Information for Replacement of Speed Controller SC-A Series to FR-D700

Size, connection, and parameters concerning replacement are stated on the following pages.

1. Size

Installation sizes of the speed controller SC-A series and the corresponding FR-D700 series are different.
For details of the sizes, refer to the outline dimension drawings on the following pages.

Power supply voltage		Existing controller	Replacing inverter	Installation size
Three phase 200V	Box type	SC-A2040B	FR-D720-0.1K	Different size
		SC-A2100B	FR-D720-0.1K	Different size
		SC-A2200B	FR-D720-0.2K	Different size
		SC-A2400B	FR-D720-0.4K	Different size
	Unit type	SC-A2040U	FR-D720-0.1K	Different size
		SC-A2100U	FR-D720-0.1K	Different size
		SC-A2200U	FR-D720-0.2K	Different size
		SC-A2400U	FR-D720-0.4K	Different size
	Panel surface installation type	SC-AN2100-07	FR-D720-0.1K	Different size
	Module type	SC-A2040M	FR-D720-0.1K	Different size
		SC-A2100M	FR-D720-0.1K	Different size
		SC-A2200M	FR-D720-0.2K	Different size
		SC-A2400M	FR-D720-0.4K	Different size
Single phase 100V	Box type	SCA-1040B	FR-D710W-0.1K	Different size
		SCA-1100B	FR-D710W-0.1K	Different size
	Unit type	SCA-1040U	FR-D710W-0.1K	Different size
		SCA-1100U	FR-D710W-0.1K	Different size
	Panel surface installation type	SCA-N1100-07	FR-D710W-0.1K	Different size
	Module type	SCA-1040M	FR-D710W-0.1K	Different size
		SCA-1100M	FR-D710W-0.1K	Different size

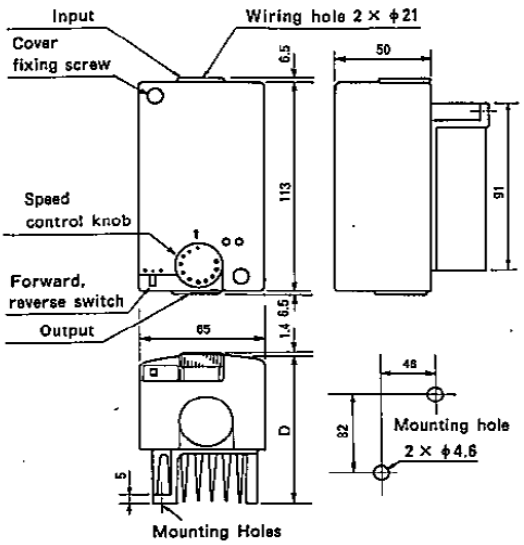
If the three-phase 200V speed controller SC-A series is currently used for single phase input, replace the controller with the single-phase 200V FR-D720S series. Installation sizes are different.
For details of the sizes, refer to the outline dimension drawings on the following pages.

Power supply voltage		Existing controller	Replacing inverter	Installation size
Three phase 200V (Single-phase connection)	Box type	SC-A2040B	FR-D720S-0.1K	Different size
		SC-A2100B	FR-D720S-0.1K	Different size
		SC-A2200B	FR-D720S-0.2K	Different size
		SC-A2400B	FR-D720S-0.4K	Different size
	Unit type	SC-A2040U	FR-D720S-0.1K	Different size
		SC-A2100U	FR-D720S-0.1K	Different size
		SC-A2200U	FR-D720S-0.2K	Different size
		SC-A2400U	FR-D720S-0.4K	Different size
	Panel surface installation type	SC-AN2100-07	FR-D720S-0.1K	Different size
	Module type	SC-A2040M	FR-D720S-0.1K	Different size
		SC-A2100M	FR-D720S-0.1K	Different size
		SC-A2200M	FR-D720S-0.2K	Different size
		SC-A2400M	FR-D720S-0.4K	Different size

* In the FR-D700 series, 40W capacity models are not available. Use 0.1kW capacity models of the FR-D700 series.

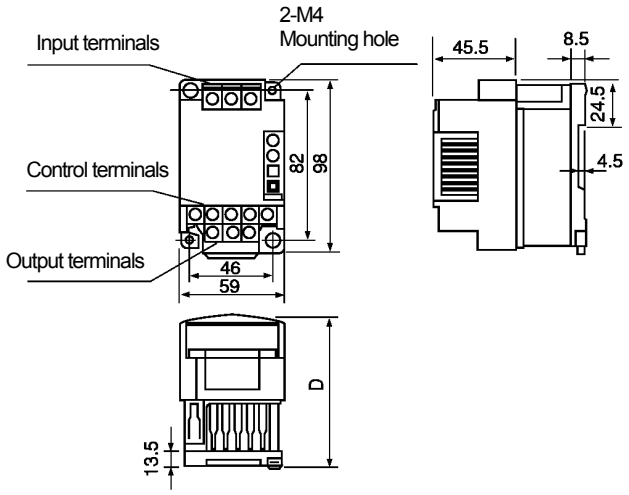
Outline dimension drawings (Unit: mm)

■ Box type
SC-A2040B to A2400B
SC-A1040B to A1100B



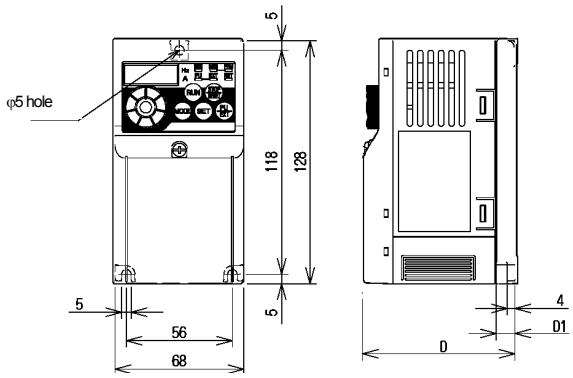
Speed Controller Model	D
SC-A2040B/A2100B SC-A1040B/A1100B	80
SC-A2200B	90
SC-A2400B	115

■ Unit type
SC-A2040U to A2400U
SC-A1040U to A1100U



Speed Controller Model	D
SC-A2040U/A2100U SC-A1040U/A1100U	84
SC-A2200U	94
SC-A2400U	119

■ FR-D720-0.1K to 0.4K
FR-D720S-0.1K to 0.4K
FR-D710W-0.1K

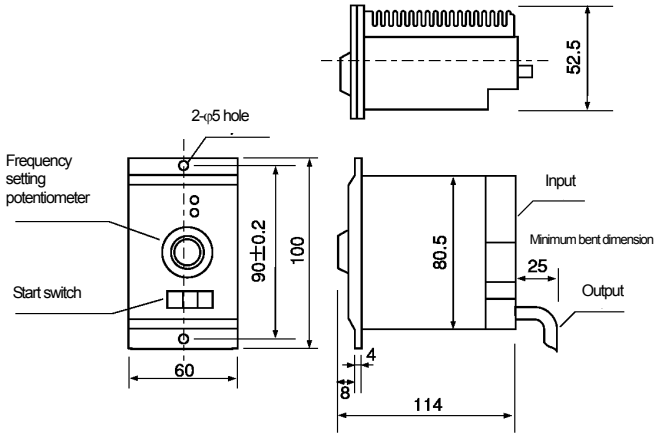


Inverter Model	D	D1
FR-D720-0.1K/0.2K FR-D720S-0.1K/0.2K FR-D710W-0.1K	80.5	10
FR-D720-0.4K	112.5	42
FR-D720S-0.4K	142.5	42

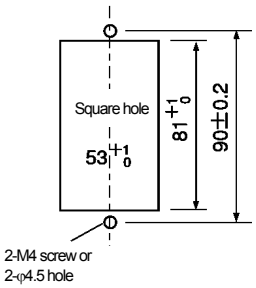
■ Panel surface installation type

SC-AN2100-07

SC-AN1100-07



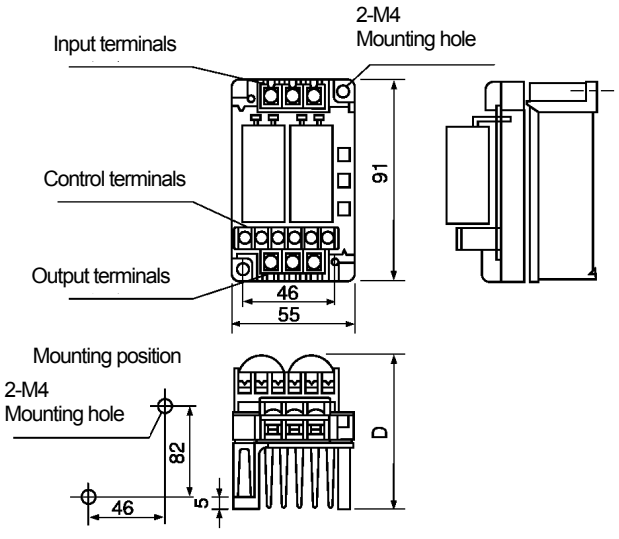
Panel cut drawing



■ Module type

SC-A2040M to A2200M

SC-A1040M to A1100M

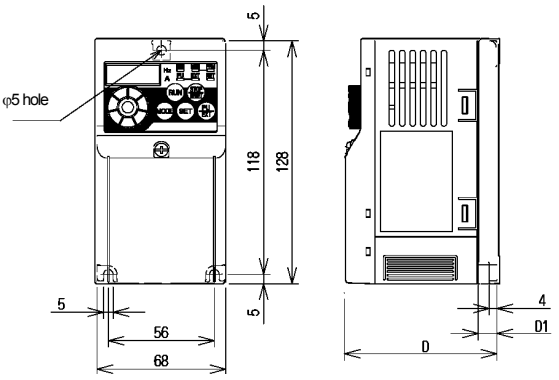


Speed Controller Model	D
SC-A2040M/A2100M SC-A1040M/A1100M	68
SC-A2200M	78
SC-A2400M	103

■ FR-D720-0.1K to 0.4K

FR-D720S-0.1K to 0.4K

FR-D710W-0.1K



Inverter Model	D	D1
FR-D720-0.1K/0.2K FR-D720S-0.1K/0.2K FR-D710W-0.1K	80.5	10
FR-D720-0.4K	112.5	42
FR-D720S-0.4K	142.5	42

2. Connection

The terminal names are basically the same. Connect the terminals according to their names.

For the terminal sizes, refer to page 6 to page 9.

Type		Speed controller terminal name		FR-D700 terminal name	Remarks
Main circuit		R, S, T		R/L1, S/L2, T/L3	FR-D720S (single phase specification) does not have terminal T/L3.
		U, V, W		U, V, W	
		⏚		⏚	
Control circuit Input signal	Contact *1	Unit type	STF	STF	
			STR	STR	
			5/SD	SD	
		Installation on the enclosure Type	EXT	STF, STR	For the SC-A panel surface installation type, a switch on the rear side is used for switching between STF and STR.
			SD	SD	
		Module type	STF	STF	
			STR	STR	
			SD	SD	
Analog	Frequency Setting *2	Unit type	10	10	
			2	2	
			5/SD	5	
		Module type	10	10	
			2	2	
			5	5	
Control circuit output signal	Fault output *3	Unit type	Y1	A	Y1 and SE are open collector terminals, and A and C are relay contacts.
			SE	C	

*1 No external connection terminal is provided for the control circuit of box type SC-A[][]B.

*2 No external connection terminal for frequency setting is provided for the box type SC-A[][]B and panel surface installation type SC-AN[][]-07.

*3 No external output terminal is provided for the box type SC-A[][]B, panel installation type SC-AN[][]-07, and module type SC-A[][]M.

Terminal size

[Main circuit terminals]

Voltage class	Speed controller					FR-D700*2		
	Capacity		R, S, T	U, V, W	⏚	R/L1, S/L2, T/L3*3	U, V, W	⏚
Three phase 200V	Box type SC-A[][]B	40 to 400W	M3.5	M3.5	M3	M3.5	M3.5	M3.5
	Unit type SC-A[][]U	40 to 400W	M3.5	M3.5	M3			
	Panel surface installation type SC-AN[][]-07	100W	M3	- *1	M3			
	Module type SC-A[][]M	40 to 400W	M3.5	M3.5	M3			
Single phase 100V	Box type SC-A[][]B	40 to 100W	M3.5	M3.5	M3	M3.5	M3.5	M3.5
	Unit type SC-A[][]U	40 to 100W	M3.5	M3.5	M3			
	Panel surface installation type SC-AN[][]-07*2	100W	M3	- *1	M3			
	Module type SC-A[][]M	40 to 100W	M3.5	M3.5	M3			

*1 Cabtyre cables with round crimping terminals are connected to U, V, and W of the panel surface installation type. Size of the crimping terminal: Nominal diameter of 0.5-4 (with sleeve)

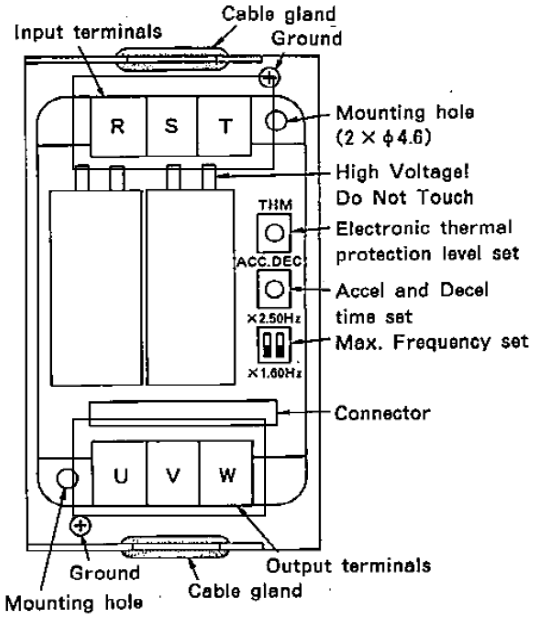
*2 For the FR-D700, 40W capacity models are not available. 0.1kW or higher capacity models are available for the FR-D700.

*3 Terminal T/L3 is not available for the single-phase power input model.

* The positions of main circuit terminals are different between the speed controller and the FR-D700. Details of the positions are shown below.

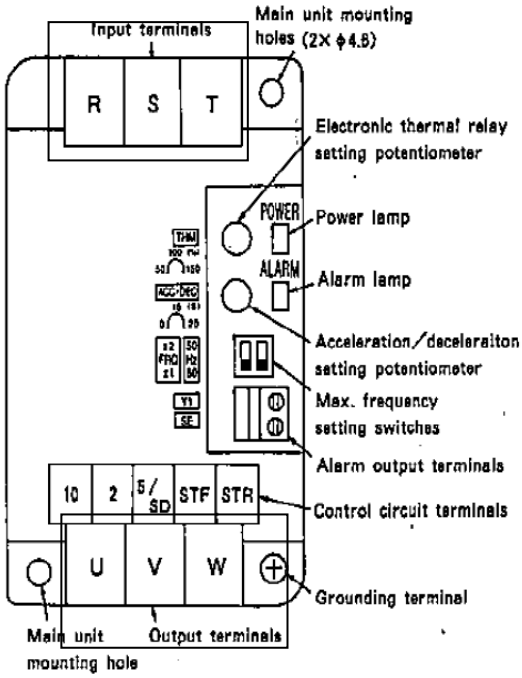
Terminal positions of the box type

* Input terminals are arranged on the upper part of the enclosure, and output terminals are arranged on the lower part of the enclosure.

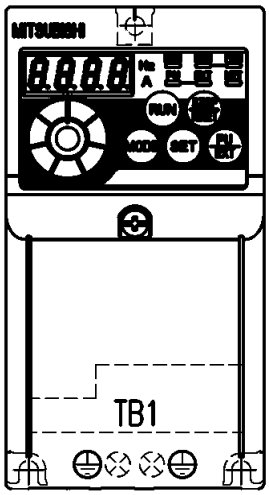


Terminal positions of the unit type

* Input terminals are arranged on the upper part of the enclosure, and output terminals are arranged on the lower part of the enclosure.



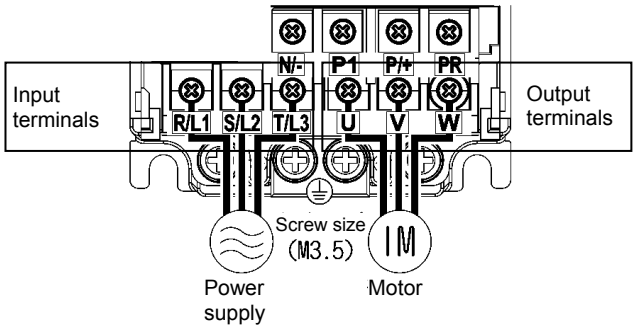
Terminal block position of the FR-D700



The main circuit terminal block is located at TB1 position.

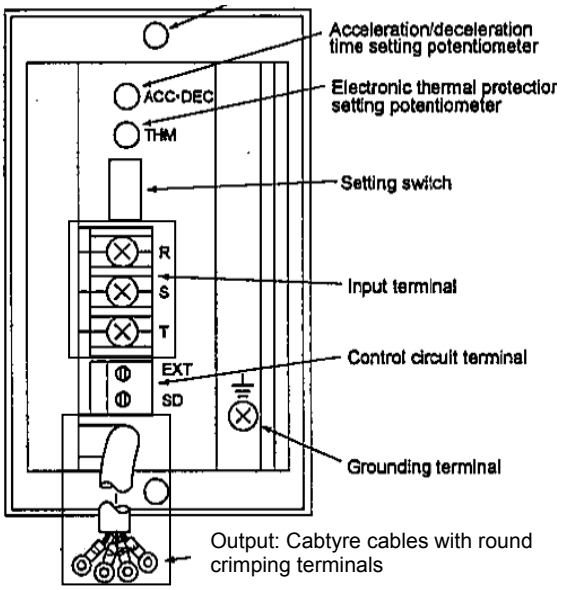
The positions of main circuit terminals are different from those of the speed controller.

Details of TB1



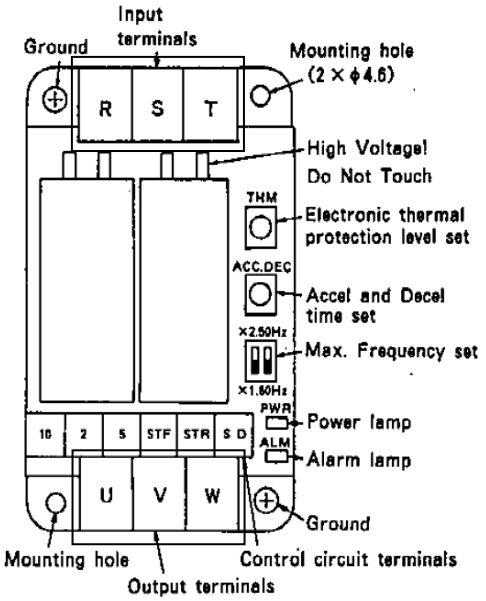
Terminal positions of the panel surface installation type

* Input terminals are arranged at the middle part of the enclosure, and output cabtyre cables with round crimping terminals are connected.

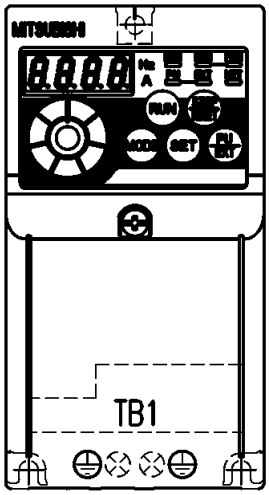


Terminal positions of the module type

* Input terminals are arranged on the upper part of the enclosure, and output terminals are arranged on the lower part of the enclosure.



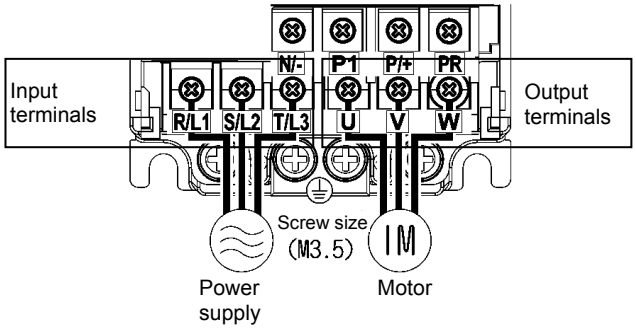
Terminal block position of the FR-D700



The main circuit terminal block is located at TB1 position.

The positions of main circuit terminals are different from those of the speed controller.

Details of TB1



[Control circuit terminals]

Voltage class	Capacity		Speed controller 10	2	5	STF	STR	SD	EXT	Y1	SE	FR-D700*2
Three phase 200V	Box type SC-A[][]B*1	40 to 400W	-	-	-	-	-	-	-	-	-	Spring clamp terminals
	Unit type SC-A[][]U	40 to 400W	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	-	M2	M2	
	Panel surface installation type SC-AN[][]-07	100W	-	-	-	-	-	Plug-in terminal block		-	-	
	Module type SC-A[][]M	40 to 400W	M3	M3	M3	M3	M3	M3	-	-	-	
Single phase 100V	Box type SC-A[][]B*1	40 to 100W	-	-	-	-	-	-	-	-	-	Spring clamp terminals
	Unit type SC-A[][]U	40 to 100W	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	-	M2	M2	
	Panel surface installation type SC-AN[][]-07	100W	-	-	-	-	-	Plug-in terminal block		-	-	
	Module type SC-A[][]M	40 to 100W	M3	M3	M3	M3	M3	M3	-	-	-	

*1 No control circuit terminal block is provided for the box type SC-A[][]B.

*2 For the FR-D700, 40W capacity models are not available. 0.1kW or higher capacity models are available for the FR-D700.

For the control circuit wiring of FR-D700, strip off the sheath of a cable, and use it as a bare wire, or use it with a blade terminal shown below.
Also, make sure to select applicable cable size.

Table 1. Applicable cable size for the FR-D700 control terminal block (bare wire)

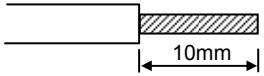
Cable sheath stripping length	Applicable bare wire size
	Solid wire (mm^2)
 Wire the stripped cable after twisting it to prevent it from becoming loose. In addition, do not solder it.	0.3 to 0.75

Table 2. Applicable cable size for the FR-D700 control terminal block (blade terminal)

Blade terminal model (Phoenix Contact Co., Ltd.)		Applicable bare wire size (mm^2)
With insulation sleeve	Without insulation sleeve	
AI 0.5-10WH	-	0.3 to 0.5
AI 0.75-10GY	AI 0.75-10	0.75
AI 1-10RD	A 1-10	1
AI 1.5-10BK	AI 1.5-10	1.25, 1.5
AI-TWIN 2×0.75-GY	-	0.75 (for two wires)

Blade terminal model (NICHIFU Co., Ltd.)		Applicable bare wire size (mm^2)
Blade terminal product number	Blade terminal product number	
BT 0.75−11	VC 0.75	0.3 to 0.75

3. Setting/adjustment

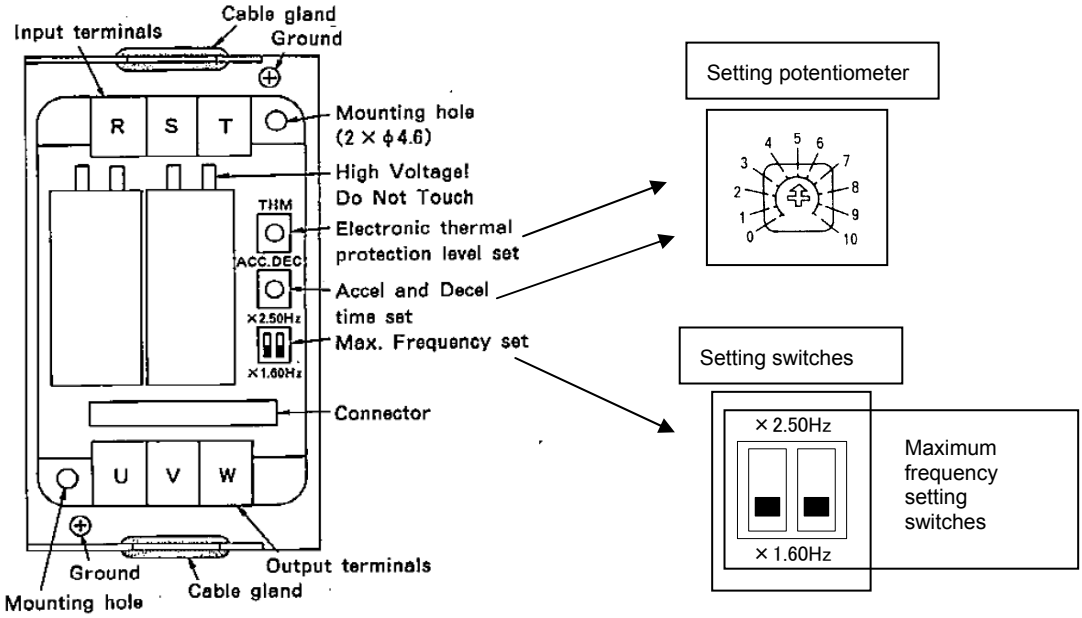
Settings and adjustments of the speed controller are performed with the internal switches and potentiometer.
Refer to the figures below for the approximate positions of the switches and potentiometer.

The following three items can be set by the speed controller.

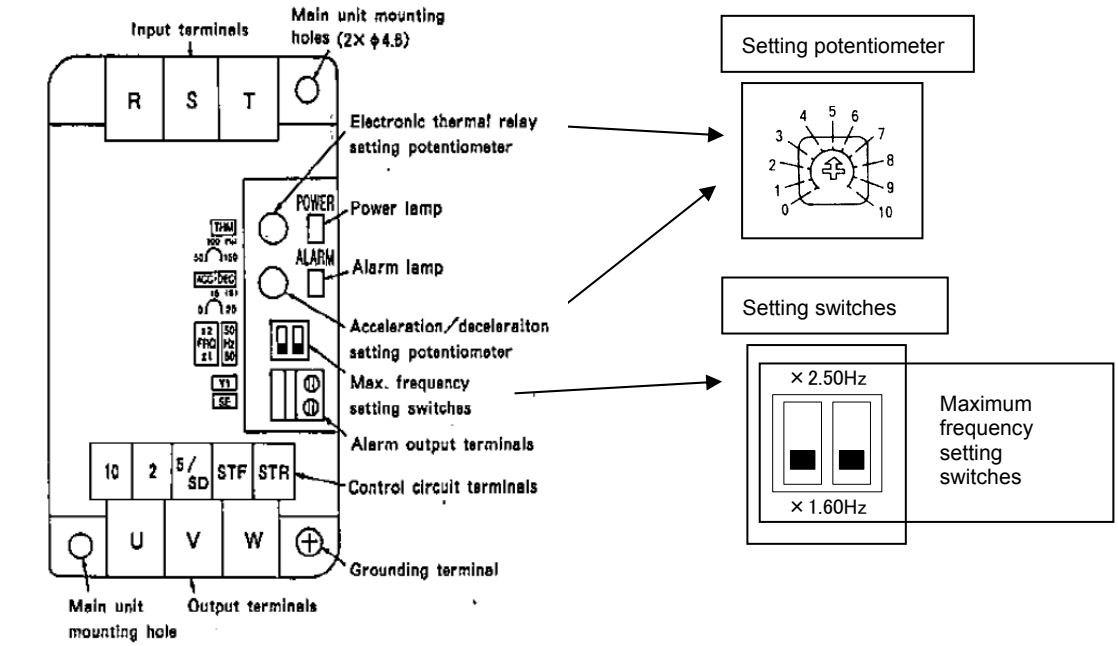
- Maximum frequency / V/F pattern
- Acceleration/deceleration time
- Electronic thermal O/L relay

Approximate positions of the switches and potentiometer

Box type SC-A[][]B

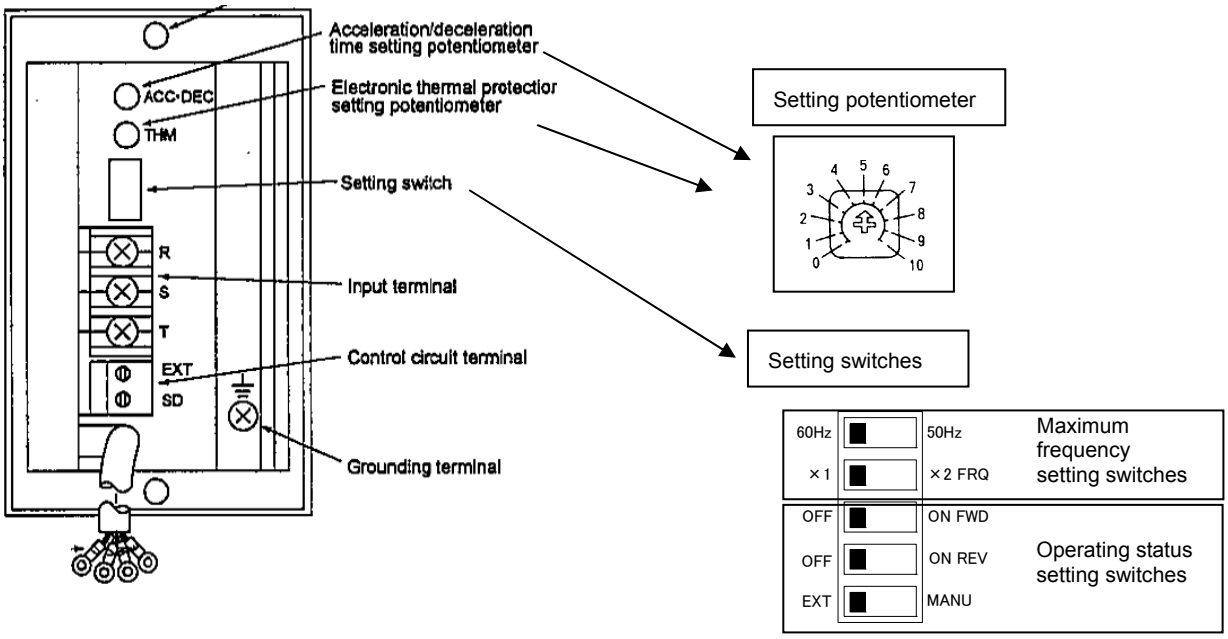


Unit type SC-A[][]U

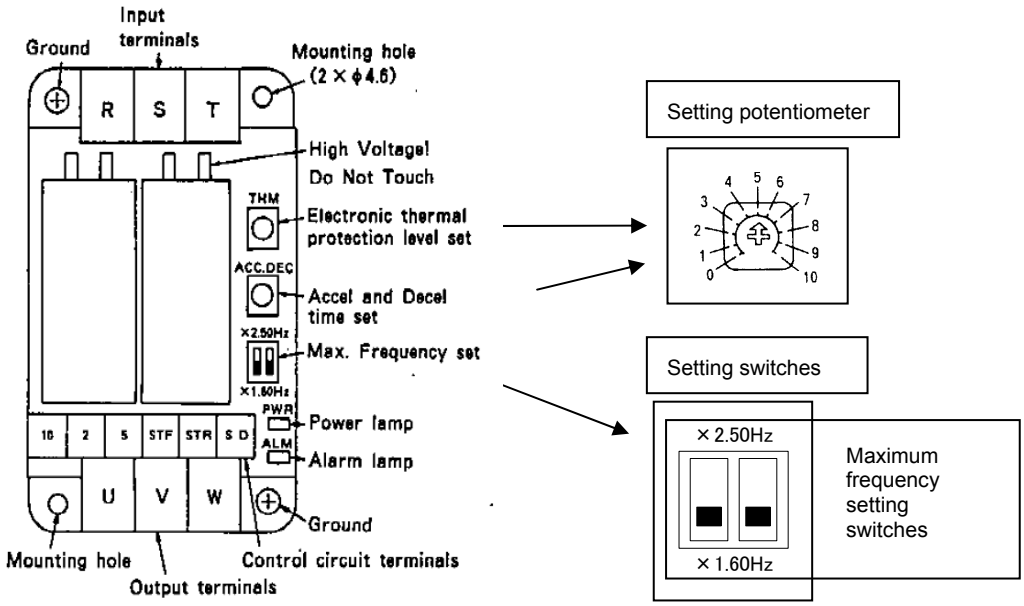


Approximate positions of the switches and potentiometer

Panel surface installation type SC-AN[][]-07

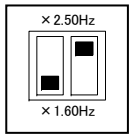
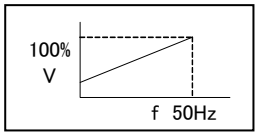
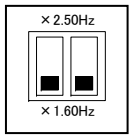
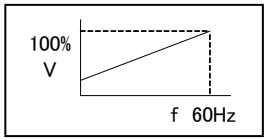
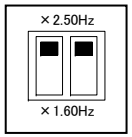
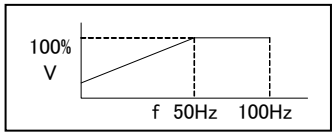
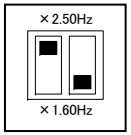
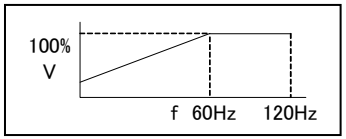


Module type SC-A[][]M

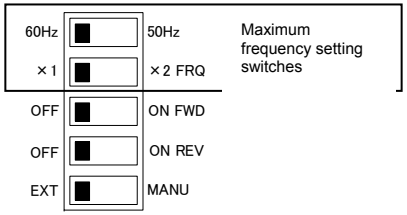
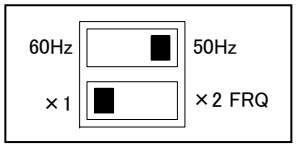
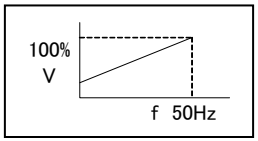
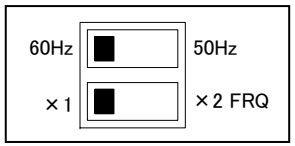
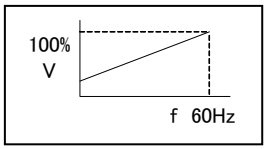
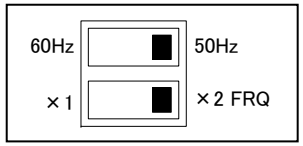
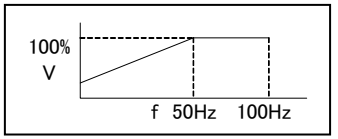
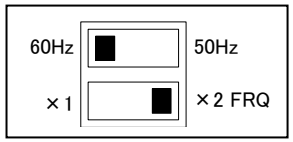
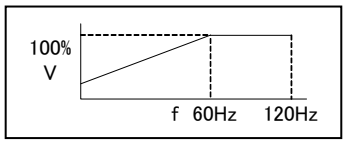


The FR-D700 parameter settings used to replace the speed controller settings with the switches and potentiometer are shown below.

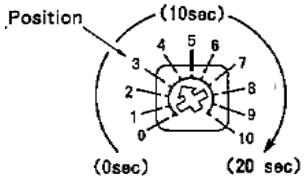
Maximum frequency setting / V/F pattern setting: Corresponding FR-D700 parameters - Pr.1 (Maximum frequency) and Pr.3 (Base frequency)
Refer to the following table and set the corresponding FR-D700 parameters.

Speed controller			FR-D700
Applicable model	Switch position	V/F pattern	Parameter setting
Box type SC-A[][]B Unit type SC-A[][]U Module type SC-A[][]M			Pr.1: 50Hz Pr.3: 50Hz
			Pr.1: 60Hz Pr.3: 60Hz
			Pr.1: 100Hz Pr.3: 50Hz
			Pr.1: 120Hz Pr.3: 60Hz

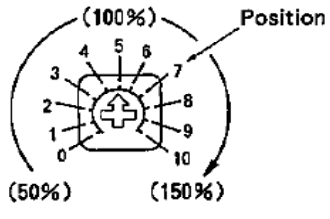
Maximum frequency setting / V/F pattern setting: Corresponding FR-D700 parameters - Pr.1 (Maximum frequency) and Pr.3 (Base frequency)
Refer to the following table and set the corresponding FR-D700 parameters.

Speed controller			FR-D700
Applicable model	Switch position	V/F pattern	Parameter setting
Panel surface installation type SC-AN[][]-07 			Pr.1: 50Hz Pr.3: 50Hz
			Pr.1: 60Hz Pr.3: 60Hz
			Pr.1: 100Hz Pr.3: 50Hz
			Pr.1: 120Hz Pr.3: 60Hz

Acceleration/deceleration time setting: Corresponding FR-D700 parameters - Pr.7 (Acceleration time) and Pr.8 (Deceleration time)
Refer to the following table and set the corresponding FR-D700 parameters.

Speed controller		Corresponding FR-D700 parameter
Box type SC-A[][]B Unit type SC-A[][]U Panel surface installation type SC-AN[][]-07 Module type SC-A[][]M Acceleration/deceleration time setting potentiometer 	Acceleration/deceleration time setting potentiometer position	Pr.7/Pr.8 setting
	0	0s
	1	0s
	2	2.5s
	3	5.0s
	4	7.5s
	5	10s
	6	12.5s
	7	15s
	8	17.5s
	9	20s
	10	20s

Electronic thermal O/L relay setting: Corresponding FR-D700 parameters - Pr.9 (Electronic thermal O/L relay)
Refer to the following table and set the corresponding FR-D700 parameters.

Speed controller		Corresponding FR-D700 parameter
Box type SC-A[][]B Unit type SC-A[][]U Panel surface installation type SC-AN[][]-07 Module type SC-A[][]M Electronic thermal O/L relay setting potentiometer 	Electronic thermal O/L relay potentiometer position	Pr.9 setting
	0	Rated motor current value × 50%
	1	Rated motor current value × 50%
	2	Rated motor current value × 62.5%
	3	Rated motor current value × 75%
	4	Rated motor current value × 87.5%
	5	Rated motor current value × 100%
	6	Rated motor current value × 112.5%
	7	Rated motor current value × 125%
	8	Rated motor current value × 137.5%
	9	Rated motor current value × 150%
	10	Rated motor current value × 150%

PWM frequency setting

The panel surface installation type SC-AN[][]-07 is a low noise type. If the motor noise increases by replacing the panel surface installation type with the FR-D700, adjust the Pr.72 (PWM frequency) setting.

Parameter number	Setting range	Description
Pr.72	0 to 15	Set the PWM carrier frequency. The setting displayed is in [kHz]. However, 0 indicates 0.7kHz, and 15 indicates 14.5kHz.

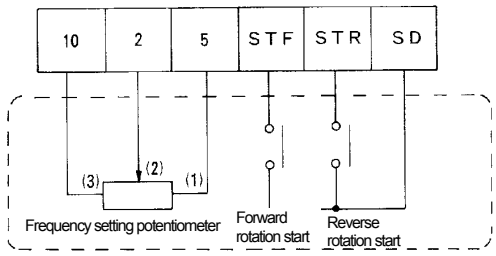
4. Operation method setting

4-1. Module type / unit type

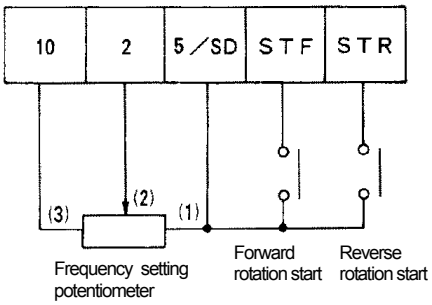
When the FR-D700 replaces a module or unit type speed controller, the existing frequency setting potentiometer and the existing start switch can be readily used.

For the re-wiring of the potentiometer and the switch, refer to the following.

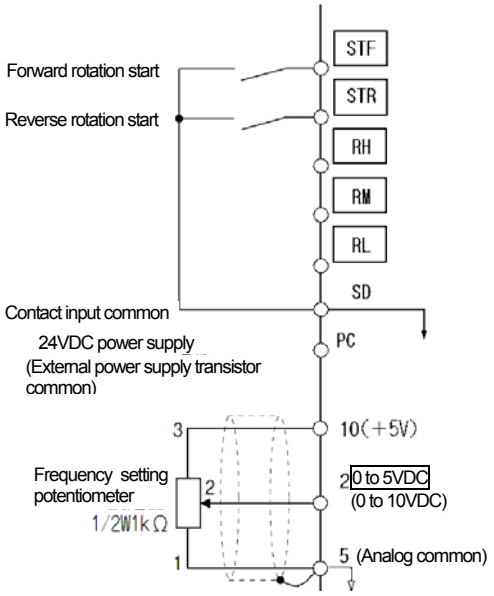
■ Module type SC-A[][]M control terminal connection diagram



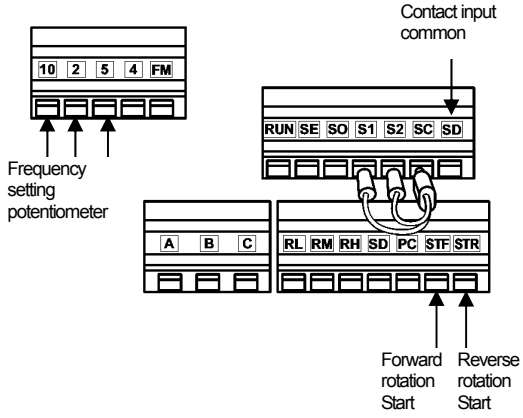
■ Unit type SC-A[][]U control terminal connection diagram



■ FR-D700 control terminal connection diagram



* FR-D700 control circuit



Set

Pr.79=0 or 1 (External operation mode).

- Forward rotation when terminal STF is ON
- Reverse rotation when terminal STR is ON
- Stopped when terminals are OFF

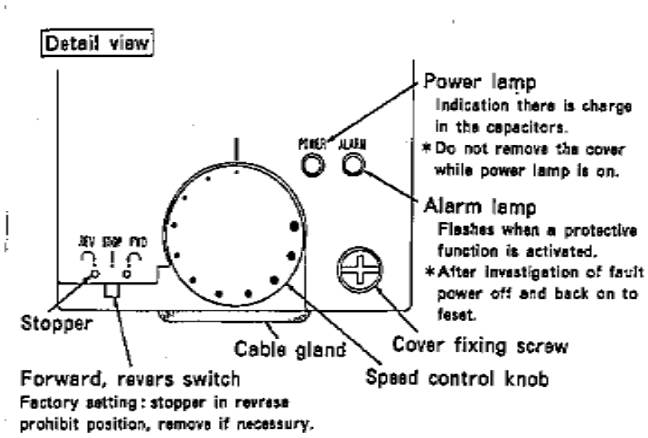
4-2. Box type / panel surface installation type

The operation components of the box type and the panel surface installation type, and the operation panel on the front of the FR-D700 are shown below.

* The frequency setting potentiometer and the start switch are not provided for the module type and the unit type.

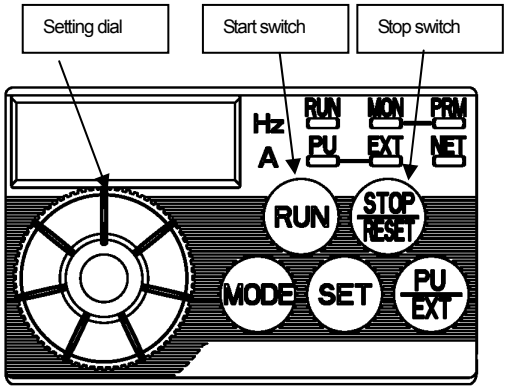
■ Box type SC-A[][]B

Box type: Details of the operation component



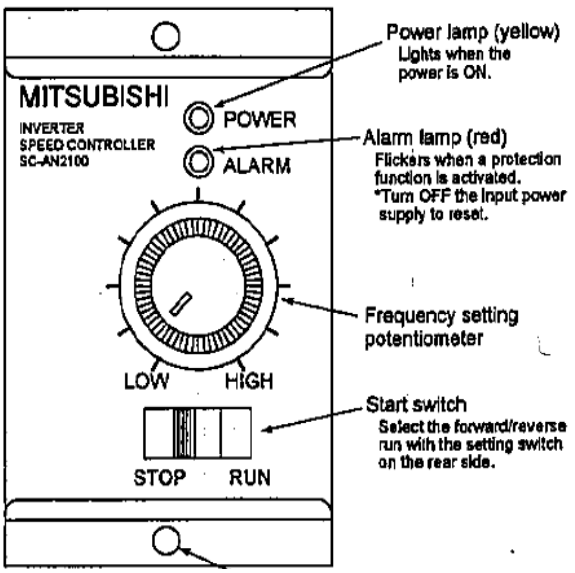
■ FR-D700

FR-D700: Details of the inverter operation panel



■ Panel surface installation type SC-AN[][]-07

Panel surface installation type: Details of the operation component



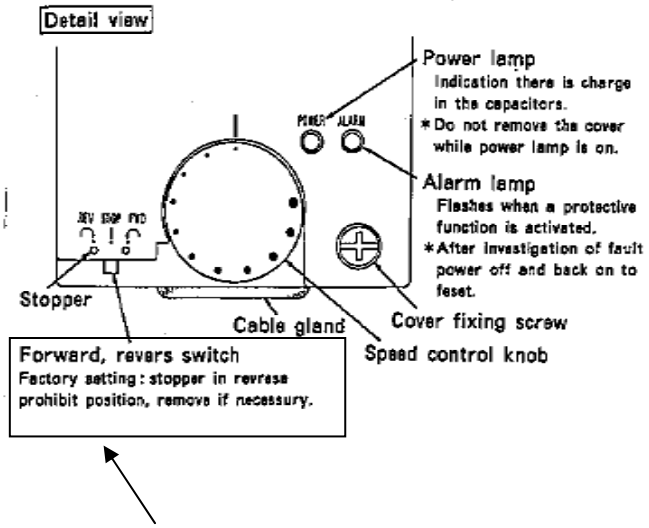
4-2-1. Operation setting for replacing the box type

Set the parameters of the FR-D700 as follows to use the setting dial, the RUN key, and the STOP key on front of the FR-D700 in the same way as the frequency setting potentiometer and the start switch of the box type are used.

* To switch between the forward and reverse rotations on the FR-D700 inverter, change the Pr.40 (RUN key rotation direction selection) setting.

■ Box type SC-A[][]B

When the operation is performed only in forward or reverse rotation



Set the stopper for forward rotation only, or reverse rotation only.

■ FR-D700

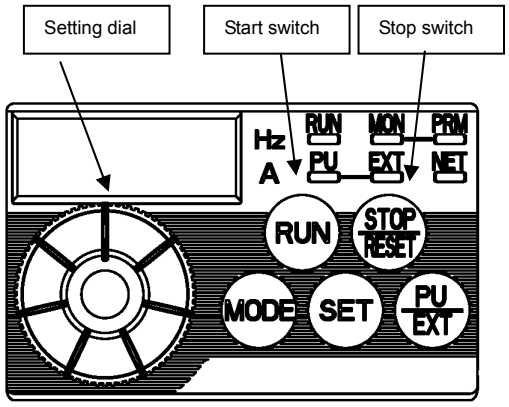
* Forward rotation only

Set
- Pr.79=1 (PU operation mode fixed)
- Pr.40=0 (RUN key rotation direction selection: Forward rotation)
- Pr.161=1 (Setting dial potentiometer mode)

* Reverse rotation only

Set
- Pr.79=1 (PU operation mode fixed)
- Pr.40=1 (RUN key rotation direction selection: Reverse rotation)
- Pr.161=1 (Setting dial potentiometer mode)

FR-D700: Details of the inverter operation panel

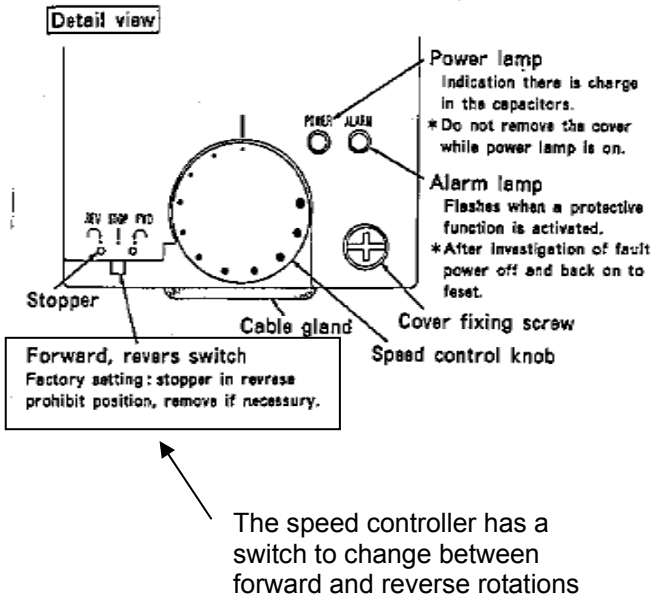


Operation of the operation panel
- Press RUN key to start (forward or reverse rotation).
- Press STOP key to stop.

To switch between the forward and reverse rotations on the FR-D700 inverter, perform either of the following operations.

1) Operation with external switches connected to terminals STF and STR
2) Operation with the connected enclosure surface operation panel (FR-PA07)

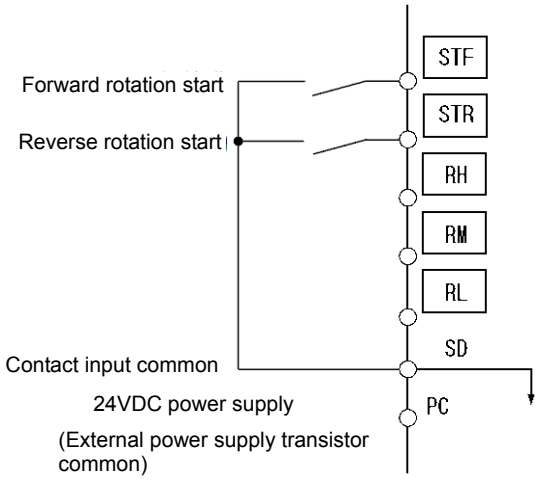
■ Box type SC-A[][]
When the operation is performed both in forward and reverse rotations



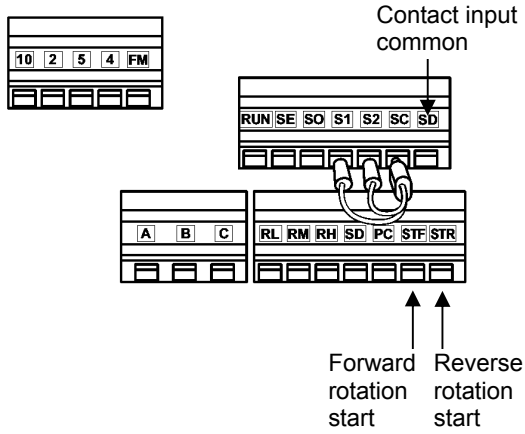
The speed controller has a switch to change between forward and reverse rotations

■ FR-D700

1) When external switches are connected to terminals STF and STR



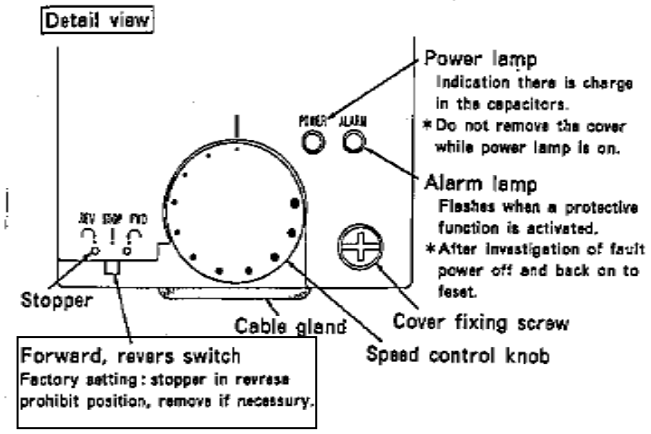
* FR-D700 control circuit terminal block layout



Set
- Pr.79=3 (External/PU combined operation mode 1)
- Pr.161=1 (Setting dial potentiometer mode)

- Forward rotation when terminal STF is ON
- Reverse rotation when terminal STR is ON
- Stopped when terminals are OFF

■ Box type SC-A[][]
When the operation is performed both in forward and reverse rotations



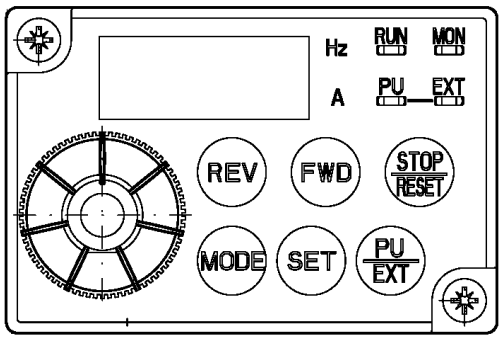
The speed controller has a switch to change between forward and reverse rotations

■ FR-D700

2) When the enclosure surface operation panel FR-PA07 is connected

Set
- Pr.79=1 (PU operation mode fixed)
- Pr.161=1 (Setting dial potentiometer mode)

FR-PA07: Details of the operation panel



Operation of the FR-PA07
- Press FWD key for the forward rotation.
- Press REV key for the reverse rotation.
- Press STOP key to stop.

* When the FR-PA07 is connected, the setting dial and the RUN key of the FR-D700 operation panel cannot be used for the operation.
* When the operation is stopped with the STOP key of the FR-D700 operation panel, the PU stop status is established.

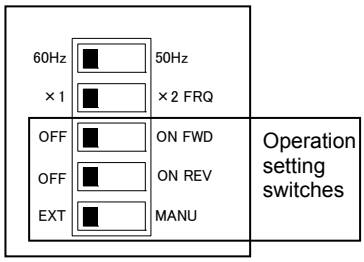
4-2-2. Operation setting for replacing the panel surface installation type

Set the parameters of the FR-D700 as follows to use the setting dial, the RUN key, and the STOP key on front of the FR-D700 in the same way as the frequency setting potentiometer and the start switch of the panel surface installation type are used.

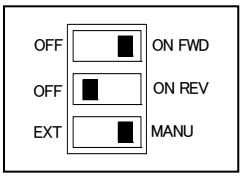
Refer to the following for the setting of the FR-D700 to replace the panel surface installation type used with the start switch and the frequency setting potentiometer on the speed controller.

■ Panel surface installation type SC-AN[][]-07

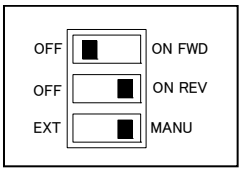
Positions of the operation setting switches

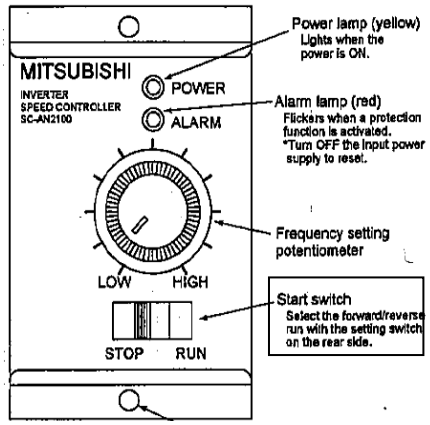


Set the operation setting switches to decide the rotation direction when the start switch is turned ON.



2. Setting for the reverse rotation when the start switch is turned ON





■ FR-D700

FR-D700 parameter settings

1. SC-AN[][]-07 operation setting switch setting
   • FWD ON

   Set
   • Pr.79=1 (PU operation mode fixed)
   • Pr.40=0 (RUN key rotation direction selection: Forward rotation)
   • Pr.161=1 (Setting dial potentiometer mode)

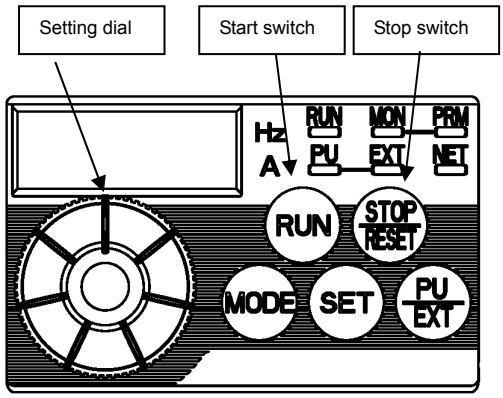
   Operation on the operation panel
   • Press RUN key for the forward rotation.
   • Press STOP key to stop.

2. SC-AN[][]-07 operation setting switch setting
   • REV ON

   Set
   • Pr.79=1 (PU operation mode fixed)
   • Pr.40=1 (RUN key rotation direction selection: Reverse rotation)
   • Pr.161=1 (Setting dial potentiometer mode)

   Operation on the operation panel
   • Press RUN key for the reverse rotation.
   • Press STOP key to stop.

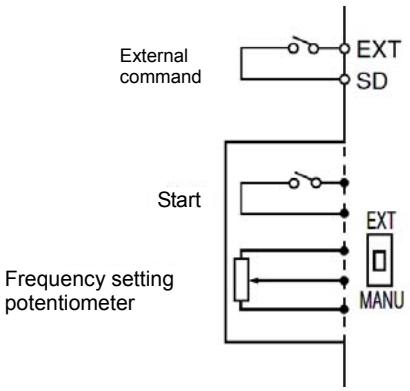
FR-D700: Details of the inverter operation panel



When the FR-D700 replaces the panel surface installation type used with the external command, the existing start switch can be readily used.

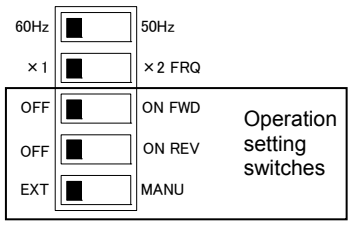
For the re-wiring of the start switch, refer to the following.

■ Panel surface installation type SC-A[][]-07 control terminal connection diagram
When the external command is used

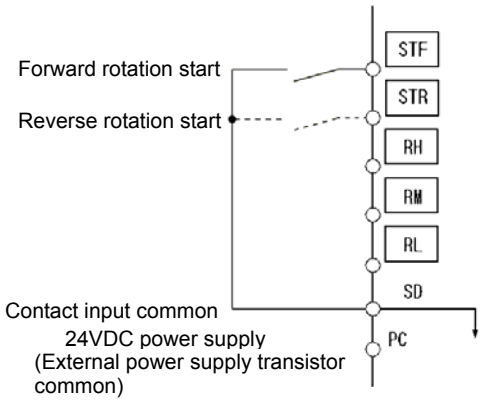


The frequency setting potentiometer is provided on the speed controller.

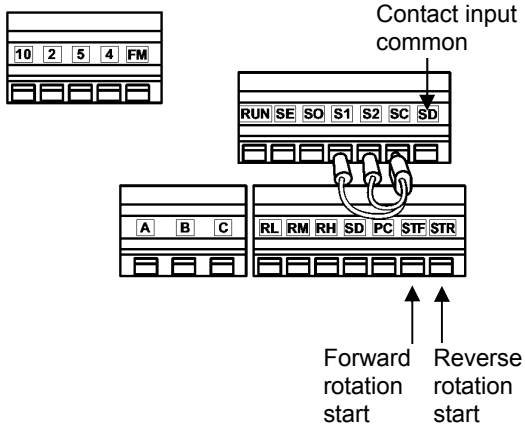
Positions of the setting switches



■ FR-D700 control terminal connection diagram



* FR-D700 control circuit terminal block layout



Connect the external command switch as follows according to the SC-AN[][]-07 operation setting switch setting.

- FWD ON: Connect the switch to STF for the forward rotation start.
- REV ON: Connect the switch to STR for the reverse rotation start.

Set

- Pr.79=3 (External/PU combined operation mode 1)
- Pr.161=1 (Setting dial potentiometer mode)

- Forward rotation when terminal STF is ON
- Reverse rotation when terminal STR is ON
- Stopped when terminals are OFF

Reference: FR-D700 parameter list

The table below lists all the parameters displayed when Pr.160 "Extended function display selection" = "0".
○ indicates simple mode parameters (displayed when Pr.160 = "9999").
marks the parameters that can be changed during operation even when Pr.77 "Parameter write selection" = "0" (initial value).

(However, the Pr.72 and Pr.240 settings cannot be changed during the External operation.)

Function	Pr. No.		Parameter name	Setting range	Min. unit	Initial value
Basic function	○	0	Torque boost	0 to 30%	0.1%	6/4/3% *1
	○	1	Maximum frequency	0 to 120Hz	0.01Hz	120Hz
	○	2	Minimum frequency	0 to 120Hz	0.01Hz	0Hz
	○	3	Base frequency	0 to 400Hz	0.01Hz	60Hz
	○	4	Multi-speed setting (high speed)	0 to 400Hz	0.01Hz	60Hz
	○	5	Multi-speed setting (middle speed)	0 to 400Hz	0.01Hz	30Hz
	○	6	Multi-speed setting (low speed)	0 to 400Hz	0.01Hz	10Hz
	○	7	Acceleration time	0 to 3600s	0.1s	5/10s *2
	○	8	Deceleration time	0 to 3600s	0.1s	5/10s *2
	○	9	Electronic thermal O/L relay	0 to 500A	0.01A	Rated output current of the inverter
DC injection brake		10	DC injection brake operation frequency	0 to 120Hz	0.01Hz	3Hz
		11	DC injection brake operation time	0 to 10s	0.1s	0.5s
		12	DC injection brake operation voltage	0 to 30%	0.1%	6/4%*3
-		13	Starting frequency	0 to 60Hz	0.01Hz	0.5Hz
-		14	Load pattern selection	0 to 3	1	0
JOG operation		15	Jog frequency	0 to 400Hz	0.01Hz	5Hz
		16	Jog acceleration/deceleration time	0 to 3600s	0.1s	0.5s
-		17	MRS input selection	0,2,4	1	0
-		18	High speed maximum frequency	120 to 400Hz	0.01Hz	120Hz
-		19	Base frequency voltage	0 to 1000V, 8888, 9999	0.1V	9999
Acceleration/ deceleration time		20	Acceleration/deceleration reference frequency	1 to 400Hz	0.01Hz	60Hz
Stall prevention		22	Stall prevention operation level	0 to 200%	0.1%	150%
		23	Stall prevention operation level compensation factor at double speed	0 to 200%, 9999	0.1%	9999
Multi-speed setting		24	Multi-speed setting (speed 4)	0 to 400Hz, 9999	0.01Hz	9999
		25	Multi-speed setting (speed 5)	0 to 400Hz, 9999	0.01Hz	9999
		26	Multi-speed setting (speed 6)	0 to 400Hz, 9999	0.01Hz	9999
		27	Multi-speed setting (speed 7)	0 to 400Hz, 9999	0.01Hz	9999
-		29	Acceleration/deceleration pattern selection	0, 1, 2	1	0
-		30	Regenerative function selection	0, 1, 2	1	0
Frequency jump		31	Frequency jump 1A	0 to 400Hz, 9999	0.01Hz	9999
		32	Frequency jump 1B	0 to 400Hz, 9999	0.01Hz	9999
		33	Frequency jump 2A	0 to 400Hz, 9999	0.01Hz	9999
		34	Frequency jump 2B	0 to 400Hz, 9999	0.01Hz	9999
		35	Frequency jump 3A	0 to 400Hz, 9999	0.01Hz	9999
		36	Frequency jump 3B	0 to 400Hz, 9999	0.01Hz	9999
-		37	Speed display	0, 0.01 to 9998	0.001	0

Function	Pr. No.		Parameter name	Setting range	Min. unit	Initial value
-		40	RUN key rotation direction selection	0, 1	1	0
Frequency detection		41	Up-to-frequency sensitivity	0 to 100%	0.1%	10%
		42	Output frequency detection	0 to 400Hz	0.01Hz	6Hz
		43	Output frequency detection for reverse rotation	0 to 400Hz, 9999	0.01Hz	9999
Second function		44	Second acceleration/deceleration time	0 to 3600s	0.1s	5/10s *2
		45	Second deceleration time	0 to 3600s, 9999	0.1s	9999
		46	Second torque boost	0 to 30%, 9999	0.1%	9999
		47	Second V/F (base frequency)	0 to 400Hz, 9999	0.01Hz	9999
		48	Second stall prevention operation current	0 to 200%, 9999	0.1%	9999
		51	Second electronic thermal O/L relay	0 to 500A, 9999	0.01A	9999
Monitor function		52	DU/PU main display data selection	0, 5, 8 to 12, 14, 20, 23 to 25, 52 to 55, 61, 62, 64, 100	1	0
		54	FM terminal function selection	1 to 3, 5, 8 to 12, 14, 21, 24, 52, 53, 61, 62	1	1
		55	Frequency monitoring reference	0 to 400Hz	0.01Hz	60Hz
		56	Current monitoring reference	0 to 500A	0.01A	Rated output current of the inverter
Restart		57	Restart coasting time	0, 0.1 to 5s, 9999	0.1s	9999
		58	Restart cushion time	0 to 60s	0.1s	1s
-		59	Remote function selection	0, 1, 2, 3	1	0
-		60	Energy saving control selection	0, 9	1	0
-		65	Retry selection	0 to 5	1	0
-		66	Stall prevention operation reduction starting frequency	0 to 400Hz	0.01Hz	60Hz
Retry		67	Number of retries at fault occurrence	0 to 10, 101 to 110	1	0
		68	Retry waiting time	0.1 to 600s	0.1s	1s
		69	Retry count display erase	0	1	0
-		70	Special regenerative brake duty	0 to 30%	0.1%	0%
-		71	Applied motor	0, 1, 3, 13, 23, 40, 43, 50, 53	1	0
-		72	PWM frequency selection	0 to 15	1	1
-		73	Analog input selection	0, 1, 10, 11	1	1
-		74	Input filter time constant	0 to 8	1	1
-		75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	1	14
-		77	Parameter write selection	0, 1, 2	1	0
-		78	Reverse rotation prevention selection	0, 1, 2	1	0
-	○	79	Operation mode selection	0, 1, 2, 3, 4, 6, 7	1	0
Motor constant		80	Motor capacity	0.1 to 7.5kW, 9999	0.01kW	9999
		82	Motor excitation current	0 to 500A, 9999	0.01A	9999
		83	Rated motor voltage	0 to 1000V	0.1V	200V/400V*5
		84	Rated motor frequency	10 to 120Hz	0.01Hz	60Hz
		90	Motor constant (R1)	0 to 50Ω, 9999	0.001Ω	9999
		96	Auto tuning setting/status	0, 11, 21	1	0

Function	Pr. No.		Parameter name	Setting range	Min. unit	Initial value
PU connector communi-cation		117	PU communication station number	0 to 31 (0 to 247)	1	0
		118	PU communication speed	48,96,192,384	1	192
		119	PU communication stop bit length	0, 1, 10, 11	1	1
		120	PU communication parity check	0, 1, 2	1	2
		121	PU communication retry count	0 to 10, 9999	1	1
		122	PU communication check time interval	0, 0.1 to 999.8s, 9999	0.1s	0
		123	PU communication waiting time setting	0 to 150ms, 9999	1	9999
		124	PU communication CR/LF selection	0, 1, 2	1	1
-	○	125	Terminal 2 frequency setting gain frequency	0 to 400Hz	0.01Hz	60Hz
-	○	126	Terminal 4 frequency setting gain frequency	0 to 400Hz	0.01Hz	60Hz
PID operation		127	PID control automatic switchover frequency	0 to 400Hz, 9999	0.01Hz	9999
		128	PID action selection	0, 20, 21, 40 to 43	1	0
		129	PID proportional band	0.1 to 1000%, 9999	0.1%	100%
		130	PID integral time	0.1 to 3600s, 9999	0.1s	1s
		131	PID upper limit	0 to 100%, 9999	0.1%	9999
		132	PID lower limit	0 to 100%, 9999	0.1%	9999
		133	PID action set point	0 to 100%, 9999	0.01%	9999
		134	PID differential time	0.01 to 10s, 9999	0.01s	9999
PU		145	PU display language selection	0 to 7	1	0
-		146 *6	Built-in potentiometer switching	0, 1	1	1
Current detection		150	Output current detection level	0 to 200%	0.1%	150%
		151	Output current detection signal delay time	0 to 10s	0.1s	0s
		152	Zero current detection level	0 to 200%	0.1%	5%
		153	Zero current detection time	0 to 1s	0.01s	0.5s
-		156	Stall prevention operation selection	0 to 31, 100, 101	1	0
-		157	OL signal output timer	0 to 25s, 9999	0.1s	0s
-	○	160	Extended function display selection	0, 9999	1	9999
-		161	Frequency setting/key lock operation selection	0, 1, 10, 11	1	0
Restart		162	Automatic restart after instantaneous power failure selection	0, 1, 10, 11	1	1
		165	Stall prevention operation level for restart	0 to 200%	0.1%	150%
Current detection		166	Output current detection signal retention time	0 to 10s, 9999	0.1s	0.1s
		167	Output current detection operation selection	0, 1	1	0
-		168	Parameter for manufacturer setting. Do not set.			
-		169				
Cumulative monitor clear		170	Watt-hour meter clear	0, 10, 9999	1	9999
		171	Operation hour meter clear	0, 9999	1	9999
Input terminal function assignment		178	STF terminal function selection	0 to 5, 7, 8, 10, 12, 14, 16, 18, 24, 25, 60, 62, 65 to 67, 9999	1	60
		179	STR terminal function selection	0 to 5, 7, 8, 10, 12, 14, 16, 18, 24, 25, 61, 62, 65 to 67, 9999	1	61
		180	RL terminal function selection	0 to 5, 7, 8, 10, 12, 14, 16, 18, 24, 25, 62, 65 to 67, 9999	1	0
		181	RM terminal function selection		1	1
		182	RH terminal function selection		1	2

Function	Pr. No.		Parameter name	Setting range	Min. unit	Initial value
Output terminal function assignment		190	RUN terminal function selection	0, 1, 3, 4, 7, 8, 11 to 16, 25, 26, 46, 47, 64, 70, 80, 90, 91, 93, 95, 96, 98, 99, 100, 101, 103, 104, 107, 108, 111 to 116, 125, 126, 146, 147, 164, 170, 180, 190, 191, 193, 195, 196, 198, 199, 9999	1	0
		192	A,B,C terminal function selection	0, 1, 3, 4, 7, 8, 11 to 16, 25, 26, 46, 47, 64, 70, 80, 90, 91, 95, 96, 98, 99, 100, 101, 103, 104, 107, 108, 111 to 116, 125, 126, 146, 147, 164, 170, 180, 190, 191, 195, 196, 198, 199, 9999	1	99
Multi-speed setting		232	Multi-speed setting (speed 8)	0 to 400Hz, 9999	0.01Hz	9999
		233	Multi-speed setting (speed 9)	0 to 400Hz, 9999	0.01Hz	9999
		234	Multi-speed setting (speed 10)	0 to 400Hz, 9999	0.01Hz	9999
		235	Multi-speed setting (speed 11)	0 to 400Hz, 9999	0.01Hz	9999
		236	Multi-speed setting (speed 12)	0 to 400Hz, 9999	0.01Hz	9999
		237	Multi-speed setting (speed 13)	0 to 400Hz, 9999	0.01Hz	9999
		238	Multi-speed setting (speed 14)	0 to 400Hz, 9999	0.01Hz	9999
		239	Multi-speed setting (speed 15)	0 to 400Hz, 9999	0.01Hz	9999
-		240	Soft-PWM operation selection	0, 1	1	1
-		241	Analog input display unit switchover	0, 1	1	0
-		244	Cooling fan operation selection	0, 1	1	1
Slip compensation		245	Rated slip	0 to 50%, 9999	0.01%	9999
		246	Slip compensation time constant	0.01 to 10s	0.01s	0.5s
		247	Constant-output range slip compensation selection	0, 9999	1	9999
-		249	Earth (ground) fault detection at start	0, 1	1	0
-		250	Stop selection	0 to 100s, 1000 to 1100s, 8888, 9999	0.1s	9999
-		251	Output phase loss protection selection	0, 1	1	1
Life diagnosis		255	Life alarm status display	(0 to 15)	1	0
		256	Inrush current limit circuit life display	(0 to 100%)	1%	100%
		257	Control circuit capacitor life display	(0 to 100%)	1%	100%
		258	Main circuit capacitor life display	(0 to 100%)	1%	100%
		259	Main circuit capacitor life measuring	0, 1 (2, 3, 8, 9)	1	0
-		260	PWM frequency automatic switchover	0, 1	1	0
-		260	PWM frequency automatic switchover	0, 1	1	0
Power failure stop		261	Power failure stop selection	0, 1, 2	1	0
-		267	Terminal 4 input selection	0, 1, 2	1	0
-		268	Monitor decimal digits selection	0, 1, 9999	1	9999
-		269	Parameter for manufacturer setting. Do not set.			

Function	Pr. No.		Parameter name	Setting range	Min. unit	Initial value
-		295	Magnitude of frequency change setting	0, 0.01, 0.10, 1.00, 10.00	0.01	0
Password function		296	Password lock level	1 to 6, 101 to 106, 9999	1	9999
		297	Password lock/unlock	1000 to 9999 (0 to 5, 9999)	1	9999
-		298	Frequency search gain	0 to 32767, 9999	1	9999
-		299	Rotation direction detection selection at restarting	0, 1, 9999	1	0
RS-485 communication		338	Communication operation command source	0, 1	1	0
		339	Communication speed command source	0, 1, 2	1	0
		340	Communication startup mode selection	0,1,10	1	0
		342	Communication EEPROM write selection	0, 1	1	0
		343	Communication error count	-	1	0
Second motor constant		450	Second applied motor	0, 1, 9999	1	9999
Remote Output		495	Remote output selection	0, 1, 10, 11	1	0
		496	Remote output data 1	0 to 4095	1	0
-		502	Stop mode selection at communication error	0, 1, 2	1	0
Maintenance		503	Maintenance timer	0 (1 to 9998)	1	0
		504	Maintenance timer warning output set time	0 to 9998, 9999	1	9999
Communication		549	Protocol selection	0, 1	1	0
		551	PU mode operation command source selection	2,4,9999	1	9999
Current average value monitor		555	Current average time	0.1 to 1s	0.1s	1s
		556	Data output mask time	0 to 20s	0.1s	0s
		557	Current average value monitor signal output reference current	0 to 500A	0.01A	Rated inverter current
-		561	PTC thermistor protection level	0.5 to 30kΩ, 9999	0.01kΩ	9999
-		563	Energization time carrying-over times	(0 to 65535)	1	0
-		564	Operating time carrying-over times	(0 to 65535)	1	0
-		571	Holding time at a start	0 to 10s, 9999	0.1s	9999
PID control		575	Output interruption detection time	0 to 3600s, 9999	0.1s	1s
		576	Output interruption detection level	0 to 400Hz	0.01Hz	0Hz
		577	Output interruption cancel level	900 to 1100%	0.1%	1000%
-		611	Acceleration time at a restart	0 to 3600s, 9999	0.1s	9999
-		653	Speed smoothing control	0 to 200%	0.1%	0
-		665	Regeneration avoidance frequency gain	0 to 200%	0.1%	100
Protective function		872*9	Input phase loss protection selection	0, 1	1	0
Regeneration avoidance function		882	Regeneration avoidance operation selection	0, 1, 2	1	0
		883	Regeneration avoidance operation level	300 to 800V	0.1V	400VDC/ 780VDC*5
		885	Regeneration avoidance compensation frequency limit value	0 to 10Hz, 9999	0.01Hz	6Hz
		886	Regeneration avoidance voltage gain	0 to 200%	0.1%	100%

Function	Pr. No.	Parameter name	Setting range	Min. unit	Initial value
Free parameter	888	Free parameter 1	0 to 9999	1	9999
	889	Free parameter 2	0 to 9999	1	9999
-	891	Cumulative power monitor digit shifted times	0 to 4,9999	1	9999
Calibration parameter	C0 (900) *7	FM terminal calibration	-	-	-
	C2 (902) *7	Terminal 2 frequency setting bias frequency	0 to 400Hz	0.01Hz	0Hz
	C3 (902) *7	Terminal 2 frequency setting bias	0 to 300%	0.1%	0%
	125 (903) *7	Terminal 2 frequency setting gain frequency	0 to 400Hz	0.01Hz	60Hz
	C4 (903) *7	Terminal 2 frequency setting gain	0 to 300%	0.1%	100%
	C5 (904) *7	Terminal 4 frequency setting bias frequency	0 to 400Hz	0.01Hz	0Hz
	C6 (904) *7	Terminal 4 frequency setting bias	0 to 300%	0.1%	20%
	126 (905) *7	Terminal 4 frequency setting gain frequency	0 to 400Hz	0.01Hz	60Hz
	C7 (905) *7	Terminal 4 frequency setting gain	0 to 300%	0.1%	100%
	C22 (922) *6*7	Frequency setting voltage bias frequency (built-in potentiometer)	0 to 400Hz	0.01Hz	0
	C23 (922) *6*7	Frequency setting voltage bias (built-in potentiometer)	0 to 300%	0.1%	0
	C24 (923) *6*7	Frequency setting voltage gain frequency (built-in potentiometer)	0 to 400Hz	0.01Hz	60Hz
	C25 (923) *6*7	Frequency setting voltage gain (built-in potentiometer)	0 to 300%	0.1%	100%
PU	990	PU buzzer control	0, 1	1	1
	991	PU contrast adjustment	0 to 63	1	58
Parameter clear	Pr.CL	Parameter clear	0, 1	1	0
	ALLC	All parameter clear	0, 1	1	0
	Er.CL	Faults history clear	0, 1	1	0
Initial change list	Pr.CH	Initial value change list	-	-	-

*1 Differs according to the inverter capacity. 6%: 0.75K or lower, 4%: 1.5K to 3.7K, 3%: 5.5K, 7.5K
*2 Differs according to the inverter capacity. 5s: 3.7 or lower, 10s: 5.5K, 7.5K
*3 Differs according to the inverter capacity. 6%: 0.1K, 0.2K, 4%: 0.4K to 7.5K
*4 Writing is disabled during the communication via the PU connector (Network operation mode).
*5 Differs according to the voltage class. (200V class/400V class)
*6 Set when the FR-E500 series operation panel (PA02) is connected using a cable, and the built-in potentiometer of the operation panel is calibrated.
*7 The parameter number in parentheses is the one for use with the operation panel (PA02) of the FR-E500 series or the parameter unit (FR-PU04/FR-PU07).
*8 Communication parameters that are not cleared by parameter clear (all clear) via the RS-485 communication.
*9 The setting is available only for the three phase power supply input model.

Rated current value

For comparison of rated current values between the SC-A series and the FR-D700 series, refer to the tables below.

* In the FR-D700 series, 40W capacity models are not available. Use 0.1kW capacity models of the FR-D700 series.

Three-phase 200V

Capacity	40W	100W	200W	400W
Box type SC-A[][]B Unit type SC-A[][]U Panel surface installation type SC-AN[][]-07 Module type SC-A[][]M	0.4A	0.8A	1.4A	2.4A
Compatible FR-D720 * The values in parentheses are capacities of the FR-D720.	0.8A (0.1kW)	0.8A (0.1kW)	1.4A (0.2kW)	2.5A (0.4kW)

Single phase 200V

Capacity	100W	200W	400W
Box type SC-A[][]B Unit type SC-A[][]U Panel surface installation type SC-AN[][]-07 Module type SC-A[][]M	Reduced from 0.8A to 0.4A	Reduced from 1.4A to 0.8A	Reduced from 2.4A to 1.4A
Compatible FR-D720S * The values in parentheses are capacities of the FR-D720S.	0.8A (0.1kW)	0.8A (0.1kW)	1.4A (0.2kW)

* For single phase input, the SC-A series capacity must be one rank higher than the motor capacity. When using the FR-D700 series, select the single phase input model, FR-D720S.

Single-phase 100V

Capacity	40W	100W
Box type SC-A[][]B Unit type SC-A[][]U Panel surface installation type SC-AN[][]-07 Module type SC-A[][]M	0.4A	0.8A
Compatible FR-D710W * The values in parentheses are capacities of the FR-D710W.	0.8A (0.1kW)	0.8A (0.1kW)