VFAS3-4220PC to 4280KPC, a rush current suppression circuit (optional) is required. Connected to a braking unit (Optional) for frame size A6. Supply AC power supply to cooling fans if you use VFAS3-4160KPC - 4280KPC with DC input.	All frame sizes
[PA/+] [P0]	Be sure to connect the attached DC reactor.	Frame sizes A7 and A8
[R0] [S0] [T0]	Supply AC power supply for cooling fans if you use VFAS3-4160KPC - 4280KPC with DC input.	Frame sizes A7 and A8

**Memo**

- The arrangement of the terminals varies depending on the type. See the figures on the next page and after.

■ **Recommended tightening torque of power terminal screws**

**Power terminal torque and wire strip length**

Screw size	Frame size	Torque		Strip length (mm)	Cable size
		(N · m)	(lb · in)		
M4	A1	1.3	11.5	10	-
	A2	1.5	13.3	10	-
M5	A3	2.6	23	18	-
M8	A4	5.0	44.3	28	AWG2 or smaller
		10	88.5	28	AWG1 or bigger
M10	A6	27	239	-	-
M12	A5	10	88.5	35	AWG1/0 or smaller
		18	159	35	AWG2/0 or bigger
M12	A7/A8	41	360	-	-
M10	A7	24	212	-	-
M4	A7/A8	1.4	12.4	-	-

2

**Grounding terminal torque**

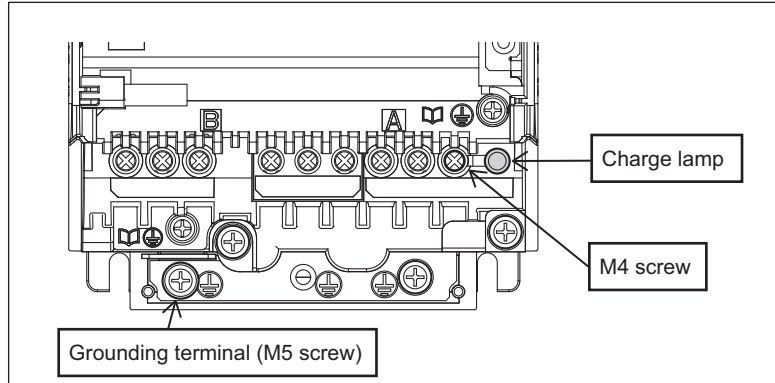
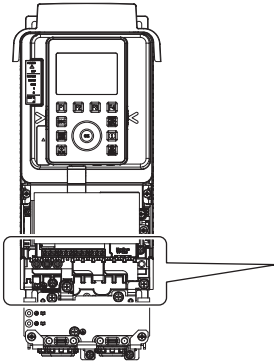
Screw size	Frame size	Torque		Strip length (mm)	Cable size
		(N · m)	(lb · in)		
M5	A1,A2,A3	2.6	23	-	-
M6	A4	4.4	38.9	-	-
M8	A4	5.0	44.3	28	AWG2 or smaller
		10	88.5	28	AWG1 or bigger
M8	A5,A6	11.8	104	-	-
M10	A6	27	239	-	-
M12	A5	10	88.5	35	AWG1/0 or smaller
		18	159	35	AWG2/0 or bigger
M12	A7/A8	41	360	-	-
M10	A7	24	212	-	-

Note) 1(N · m) = 8.850(lb · in)

■ Arrangement of power terminals

1) Frame size A1

VFAS3-2004P to 2022P, VFAS3-4004PC to 4037PC



**⚠ CAUTION**

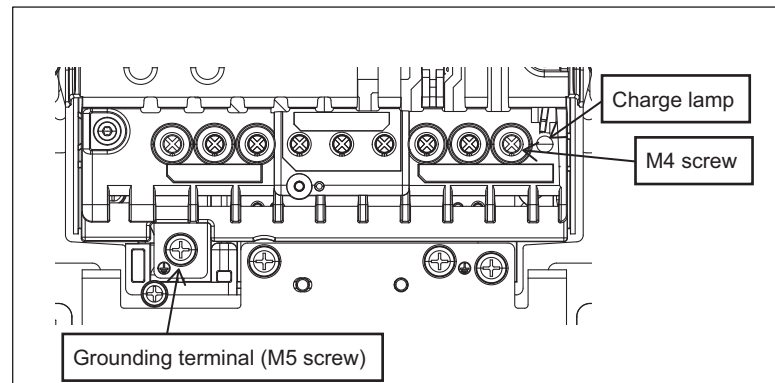
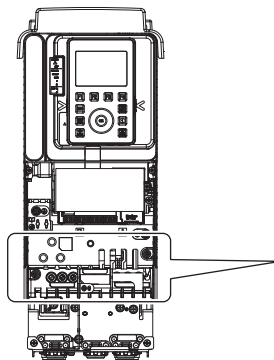


Mandatory action

- Following type of screwdriver should be used for M4 screw;  
PH2 (phillips, bit type2), shaft diameter 5.0 mm or less.

2) Frame size A2

VFAS3-2037P, VFAS3-4055PC, 4075PC



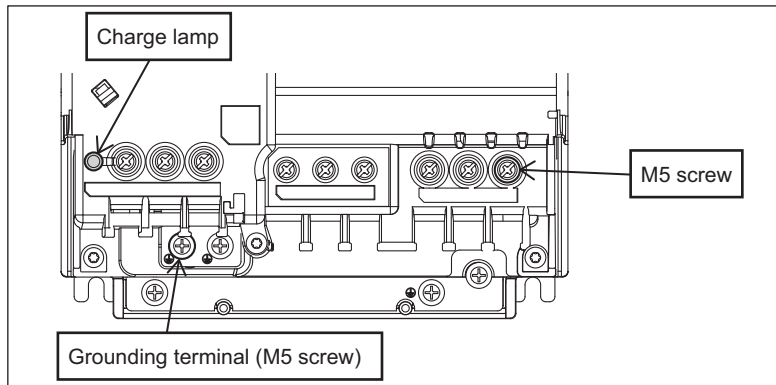
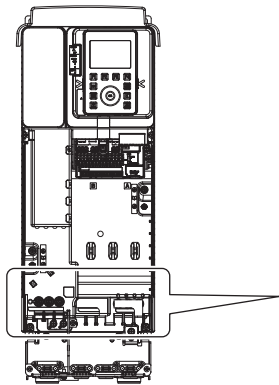
**⚠ CAUTION**



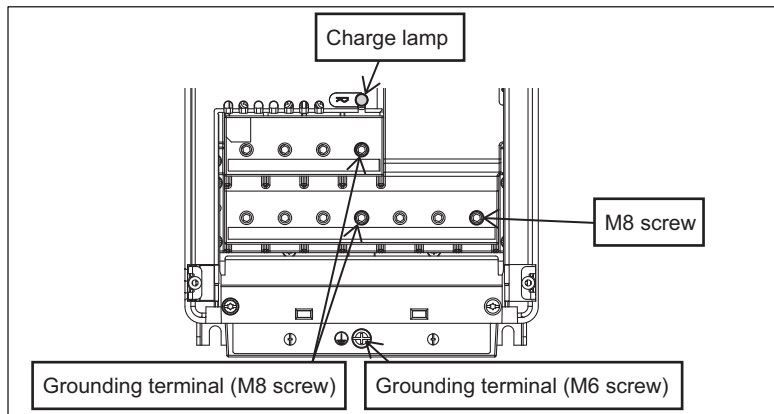
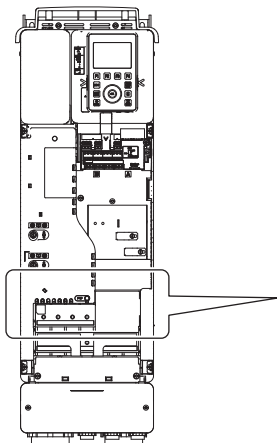
Mandatory action

- Following type of screwdriver should be used for M4 screw;  
PH2 (phillips, bit type2), shaft diameter 5.8 mm or less

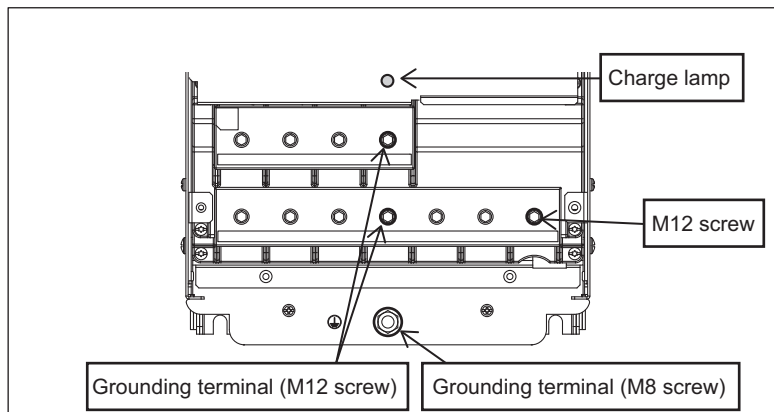
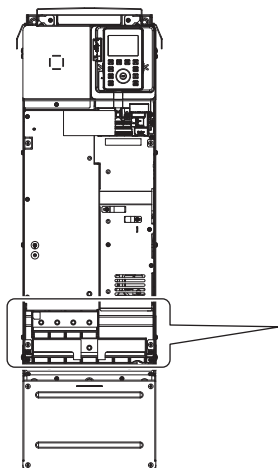
**3) Frame size A3  
VFAS3-2055P, 2075P, VFAS3-4110PC to 4185PC**



**4) Frame size A4  
VFAS3-2110P to 2185P, VFAS3-4220PC to 4370PC**



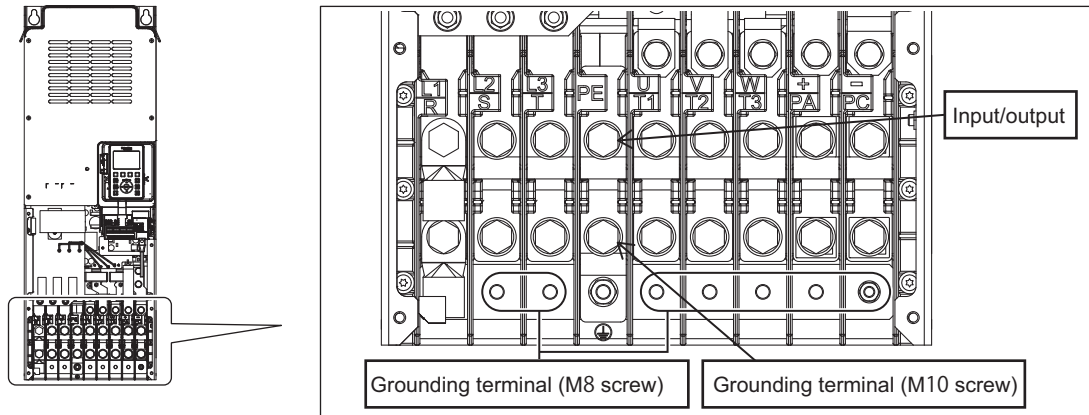
**5) Frame size A5  
VFAS3-2220P to 2370P, VFAS3-4450PC to 4750PC**



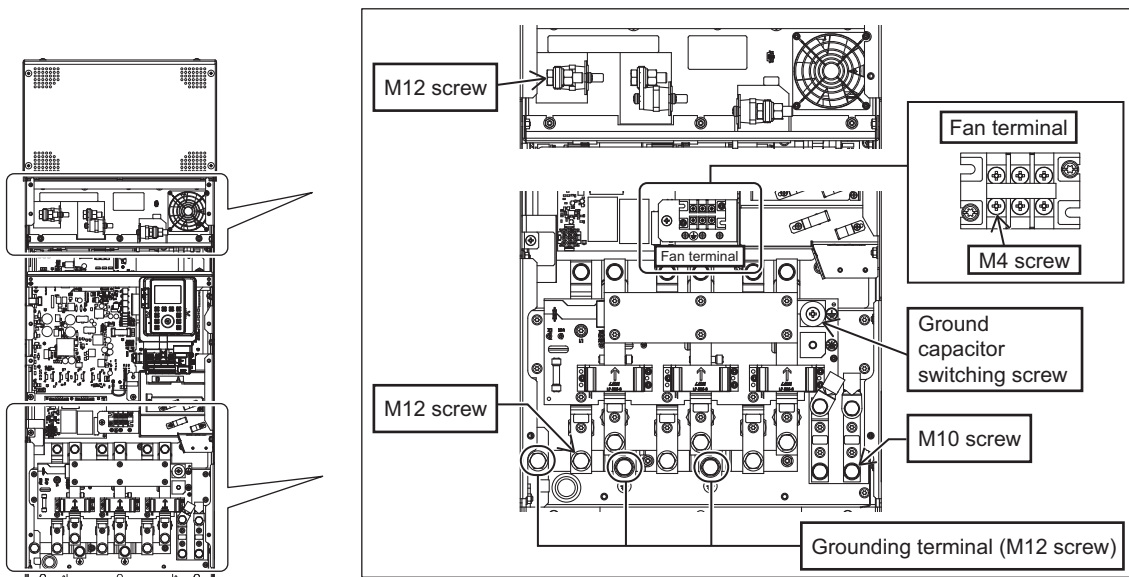


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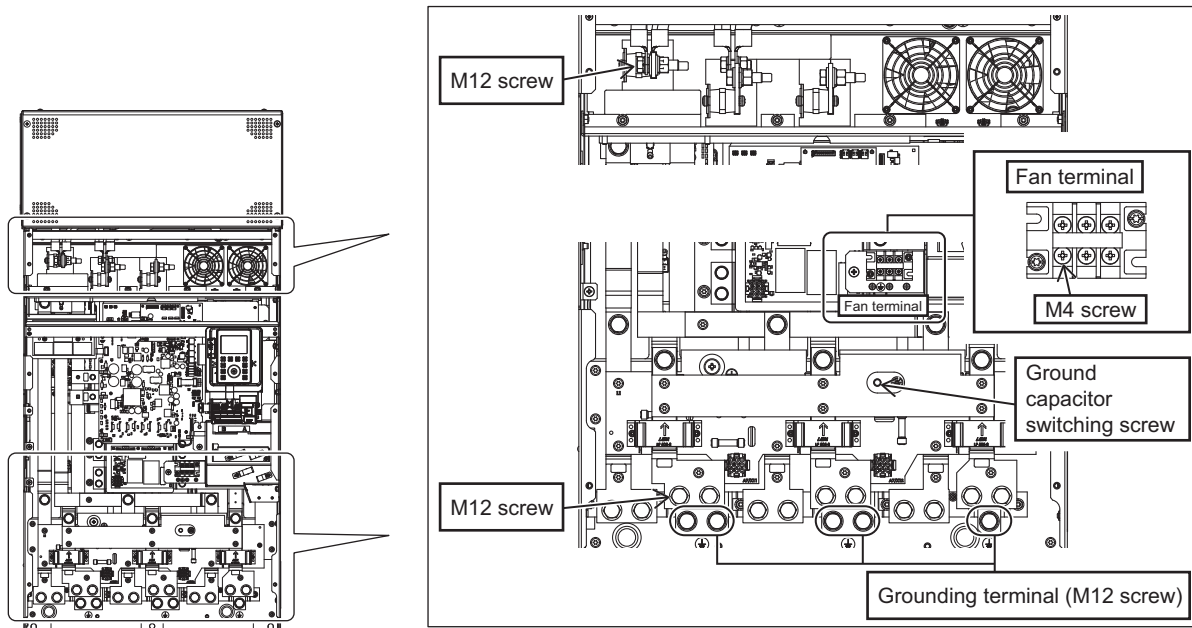
**6) Frame size A6  
VFAS3-2450P, 2550P, VFAS3-4900PC to 4132KPC**



**7) Frame size A7  
VFAS3-4160KPC**



8) Frame size A8  
VFAS3-4200KPC to 4280KPC



2

**2. 3. 4 Switching of grounding capacitor**

**⚠ WARNING**

**Prohibited**

- When using this 480V class inverter with a power supply system that is grounded in other than the neutral point (e.g. when the power supply has delta connection with single phase grounding), the grounding capacitor should not be grounded (or the capacity of the grounding capacitor should not be increased). Otherwise, it will result in failure or fire.

This inverter has a built-in noise filter (EMC noise filter for 480V class) and the inverter input power supply is grounded via the capacitor. By switching this grounding capacitor, the leakage current from the inverter can be reduced.

It is switched by changing the position of the exclusive switching screw(s) that varies depending on the type. For some types, the grounding capacitor is completely disconnected (frame size A1 to A5). For others, the capacitor capacity is reduced (frame size A6 to A8).

For the details of the influence of the leakage current and measures, refer to [2. 4. 3].

**Important**

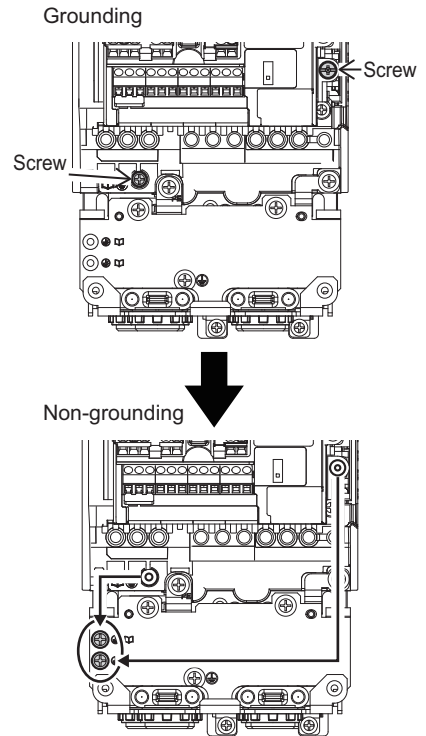
- Note that when the grounding capacitor is reduced or not grounded, the inverter unit no longer comply with the EMC directive.
- Be sure to switch with the power off.
- For models with two switching screws, be sure to set both screws to the same side.

Switch the grounding capacitor in the following procedure given for each type. At the time of shipping, the grounding capacitor is grounded or its capacity is small.

2

■ **With frame size A1**  
**VFAS3-2004P to 2022P, VFAS3-4004PC to 4037PC**

- 1 Remove the front cover.  
 For how to remove, refer to [2. 2. 1].
- 2 Remove two screws for switching of grounding capacitor.  
 The grounding capacitor is disconnected.  
 Mount the removed screws to the positions shown in the figure on the right and tighten them.
- 3 To recover the shipping state, mount the two screws for switching of grounding capacitor and tighten them.  
 The grounding capacitor is connected and grounded.
- 4 After switching, mount the front cover.  
 For how to mount, refer to [2. 2. 1].

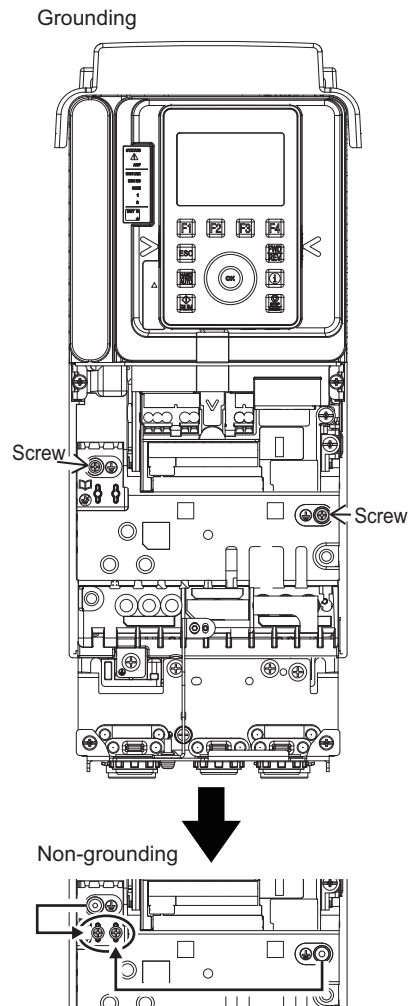


Important

- For models with two switching screws, be sure to set both screws to the same side.

■ **With frame size A2**  
**VFAS3-2037P, VFAS3-4055PC, 4075PC**

- 1 Remove the front cover.  
 For how to remove, refer to [2. 2. 1].
- 2 Remove two screws for switching of grounding capacitor.  
 The grounding capacitor is disconnected.  
 Insert the removed screws to the positions shown in the figure on the right.
- 3 To recover the shipping state, mount the two screws for switching of grounding capacitor and tighten them.  
 The grounding capacitor is connected and grounded.
- 4 After switching, mount the front cover.  
 For how to mount, refer to [2. 2. 1].



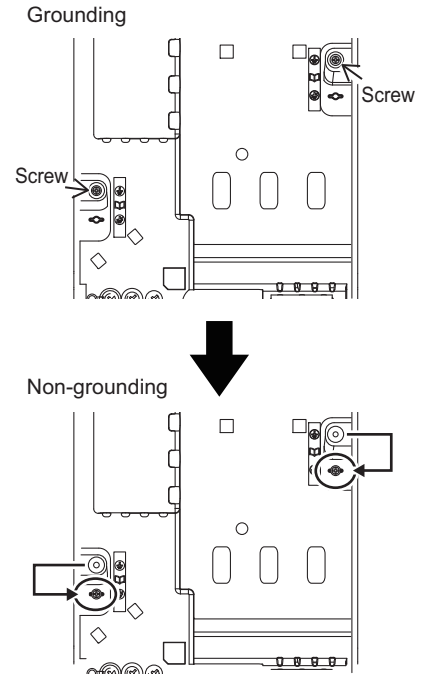
Important

- For models with two switching screws, be sure to set both screws to the same side.

2

■ With frame size A3  
VFAS3-2055P, 2075P, VFAS3-4110PC to 4185PC

- 1 Remove the front cover.  
For how to remove, refer to [2. 2. 1].
- 2 Remove two screws for switching of grounding capacitor.  
The grounding capacitor is disconnected.  
Insert the removed screws to the positions shown in the figure on the right.
- 3 To recover the shipping state, mount the two screws for switching of grounding capacitor and tighten them.  
The grounding capacitor is connected and grounded.
- 4 After switching, mount the front cover.  
For how to mount, refer to [2. 2. 1].

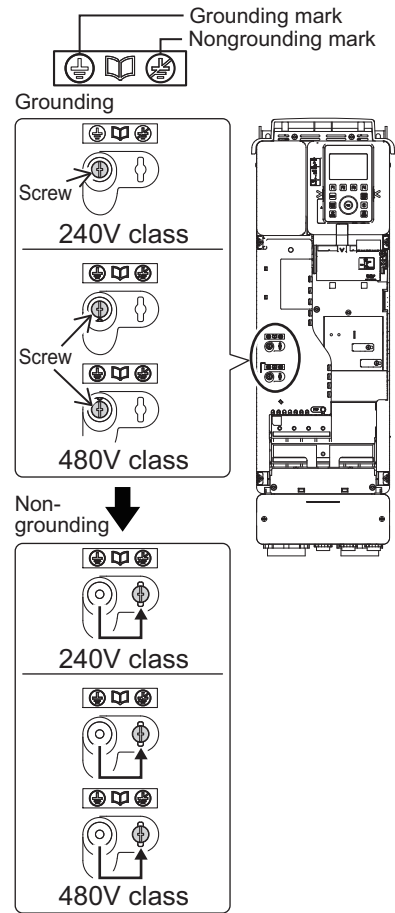


Important

- For models with two switching screws, be sure to set both screws to the same side.

■ **With frame size A4**  
**VFAS3-2110P to 2185P, VFAS3-4220PC to 4370PC**

- 1 Remove the front cover.  
 For how to remove, refer to [2. 2. 2].
  
- 2 Remove the screw(s) for switching of grounding capacitor from the position of the grounding mark and insert it/them into the position of the non-grounding mark.  
 The 240 V class has one screw.  
 The 480 V class has two screws. Remove both of two screws.  
 The grounding capacitor is disconnected.
  
- 3 To recover the shipping state, remove the screw(s) for switching of grounding capacitor and tighten it/them to the screw hole in the position of the grounding mark.  
 The grounding capacitor is connected and grounded.
  
- 4 After switching, mount the front cover.  
 For how to mount, refer to [2. 2. 2].



2

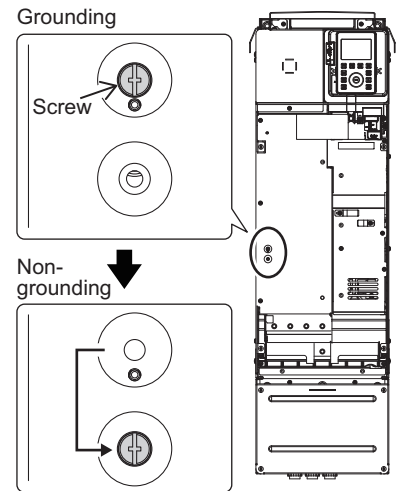


Important

- For models with two switching screws, be sure to set both screws to the same side.

■ **With frame size A5**  
**VFAS3-2220P to 2370P, VFAS3-4450PC to 4750PC**

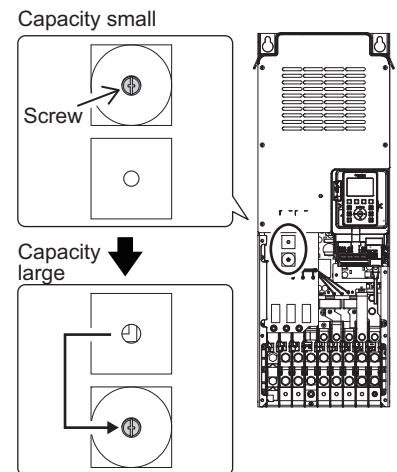
- 1 Remove the front cover.  
 For how to remove, refer to [2. 2. 3].
- 2 Remove the screw for switching of grounding capacitor from the position of the grounding mark and tighten it to the position of the non-grounding mark.  
 The grounding capacitor is disconnected.
- 3 To recover the shipping state, remove the screw(s) for switching of grounding capacitor and tighten it/them to the screw hole in the position of the grounding mark.  
 The grounding capacitor is connected and grounded.
- 4 After switching, mount the front cover.  
 For how to mount, refer to [2. 2. 3].  
 For frame size A6, A7 and A8, grounding capacitor is set to small (non-grounding mark side).  
 To comply with EMC directive, switch the capacitance into large (grounding mark side) according to the procedure below.



■ **With frame size A6**  
**VFAS3-2450P, 2550P, VFAS3-4900PC to 4132KPC**

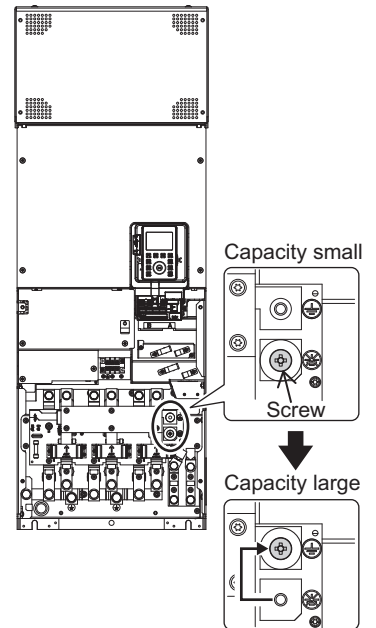
Grounding capacitor is set to small (non-grounding mark side). To comply with EMC directive, switch the capacitance into large (grounding mark side) according to the procedure below.

- 1 Remove the front cover and the transparent cover inside (transparent resin).  
 For how to remove, refer to [2. 2. 4].
- 2 Remove the screw for switching of grounding capacitor from the position of the non-grounding mark and tighten it to the position of the grounding mark.  
 The grounding capacitor's capacity is increased.
- 3 To recover the shipping state, remove the screw(s) for switching of grounding capacitor and tighten it to the screw hole in the position of the non-grounding mark.  
 The grounding capacitor's capacity is recovered.
- 4 After switching, mount the transparent cover and the front cover in this order.  
 For how to mount, refer to [2. 2. 4].



■ With frame size A7  
VFAS3-4160KPC

- 1 Remove the front cover and the transparent cover inside (transparent resin).  
For how to remove, refer to [2. 2. 5].
- 2 Remove the screw for switching of grounding capacitor from the position of the grounding mark and tighten it to the position of the grounding mark.  
The grounding capacitor's capacity is increased.
- 3 To recover the shipping state, remove the screw(s) for switching of grounding capacitor and tighten it/them to the screw hole in the position of the non-grounding mark.  
The grounding capacitor's capacity is reduced.
- 4 After switching, mount the transparent cover and the front cover in this order.  
For how to mount, refer to [2. 2. 5].



 CAUTION



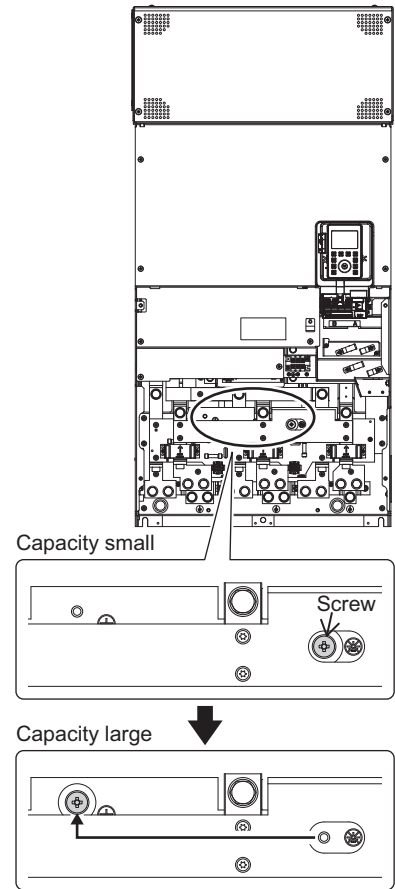
- In case of one phase grounding system (A three-phase supply power is connected in delta), do not change the connection of grounding capacitor before factory setting. If connection changed (this means the capacitance is increased), the capacitor may become damaged.

Note) If a neutral grounding system is used, changing the connection of the grounding capacitor as shown in the figure at the top (changing the capacitance from Small to Large) makes the inverter compliant with the EMC directive.



■ With frame size A8  
VFAS3-4200KPC to 4280KPC

- 1 Remove the front cover and the transparent cover inside (transparent resin).  
For how to remove, refer to [2. 2. 5].
- 2 Remove the screw for switching of grounding capacitor from the position of the grounding mark and tighten it to the position of the grounding mark.  
The grounding capacitor's capacity is increased.
- 3 To recover the shipping state, remove the screw(s) for switching of grounding capacitor and tighten it/them to the screw hole in the position of the non-grounding mark.  
The grounding capacitor's capacity is reduced.
- 4 After switching, mount the transparent cover and the front cover in this order.  
For how to mount, refer to [2. 2. 5].



**⚠ CAUTION**



- In case of one phase grounding system (A three-phase supply power is connected in delta), do not change the connection of grounding capacitor before factory setting. If connection changed (this means the capacitance is increased), the capacitor may become damaged.

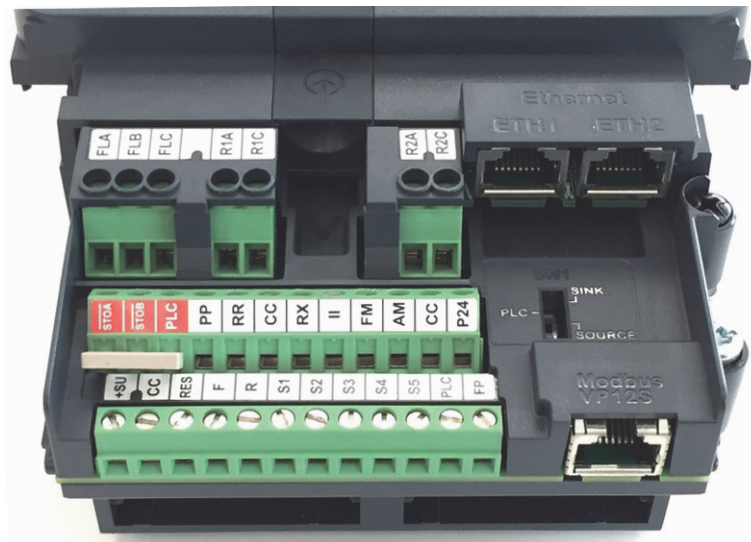
Note) If a neutral grounding system is used, changing the connection of the grounding capacitor as shown in the figure at the top (changing the capacitance from Small to Large) makes the inverter compliant with the EMC directive.

### 2.3.5 Control terminals

The control terminals are connected to external control equipment to control operation of the inverter and motor and monitor the state externally.

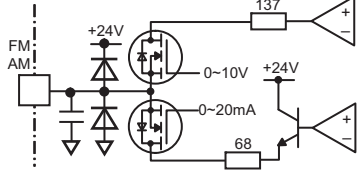
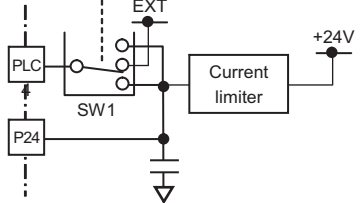
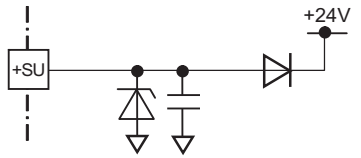
■ **Functions of control terminals**

The control terminal block is common to all the models.



Terminal symbol	Input/output	Function	Electrical specifications	Internal circuit
F	Input	Multifunction programmable digital input. In the default setting, forward run is performed with ON and deceleration stop with OFF.		
R	Input	Multifunction programmable digital input. In the default setting, reverse run is performed with ON and deceleration stop with OFF.	Digital input. • 24 Vdc-5 mA or less	
RES	Input	Multifunction programmable digital input. In the default setting, this inverter protective function is reset by ON→OFF. It has no effect when the inverter is in a normal condition.	Compliant with IEC61131-2 logic type 1 • Sink logic: ON < 10 V, 16 V < OFF • Source logic: OFF < 5 V, 11 V < ON	
S1	Input	Multifunction programmable digital input. In the default setting, preset speed operation is performed with ON	Sink logic and source logic can be switched with the slide switch [SW1]	
S2	Input	Multifunction programmable digital input. In the default setting, preset speed operation is performed with ON		
S3	Input	Multifunction programmable digital input. In the default setting, preset speed operation is performed with ON		
S4	Input	Multifunction programmable digital input. In the default setting, preset speed operation is performed with ON With <F146: Terminal S4 input select>, digital input, pulse train input, and PG input can be switched.	Digital input. • 24 Vdc-5 mA or less  Compliant with IEC61131-2 logic type 1 • Sink logic: ON < 10 V, 16 V < OFF • Source logic: OFF < 5 V, 11 V < ON	
S5	Input	Multifunction programmable digital input. In the default setting, preset speed operation is performed with ON. With <F147: Terminal S5 input select>, digital input, pulse train input, and PG input can be switched.	Sink logic and source logic can be switched with the slide switch [SW1]  Pulse train input • Up to 30 kpps (duty 50%)	

Terminal symbol	Input/output	Function	Electrical specifications	Internal circuit
CC	Common to input/output	An equipotential terminal of the control circuit. It is allocated in three positions.	-	
PP	Output	Voltage reference output for potentiometer.	10 Vdc (allowable load current: 10 mA)	
FP	Output	Multifunction programmable digital/pulse train output. With <F669: Terminal FP switching>, digital output and pulse train output can be switched.	Digital output • 24 Vdc-50 mA  Pulse train output • Up to 30 kpps (duty 50%)	
RR	Input	Analog input with 0 - 10 Vdc. It can be switched to PTC input, etc. with <F108: Terminal RR input select>.	0 - 10 Vdc (Input impedance: 31.5 kΩ)	
RX	Input	Analog input with -10 to +10 Vdc. With <F107: Terminal RX input voltage select>, it can be switched to 0 - 10 Vdc.	-10 to +10 Vdc (Input impedance: 31.5 kΩ)	
II	Input	Analog current input with 0 - 20 mA. The current can be changed to 4 - 20 mA, etc. with setting of the parameter.	0 - 20 mA (Input impedance: 250 Ω)	

Terminal symbol	Input/output	Function	Electrical specifications	Internal circuit
FM	Output	Multifunction programmable analog output. 0 - 10 Vdc output with default setting. With <F681: Terminal FM switching>, meter option (0 - 1 mA), current (0 - 20 mA) output, and voltage (0 - 10 V) output can be switched.	0 - 10 Vdc (allowable load resistance: 1 kΩ or more) 4 - 20 mAdc (0 - 20 mAdc) (allowable load resistance: 500 Ω or less)	
AM	Output	Multifunction programmable analog output. 0 - 20 mAdc output with default setting. With <F686: Terminal AM switching>, meter option (0 - 1 mA), current (0 - 20 mA) output, and voltage (0 - 10 V) output can be switched.		
PLC	Output	When the slide switch [SW1] is set to the sink side or source side, it can be used as 24 Vdc power output.	24 Vdc-200 mA (200 mA in total with P24) Compliant with IEC61131-2	
	Input	When the slide switch [SW1] is set to the PLC side, it can be used as a common terminal for digital input terminal.	-	
P24	Output	24 Vdc power output.	24 Vdc-200 mA (200 mA in total with PLC) Compliant with IEC61131-2	
+SU	Input	DC power input to operate the control circuit. Connect a control power supply option or 24 Vdc power supply between [+SU] and [CC].	24 Vdc- current 1A or more	
STOA	Input	STO function that complies with the safety standard IEC61800-5-2 (this is different function from programmable digital input). Function is deactivated by shorting the terminals [STOA]-[STOB]-[PLC] with a bridge at factory.	Compliant with IEC61131-2 logic type 1 • Activate < 5 V, 11 V < Deactivate	
STOB	Input	When STOA/STOB are OFF during motor is running, motor becomes coast stop. Under this condition, even if STOA/STOB are ON, motor is not running unless run command is once OFF and On again. For details, refer to Safety function manual (E6582067).		

Terminal symbol	Input/output	Function	Electrical specifications	Internal circuit
FLA	Output	Multifunction programmable relay contact output. Operation of the protection function of the inverter is detected in the default setting. The contact across [FLA]-[FLC] is closed and [FLB]-[FLC] is opened during protection function operation.	Maximum contact capacity <ul style="list-style-type: none"> <li>• 250 Vac-2 A (cosφ=1)</li> <li>• 30 Vdc-2 A (at resistive load)</li> <li>• 250 Vac-1 A (cosφ=0.4)</li> <li>• 30 Vdc-1A (L/R=7 ms)</li> </ul>	
FLB				
FLC				
R1A	Output	Multifunction programmable relay contact output. A low-speed signal is output in the default setting.	Minimum contact capacity <ul style="list-style-type: none"> <li>• 24 Vdc-5 mA</li> </ul>	
R1C				
R2A	Output	Multifunction programmable relay contact output. It is not assigned in the default setting. The function can be set with <F134: Terminal R2 function >.	Life <ul style="list-style-type: none"> <li>• 100000 times</li> </ul>	
R2C				

**Important**

- With relay contact output, chattering (momentary ON/OFF of contact) is generated by external factors of the vibration and the impact, etc. In particular, please set a filter of 10 ms or more, or timer for measures when connecting it directly to the input unit of the programmable controller.

**Reference**

- To change the function of the terminals [F], [R], [RES], and [S1] - [S5] → Refer to [6. 3. 2]
- To change the function of the terminals [FP], [FL], [R1], and [R2] → Refer to [6. 3. 3]
- To change the function of the terminals [RR] and [RX] → Refer to [6. 2]
- To change the function of the terminals [FM] and [AM] → Refer to [5. 2. 6], [6. 33. 3]

■ Recommended tightening torque of control terminal screws

Control terminal torque and wire strip length

	Screw size	Torque		Strip length (mm)	Screwdriver size	
		(N · m)	(lb · in)		Width (mm)	Thickness
Relay	M3	0.5	4.4	11	3.5	0.5
Except Relay (2nd)	M3	0.5	4.4	6 or 7	3.5	0.5
Except Relay (1st)	M3	0.5	4.4	6	3.5	0.5

**Wire size**

	Conductor	Using one wire		Using two wires		Using two wires with twin ferule	
		(mm <sup>2</sup> )	AWG	(mm <sup>2</sup> )	AWG	(mm <sup>2</sup> )	AWG
Relay	Solid wire	0.14-2.5	26-14	2x0.14 to 2x0.75	26-18	-	-
	Stranded wire	0.14-2.5	26-14	2x0.14 to 2x0.75	26-18	2x0.5 to 2x1.5	20-16
Except Relay (2nd)	Solid wire	0.14-2.5	26-14	2x0.14 to 2x1.0	26-18	-	-
	Stranded wire	0.14-1.5	26-16	2x0.14 to 2x0.75	26-18	2x0.5 to 2x1.0	20-18
Except Relay (1st)	Solid wire	0.14-1.5	26-16	2x0.14 to 2x0.75	26-18	-	-
	Stranded wire	0.14-1.5	26-16	2x0.14 to 2x0.75	26-18	2x0.5 to 2x1.0	20-18

■ **Switching of slide switch of control terminal block**

With the slide switch [SW1] of the control terminal block, the setting of sink logic, source logic and external power supply sink logic of the digital input terminals [F], [R], [RES], and [S1] - [S5] is switched.

For details of sink/source logic, refer to the following "■Sink logic and source logic."

- The slide switch [SW1] is set to the PLC side in the default setting. This is the setting when the inverter external power supply is used
- To use as sink logic, set the slide switch [SW1] to the SINK side.
- To use as source logic, set the slide switch [SW1] to the SOURCE side.



Important

- Switch the logic before turning on the power supply.
- After confirming that the sink/source setting is correct, turn on the power supply.

■ **Sink logic and source logic**

In Japan and the U.S., current flowing out turns digital input terminals on. This is called sink logic. The method generally used in Europe is source logic in which current flowing into digital input terminals turns them on.

Each digital input terminal is supplied with electricity from either the inverter's internal power supply or an external power supply, and its connections vary depending on the power supply used.

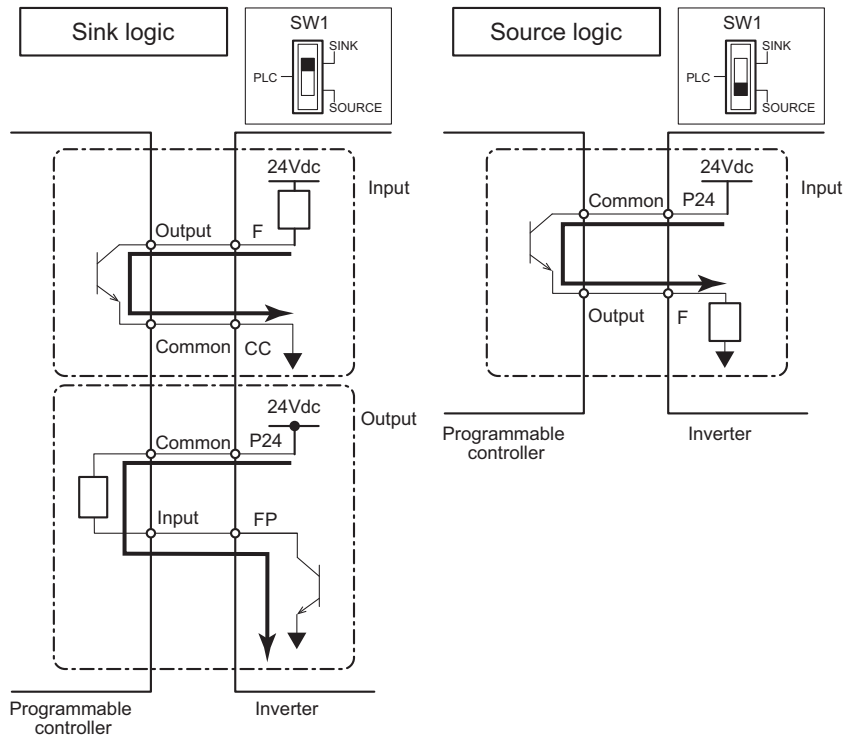
**Memo**

- Sink logic is sometimes referred to as negative logic, and source logic is referred to as positive logic.

1) **When the inverter internal power supply is used**

When the internal power supply of the inverter is used to supply electricity to digital input terminals, the connection is as shown in the diagram below.

Sink/source logic is set by the slide switch [SW1]. Refer to "■Switching of slide switch of control terminal block."

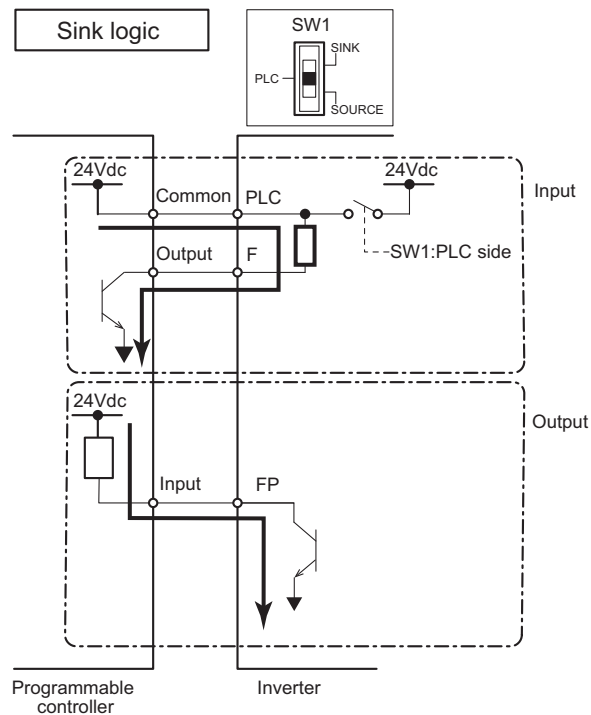


**2) When an external power supply is used**

The terminal [PLC] is used to connect to an external power supply or to separate a terminal from other input or output terminals.

Sink/source logic is set by the slide switch [SW1].

Refer to "■Switching of slide switch of control terminal block."





### **2. 3. 6    RS485 communication connectors**

This inverter is equipped with two RS485 communication ports.

To use RS485, refer to "RS485 Communication Function Instruction Manual" (E6582143).



Important

- Connection of Ethernet to the RS485 communication connectors will result in a failure.

## **2**

### **2. 3. 7    Ethernet connectors**

This inverter is equipped with two Ethernet ports.

To use Ethernet, refer to "Ethernet Function Instruction Manual" (E6582125).



Important

- Connection of RS485 communication connectors to Ethernet may result in a malfunction.