

**Information for Replacement of the FR-S500  
(S500E) Series by the FR-D700 Series**

Size, connection, and parameter concerning replacement are stated from the next page.

## 1. Size

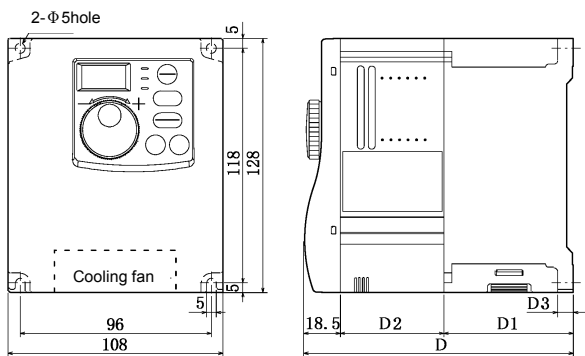
The installation size of the FR-S500 (S500E) series and of the FR-D700 series is the same.  
For details of size, refer to the outline dimension drawings on the next page and later.

Power Supply Voltage	Installed Inverter	Replacing Inverter	Installation Size
Three phase 400V	FR-S540(E)-0.4K	FR-D740-0.4K	Same size
	FR-S540(E)-0.75K	FR-D740-0.75K	Same size
	FR-S540(E)-1.5K	FR-D740-1.5K	Same size
	FR-S540(E)-2.2K	FR-D740-2.2K	Same size
	FR-S540(E)-3.7K	FR-D740-3.7K	Same size

\*The installation size of the FR-S500E series is the same as the FR-S500 series.

Outline dimension drawing (Unit: mm)

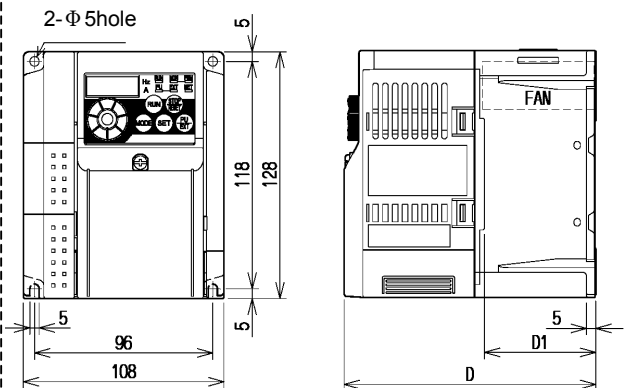
FR-S540(E)-0.4K to 3.7K



Inverter Type	D	D1	D2	D3
FR-S540(E)-0.4K	129.5	59	52	5
FR-S540(E)-0.75K				
FR-S540(E)-1.5K	135.5	65	52	8
FR-S540(E)-2.2K	155.5	65	72	8
FR-S540(E)-3.7K	165.5	65	82	8

(Note) The 0.4K and the 0.75K do not have a cooling fan.

FR-D740-0.4K to 3.7K






Inverter Type	D	D1
FR-D740-0.4K	129.5	54
FR-D740-0.75K		
FR-D740-1.5K	135.5	60
FR-D740-2.2K	155.5	60
FR-D740-3.7K	165.5	60

(Note) The 0.4K and the 0.75K do not have a cooling fan.

## 2. Connection

Since terminal names are the same, connect according to the names.  
Refer to page 5, 6 for terminal size.

[Standard type inverter]

Type		FR-S500 Terminal Name	FR-S500E Terminal Name	FR-D700 Compatible Terminal Name	Remarks
Main Circuit		R, S, T	R, S, T	R/L1, S/L2, T/L3	
		U, V, W	U, V, W	U, V, W	
			P/+, PR	P/+, PR	FR-S500 does not have PR terminal. For the FR-S500E, only FR-S520E-0.4K to 3.7K has PR terminal.
		P, N	P/+, N/-	P/+, N/-	FR-S520E-0.1K to 0.75K do not have N/- terminal.
		P, P1	P/+, P1	P/+, P1	
					
Control circuit/input signal	Contact	STF	STF	STF	
		STR	STR	STR	
		RH	RH	RH	
		RM	RM	RM	
		RL	RL	RL	
		SD	SD	SD	Isolated from terminals 5 and SE.
		PC	PC	PC	
Analog	Frequency setting	10	10	10	
		2	2	2	
		5	5	5	Isolated from terminals SD and SE.
		4	4	4	
Control circuit output signal	Contact	A, B, C	A, B, C	A, B, C	
	Open collector	RUN	RUN	RUN	
		SE	SE	SE	Isolated from terminals 5 and SD.
	Pulse	FM	FM	FM	
Communication	RS-485	PU connector (-R type only)	PU connector	PU connector	For the FR-S500, FR-S500-□K-R and FR-S500E have PU connector.

Terminal Size

[Main circuit terminal]

Voltage Class	Capacity	FR-S500				FR-S500E				FR-D700			
		R, S, T	U, V, W	P, N, P1	⊕	R, S, T	U, V, W	P/+, N/- <sup>*1</sup> P1, PR <sup>*2</sup>	⊕	R/L1, S/L2, T/L3	U, V, W	P/+, N/- P1, PR	⊕
Three phase 400V	0.4K to 3.7K	M4	M4	M4	M4	M4	M4	M4	M4	M4	M4	M4	M4

\*1 FR-S520E-0.1K to 0.75K do not have N/- terminal.

\*2 Only FR-S520E-0.4K to 3.7K have PR terminal.

[Control circuit terminal]

FR-S500, S500E		FR-D700
Control circuit		Control circuit
Except for A, B, C	A, B, C	
M2 insertion type flathead screw terminal	M3 insertion type flathead screw terminal	Spring clamp terminal

(Note 1) In case when using bar terminals of Phoenix Contact Co., Ltd. introduced for the FR-S500, S500E, they are not compatible with the FR-D700 since it does not match with the spring clamp terminal block. (Depends on the size difference of a bar terminal, some other bar terminal may not be wired to the FR-D700.)

In such a case, cut the bar terminal and strip off the wire to make it a bare wire, or use bar terminals introduced below. Also check for the applicable wire size.

Table. FR-D700 control terminal block applicable wire size (bare wire)

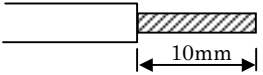
Wire Stripping Size	Applicable Bare Wire Size
 <p>Wire the stripped cable after twisting it to prevent it from becoming loose. In addition, do not solder it.</p>	0.3 to 0.75

Table. FR-D700 control terminal block applicable wire size (bar terminal)

Bar Terminal Type (Phoenix Contact Co., Ltd.)		Applicable Wire Size (mm <sup>2</sup> )
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)

\*The bar terminal length of the FR-D700 series and FR-S500 and FR-S500E series are different.

(FR-D700 series: 10mm, FR-S500, FR-S500E series: 6mm)

### 3. Parameter

Although most parameter numbers are the same, some setting values differ. Refer to the following table and set the parameter.

**List of FR-D700 series parameters compatible with the FR-S500 and S500E series**

The following shows parameter settings when replacing the FR-S500 and S500E series by the FR-D700 series.  
 When the FR-S500 and FR-S500E series settings are changed from factory settings, set parameters of the FR-D700 series according to the following table.  
 When the FR-S500 and S500E series settings are factory settings, it is unnecessary to change parameters of the FR-D700 series.

Numbers of parameters differ from that of the FR-S500 and S500E series.

Setting  $\odot$ : Set the same value as FR-S500 and S500E

$\Delta$ : Setting needs to be changed from FR-S500 and S500E

X: Adjust and set on the FR-D700

Parameter List of FR-S500 and S500E				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
0	Torque boost	0 to 15%	Except for the following: 6% S540-1.5K, 2.2K: 5% S540E-1.5K, 2.2K: 5% S540-3.7K: 4% S540E-3.7K: 4%	0	Torque boost	0 to 30%	0.75K or less: 6% 1.5K to 3.7K: 4% 5.5K to 7.5K: 3%	$\Delta$	If the setting of the S500 is the factory setting, setting change is not required for D700. If there is a setting change, set an percentage ratio of factory setting. (Example) When the FR-S540-1.5K setting is 6%, set $(6/5) \times 4 = 4.8\%$ for the FR-D740-1.5K.
1	Maximum frequency	0 to 120Hz	60Hz	1	Maximum frequency	0 to 120Hz	120Hz	$\odot$	Factory setting was changed.
2	Minimum frequency	0 to 120Hz	0Hz	2	Minimum frequency	0 to 120Hz	0Hz	$\odot$	
3	Base frequency	0 to 120Hz	60Hz	3	Base frequency	0 to 400Hz	60Hz	$\odot$	
4	Multi-speed setting (high speed)	0 to 120Hz	60Hz	4	Multi-speed setting (high speed)	0 to 400Hz	60Hz	$\odot$	
5	Multi-speed setting (middle speed)	0 to 120Hz	30Hz	5	Multi-speed setting (middle speed)	0 to 400Hz	30Hz	$\odot$	
6	Multi-speed setting (low speed)	0 to 120Hz	10Hz	6	Multi-speed setting (low speed)	0 to 400Hz	10Hz	$\odot$	
7	Acceleration time	0 to 999s	5s	7	Acceleration time	0 to 3600s	3.7K or less: 5s 5.5K or more: 10s	$\odot$	
8	Deceleration time	0 to 999s	5s	8	Deceleration time	0 to 3600s	3.7K or less: 5s 5.5K or more: 10s	$\odot$	
9	Electronic thermal O/L relay	0 to 50A	Rated output current	9	Electronic thermal O/L relay	0 to 500A	Rated output current	$\odot$	Set the rated motor current.
10	DC injection brake operation frequency	0 to 120Hz	3Hz	10	DC injection brake operation frequency	0 to 120Hz	3Hz	$\odot$	
11	DC injection brake operation time	0 to 10s	0.5s	11	DC injection brake operation time	0 to 10s	0.5s	$\odot$	
12	DC injection brake voltage	0 to 15%	6%	12	DC injection brake operation voltage	0 to 30%	0.1K, 0.2K: 6% 0.4K to 7.5K: 4%	$\Delta$	If the setting of the S500 is the factory setting, setting change is not required for D700. If there is a setting change, set an percentage ratio of factory setting. (Example) When the FR-S540-7.5K setting is 7%, set $(7/6) \times 4 = 4.7\%$ for the FR-D740-7.5K.

Parameter List of FR-S500 and S500E				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
13	Starting frequency	0 to 60Hz	0.5Hz	13	Starting frequency	0 to 60Hz	0.5Hz	⊙	
14	Load pattern selection	0 to 3	0	14	Load pattern selection	0 to 3	0	⊙	
15	Jog frequency	0 to 120Hz	5Hz	15	Jog frequency	0 to 400Hz	5Hz	⊙	
16	Jog acceleration/ deceleration time	0 to 999s	0.5s	16	Jog acceleration/ deceleration time	0 to 3600s	0.5s	⊙	
17	RUN key rotation direction selection	0, 1	0	40	RUN key rotation direction selection	0, 1	0	⊙	
19	Base frequency voltage	0 to 1000V, 888, ---	---	19	Base frequency voltage	0 to 1000V, 8888, 9999	9999	⊙	
20	Acceleration/deceleration reference frequency	1 to 120Hz	60Hz	20	Acceleration/deceleration reference frequency	1 to 400Hz	60Hz	⊙	
21	Stall prevention function selection	0 to 31, 100	0	156	Stall prevention operation selection	0 to 31, 100, 101	0	⊙	
22	Stall prevention operation level	0 to 200%	150%	22	Stall prevention operation level	0 to 200%	150%	⊙	
23	Stall prevention operation level compensation factor at double speed	0 to 200%, ---	---	23	Stall prevention operation level compensation factor at double speed	0 to 200%, 9999	9999	⊙	
24	Multi-speed setting (speed 4)	0 to 120Hz, ---	---	24	Multi-speed setting (speed 4)	0 to 400Hz, 9999	9999	⊙	
25	Multi-speed setting (speed 5)	0 to 120Hz, ---	---	25	Multi-speed setting (speed 5)	0 to 400Hz, 9999	9999	⊙	
26	Multi-speed setting (speed 6)	0 to 120Hz, ---	---	26	Multi-speed setting (speed 6)	0 to 400Hz, 9999	9999	⊙	
27	Multi-speed setting (speed 7)	0 to 120Hz, ---	---	27	Multi-speed setting (speed 7)	0 to 400Hz, 9999	9999	⊙	
28	Stall prevention operation reduction starting frequency	0 to 120Hz	60Hz	66	Stall prevention operation reduction starting frequency	0 to 400Hz	60Hz	⊙	
29	Acceleration/deceleration pattern	0, 1, 2	0	29	Acceleration/deceleration pattern selection	0, 1, 2	0	⊙	
30	Extended function display selection	0, 1	0	160	Extended function display selection	0, 9999	9999	△	Set 0 to select extended mode.
31	Frequency jump 1A	0 to 120Hz, ---	---	31	Frequency jump 1A	0 to 400Hz, 9999	9999	⊙	
32	Frequency jump 1B	0 to 120Hz, ---	---	32	Frequency jump 1B	0 to 400Hz, 9999	9999	⊙	
33	Frequency jump 2A	0 to 120Hz, ---	---	33	Frequency jump 2A	0 to 400Hz, 9999	9999	⊙	
34	Frequency jump 2B	0 to 120Hz, ---	---	34	Frequency jump 2B	0 to 400Hz, 9999	9999	⊙	
35	Frequency jump 3A	0 to 120Hz, ---	---	35	Frequency jump 3A	0 to 400Hz, 9999	9999	⊙	
36	Frequency jump 3B	0 to 120Hz, ---	---	36	Frequency jump 3B	0 to 400Hz, 9999	9999	⊙	
37	Speed display	0, 0.1 to 999	0	37	Speed display	0, 0.01 to 9998	0	⊙	

Parameter List of FR-S500 and S500E				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
38	Frequency setting voltage gain frequency	1 to 120Hz	60Hz	125	Terminal 2 frequency setting gain frequency	0 to 400Hz	60Hz	△	Frequency at 5V(10V) input for the FR-S500, and frequency to the voltage set with C4 for the FR-D700. If frequencies do not match, calibrate again.
39	Frequency setting current gain frequency	1 to 120Hz	60Hz	126	Terminal 4 frequency setting gain frequency	0 to 400Hz	60Hz	△	Frequency at 20mA input for the FR-S500 and frequency to the current set with C7 for the FR-D700. If frequencies do not match, calibrate again.
40	Start-time earth(ground) fault detection selection	0, 1	0	249	Earth (ground) fault detection at start	0, 1	0	◎	
41	Up-to-frequency sensitivity	0 to 100%	10%	41	Up-to-frequency sensitivity	0 to 100%	10%	◎	
42	Output frequency detection	0 to 120Hz	6Hz	42	Output frequency detection	0 to 400Hz	6Hz	◎	
43	Output frequency detection for reverse rotation	0 to 120Hz, ---	---	43	Output frequency detection for reverse rotation	0 to 400Hz, 9999	9999	◎	
44	Second acceleration/ deceleration time	0 to 999s	5s	44	Second acceleration/deceleration time	0 to 3600s	3.7K or less: 5s 5.5K, 7.5K: 10s	◎	
45	Second deceleration time	0 to 999s, ---	-	45	Second deceleration time	0 to 3600s, 9999	9999	◎	
46	Second torque boost	0 to 15%, ---	---	46	Second torque boost	0 to 30%, 9999	9999	△	Set same value as S500. (When PWM frequency selection Pr. 72 = 1 for E500)
47	Second V/F (base frequency)	0 to 120Hz, ---	---	47	Second V/F (base frequency)	0 to 400Hz, 9999	9999	◎	
48	Output current detection level	0 to 200%	150%	150	Output current detection level	0 to 200%	150%	◎	
49	Output current detection signal delay time	0 to 10s	0s	151	Output current detection delay time	0 to 10s	0s	◎	
50	Zero current detection level	0 to 200%	5%	152	Zero current detection level	0 to 200%	5%	◎	
51	Zero current detection period	0.05 to 1s	0.5s	153	Zero current detection time	0 to 1s	0.5s	◎	
52	Control panel display data selection	0, 1, 100	0	52	DU/PU main display data selection	0, 5, 7 to 12, 14, 20, 23 to 25, 52 to 57, 61, 62, 100	0	◎	When Pr. 52 = 23, unit of actual operation time is different.
53	Frequency setting operation selection	0, 1	0	161	Frequency setting/key lock operation selection	0, 1, 10, 11	0	◎	
54	FM terminal function selection	0, 1	0	54	FM terminal function selection	1 to 3, 5, 7 to 12, 14, 21, 24, 52, 53, 61, 62	1	△	Set 1 when a setting value of S500 is 0, or set 2 when a setting value of S500 is 1.
55	Frequency monitoring reference	0 to 120Hz	60Hz	55	Frequency monitoring reference	0 to 400Hz	60Hz	◎	
56	Current monitoring reference	0 to 50A	Rated output current	56	Current monitoring reference	0 to 500A	Rated output current	◎	
57	Restart coasting time	0 to 5s, ---	---	57	Restart coasting time	0, 0.1 to 5.8s, 9999	9999	△	When Pr.57 = 0, coasting time is different. Generally, setting is not required. To make the time same as S500, set 0.5s for 1.5K or less, or set 1.0s for 2.2K or more.
58	Restart cushion time	0 to 60s	1.0s	58	Restart cushion time	0 to 60s	1.0s	◎	
59	Remote setting function selection	0, 1, 2	0	59	Remote function selection	0, 1, 2, 3	0	◎	

Parameter List of FR-S500 and S500E				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
60	RL terminal function selection	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 16, ---	0	180	RL terminal function selection	0 to 5, 7, 8, 10, 12, 14, 16, 18, 24, 25, 62, 65 to 67, 9999	0	⊙	
61	RM terminal function selection		1	181	RM terminal function selection		1	⊙	
62	RH terminal function selection		2	182	RH terminal function selection		2	⊙	
63	STR terminal function selection		---	179	STR terminal function selection		61	⊙	
64	RUN terminal function selection	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 93, 95, 98, 99	0	190	RUN terminal function selection	0, 1, 3, 4, 7, 8, 11 to 16, 25, 26, 46, 47, 64, 70, 90, 91, 95, 96, 98, 99, 100, 101, 103, 104, 107, 108, 111 to 116, 125, 126, 146, 147, 164, 170, 190, 191, 195, 196, 198, 199, 9999	0	⊙	
65	A, B, C terminal function selection		99	192	A, B, C terminal function selection		99	⊙	
66	Retry selection	0, 1, 2, 3	0	65	Retry selection	0 to 5	0	⊙	
67	Number of retries at alarm occurrence	0 to 10, 101 to 110	0	67	Number of retries at fault occurrence	0 to 10, 101 to 110	0	⊙	
68	Retry waiting time	0.1 to 360s	1s	68	Retry waiting time	0.1 to 360s	1s	⊙	
69	Retry count display erase	0	0	69	Retry count display erase	0	0	⊙	
70	Soft-PWM setting	S500:0, 1 S500E:0, 1, 10, 11	1	240	Soft-PWM operation selection	0, 1	1	△	Set 0 when a setting value of S500E is 10, and set 1 when a setting value of S500E is 11.
71	Applied motor	S500:0, 1 S500E:0, 1, 100, 101	0	71	Applied motor	0, 1, 3 to 6, 13 to 16, 23, 24, 40, 43, 44, 50, 53, 54	0	△	When 100s value is set for S500E, set a value taking 100 from the value, and set Pr. 450 = 1.
				450	Second applied motor	0, 1, 9999	9999	×	
72	PWM frequency selection	0 to 15	1	72	PWM frequency selection	0 to 15	1	⊙	
73	0-5V/0-10V selection	0, 1	0	73	Analog input selection	0, 1, 10, 11	1	△	Set 1 when a setting value of S500 and S500E is 0, or set 0 when a setting value of S500 and S500E is 1.
74	Input filter time constant	0 to 8	1	74	Input filter time constant	0 to 8	1	⊙	
75	Reset selection/PU stop selection	0, 1, 14, 15,	14	75	Reset selection /disconnected PU detection /PU stop selection	0 to 3, 14 to 17	14	⊙	
76	Cooling fan operation selection	0, 1	1	244	Cooling fan operation selection	0, 1	1	⊙	
77	Parameter write disable selection	0, 1, 2	0	77	Parameter write selection	0, 1, 2	0	⊙	
78	Reverse rotation prevention selection	0, 1, 2	0	78	Reverse rotation prevention selection	0, 1, 2	0	⊙	
79	Operation mode selection	0 to 4, 7, 8	0	79	Operation mode selection	0 to 4, 6, 7	0	△	If the setting of the S500 is 8, set Pr. 79 = 7 and Pr. 182 = 16 for D700.
80	Multi-speed setting (speed 8)	0 to 120Hz, ---	---	232	Multi-speed setting (speed 8)	0 to 400Hz, 9999	9999	⊙	
81	Multi-speed setting (speed 9)	0 to 120Hz, ---	---	233	Multi-speed setting (speed 9)	0 to 400Hz, 9999	9999	⊙	
82	Multi-speed setting (speed 10)	0 to 120Hz, ---	---	234	Multi-speed setting (speed 10)	0 to 400Hz, 9999	9999	⊙	
83	Multi-speed setting (speed 11)	0 to 120Hz, ---	---	235	Multi-speed setting (speed 11)	0 to 400Hz, 9999	9999	⊙	
84	Multi-speed setting (speed 12)	0 to 120Hz, ---	---	236	Multi-speed setting (speed 12)	0 to 400Hz, 9999	9999	⊙	

Parameter List of FR-S500 and S500E				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
85	Multi-speed setting (speed 13)	0 to 120Hz, ---	---	237	Multi-speed setting (speed 13)	0 to 400Hz, 9999	9999	⊙	
86	Multi-speed setting (speed 14)	0 to 120Hz, ---	---	238	Multi-speed setting (speed 14)	0 to 400Hz, 9999	9999	⊙	
87	Multi-speed setting (speed 15)	0 to 120Hz, ---	---	239	Multi-speed setting (speed 15)	0 to 400Hz, 9999	9999	⊙	
88	PID action selection	20, 21	20	128	PID action selection	0, 20, 21, 40 to 43	0	△	Set same value as S500.
89	PID proportional band	0.1 to 999%, ---	100%	129	PID proportional band	0.1 to 1000%, 9999	100%	⊙	
90	PID integral time	0.1 to 999s, ---	1s	130	PID integral time	0.1 to 3600s, 9999	1	⊙	
91	PID upper limit	0 to 100%, ---	---	131	PID upper limit	0 to 100%, 9999	9999	⊙	
92	PID lower limit	0 to 100%, ---	---	132	PID lower limit	0 to 100%, 9999	9999	⊙	
93	PID action set point for PU operation	0 to 100%	0%	133	PID action set point	0 to 100%, 9999	9999	△	When using terminal 2 of D700 as set point, set 9999. Note that, if a value other than 9999 is set for D700, the value is used as the set point including other operation mode.
94	PID differential time	0.01 to 10s, ---	---	134	PID differential time	0.01 to 10s, 9999	9999	⊙	
95	Rated motor slip	0 to 50%, ---	---	245	Rated slip	0 to 50%, 9999	9999	⊙	
96	Slip compensation time constant	0.01s to 10s	0.5s	246	Slip compensation time constant	0.01 to 10s	0	⊙	
97	Constant power range slip compensation selection	0, ---	---	247	Constant-power range slip compensation selection	0, 9999	9999	⊙	
98	Automatic torque boost selection (Motor capacity)	0.1 to 3.7kW	---	80	Motor capacity	0.1 to 7.5kW, 9999	9999	⊙	Use general-purpose magnetic flux vector control for D700 if automatic torque boost is selected for S500. Set the same value as S500 in Pr. 80, and perform auto tuning with setting Pr. 71, 83, and 84.
				82	Motor excitation current	0 to 500A, 9999	9999	×	
				83	Rated motor voltage	0 to 1000V	200/400V	×	
				84	Rated motor frequency	10 to 120Hz	60Hz	×	
99	Motor primary resistance	0 to 50Ω, ---	---	90	Motor constant (R1)	0 to 50Ω, 9999	9999	×	
				96	Auto tuning setting/status	0, 11, 21	0	×	
C1 (900)	FM terminal calibration	--	--	900	FM terminal calibration	--	--	⊙	
C2 (902)	Frequency setting voltage bias frequency	0 to 60Hz	0Hz	902	Terminal 2 frequency setting bias frequency	0 to 400Hz	0Hz	△	Different calibration method
C3 (902)	Frequency setting voltage bias	0 to 300%	0%	902	Terminal 2 frequency setting bias	0 to 300%	0%	△	Different calibration method
				903	Terminal 2 frequency setting gain frequency	0 to 400Hz	60Hz	△	Different calibration method
C4 (903)	Frequency setting voltage gain	0 to 300%	96%	903	Terminal 2 frequency setting gain	0 to 300%	100%	△	Different calibration method
C5 (904)	Frequency setting current bias frequency	0 to 60Hz	0Hz	904	Terminal 4 frequency setting bias frequency	0 to 400Hz	0Hz	△	Different calibration method
C6 (904)	Frequency setting current bias	0 to 300%	20%	904	Terminal 4 frequency setting bias	0 to 300%	20%	△	Different calibration method
				905	Terminal 4 frequency setting gain frequency	0 to 400Hz	60Hz	△	Different calibration method
C7 (905)	Frequency setting current gain	0 to 300%	100%	905	Terminal 4 frequency setting gain	0 to 300%	100%	△	Different calibration method

Parameter List of FR-S500 and S500E (The following parameters are available for FR-S500E)				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
H1 (503)	Maintenance timer	0 to 999	0	503	Maintenance timer	0 to 9998	0	-	Read only
H2 (504)	Maintenance timer alarm output set time	0 to 999, ---	36	504	Maintenance timer alarm output set time	0 to 10s	0	△	To make the same setting as S500E, set a value of 10 times of the S500.
H3 (555)	Current average time	0.1 to 1s	1s	555	Current average time	0.1 to 1s	1s	◎	
H4 (556)	Data output mask time	0 to 20s	0s	556	Data output mask time	0 to 20s	0s	◎	
H5 (557)	Current average value monitor signal output reference current	0.1 to 999A	1A	557	Current average value monitor signal output reference current	0 to 500A	Rated inverter current	△	Set same value as S500E.
H6 (162)	Automatic restart after instantaneous power failure selection	0, 1, 10	1	162	Automatic restart after instantaneous power failure selection	0, 1, 10, 11	1	◎	
H7 (559)	Second electronic thermal O/L relay	0 to 50A, ---	---	51	Second electronic thermal O/L relay	0 to 500A, 9999	9999	◎	
b 1 (560)	Regenerative function selection	0, 1	0	30	Regenerative function selection	0, 1, 2	0	◎	
b 2 (561)	Special regenerative brake duty	0 to 30%	0%	70	Special regenerative brake duty	0 to 30%	0%	◎	

Parameter List of FR-S500 and S500E (The following parameters are available for FR-S500-□k-R, FR-S500E)				FR-D700 Compatible Parameters				Parameter Setting	
Function Number	Name	Setting Range	Factory Setting	Function Number	Name	Setting Range	Factory Setting	Setting	Remarks
n1 (331)	Communication station number	0 to 31	0	117	PU communication station number	0 to 31	0	◎	
n2 (332)	Communication speed	48, 96, 192	192	118	PU communication speed	48, 96, 192, 384	192	◎	
n3 (333)	Stop bit length	0, 1, 10, 11	1	119	PU communication stop bit length	0, 1, 10, 11	1	◎	
n4 (334)	Parity check presence/absence	0, 1, 2	2	120	PU communication parity check	0, 1, 2	2	◎	
n5 (335)	Number of communication retries	0 to 10, ---	1	121	Number of PU communication retries	0 to 10, 9999	1	◎	
n6 (336)	Communication check time interval	0 to 999s	---	122	PU communication check time interval	0 to 999.8s, 9999	0	◎	
n7 (337)	Waiting time setting	0 to 150ms, ---	---	123	PU communication waiting time setting	0 to 150ms, 9999	9999	△	
n8 (338)	Operation command source	0, 1	0	338	Communication operation command source	0, 1	0	◎	
n9 (339)	Speed command source	0, 1	0	339	Communication speed command source	0, 1, 2	0	◎	
n10 (340)	Link startup mode selection	0, 1	0	340	Communication startup mode selection	0, 1, 10	0	◎	
n11 (341)	CR/LF selection	0, 1, 2	1	124	PU communication CR/LF selection	0, 1, 2	1	◎	
n12 (342)	EEPROM write selection	0, 1	0	342	Communication E2PROM write selection	0, 1	0	◎	
n13 (145)	PU display language selection	0 to 7	0	145	PU display language selection	0 to 7	0	◎	
n14 (990)	PU buzzer control	0, 1	1	990	PU buzzer control	0, 1	1	◎	
n15 (991)	PU contrast adjustment	0 to 63	58	991	PU contrast adjustment	0 to 63	58	◎	
n16 (992)	PU main display screen data selection	0, 100	0						Set by Pr. 52
n17 (993)	Disconnected PU detection/PU setting lock	0, 1, 10	0	75	Reset selection /disconnected PU detection /PU stop selection	0 to 3, 14 to 17	14	△	Set 14 when a setting value of S500 and S500E is 0, 10, or set 16 when a setting value of S500 and S500E is 1.

#### 4. Option

The following shows the compatibility of options used with the FR-S500 (S500E) series on the FR-D700 series.

Name		Option Type	
		FR-S500, S500E	FR-D700
Stand-alone	Parameter unit	FR-PU04	There are some restrictions, such as parameter copy is invalid, etc.
	Parameter unit connection cable	FR-CB201, 203, 205	Compatible
	Brake resistor	MRS□□, MYS□□	Compatible
		FR-ABR-(H)□□K	Compatible
	Brake unit	BU-1500 to 15K, H7.5K, H15K	Compatible
		Discharging resistor GZG□□, GRZG□□	Compatible
	Power factor improving AC reactor	FR-BAL-(H)□□K	Compatible
	Power factor improving DC reactor	FR-BEL-(H)□□K	Compatible
	Capacitor type filter	FR-BIF-(H)	Compatible
	Common mode filter	FR-BSF01、FR-BLF	Compatible
	FR-CV type power regeneration common converter	FR-CV-(H)7.5K(-AT)	Compatible
		Dedicated, standalone reactor FR-CVL-(H)7.5K	Compatible
FR-HC type high power factor converter	FR-HC-(H)7.5K	Compatible	
Surge voltage suppression filter	FR-ASF-H□□K	Compatible	
Manual controller/speed controller	Manual controller	FR-AX	Compatible
	DC tach. follower	FR-AL	Compatible
	Three speed selector	FR-AT	Compatible
	Remote speed setter	FR-FK	Compatible
	Ratio setter	FR-FH	Compatible
	Speed detector	FR-FP	Compatible
	Master controller	FR-FG	Compatible
	Soft starter	FR-FC	Compatible
	Deviation detector	FR-FD	Compatible
	Preamplifier	FR-FA	Compatible
Others	Pilot generator	QVAH-10	Compatible
	Deviation sensor	YVGC-500W-NS	Compatible
	Frequency setting potentiometer	WA2W 1kΩ	Compatible
	Frequency meter	YM206NRI 1mA	Compatible
	Calibration resistor	RV24YN 10kΩ	Compatible
	Inverter setup software	FR-SW1-SETUP-WJ	Not compatible. (compatible with the FR-SW3-SETUP-WJ)

## 5. Main differences with the FR-S500, S500E series

### 1) Main specification comparison and differences

Item		FR-S500, S500E	FR-D700
Model	Three-phase 200V class	FR-S520(E)-0.1K to 3.7K (seven models)	(To be released)
	Three-phase 400V class	FR-S540(E)-0.4K to 3.7K (five models)	FR-D740-0.4K to 15K (nine models) (11K and 15K will be released)
	Single phase 200V class	FR-S520S(E)-0.1K to 1.5K (five models)	(To be released)
	Single phase 100V class	FR-S510W(E)-0.1K to 0.75K (four models)	(To be released)
Control method		Soft-PWM control/high carrier frequency PWM control (V/F control, or automatic torque boost control can be selected) Long wiring mode	Soft-PWM control/high carrier frequency PWM control (V/F control, general-purpose magnetic flux vector control, optimum excitation control can be selected) Long wiring mode became unnecessary and was deleted.
Overload capacity		150% 60s, 200% 0.5s (inverse-time characteristics)	150% 60s, 200% 0.5s (inverse-time characteristics)
Frequency setting signal	Analog input	Terminal 2: 0 to 10V, 0 to 5V can be selected Terminal 4: 4 to 20mA	Terminal 2: 0 to 10V, 0 to 5V can be selected Terminal 4: 0 to 10V, 0 to 5V, 4 to 20mA can be selected
	Digital input	Input using the setting dial of the operation panel or parameter unit	Input using the setting dial of the operation panel or parameter unit
Input signal	Terminal function		<Additional function> Inverter operation enable (X10), PU operation external interlock (X12), Magnetic flux vector/V/F switchover (X18), PU-NET operation switchover (X65), External-NET operation switchover (X66), Command source switchover (X67)
	Terminal function selection	Pr.60 to Pr.63 (input terminal function selection)	Addition of Pr.178 (STF)
Output signal	Terminal function	With current average value monitor (Y93)	<Additional function> Regeneration brake pre-alarm (RBP), electronic thermal pre-alarm (THP), brake opening request (BOF), fan failure (FAN), heatsink overheat pre-alarm (FIN), deceleration at an instantaneous power failure (Y46), PID control activated (PID), during retry (Y46), PID output interruption (SLEEP), life alarm (Y90), current average value monitor (Y93) *Negative logic is added to all terminal functions
	Output signal for indicator	Output frequency and output voltage only	<Additional function> Output voltage, frequency setting value, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, output power, reference voltage output, motor load factor, cumulative power, PID set point, PID measured value, PID deviation, motor thermal load factor, inverter thermal load factor
Protective/warning function		With brake transistor alarm	<Additional function> Input phase loss, brake transistor alarm, output phase loss, output current detection value excess, inrush resistor overheat, communication alarm, analog input alarm, PTC thermistor operation, safety circuit alarm, regeneration brake pre-alarm, electronic thermal pre-alarm, maintenance output, operation panel lock, password locked, safety input

Item		FR-S500, S500E	FR-D700
Outline dimension		Compatible	
Installation size		Compatible	
Main circuit terminal block		Compatible (screw type terminal block)	
Control circuit terminal block and screw size		Fixed insertion terminal block Flathead screw M3: ABC terminal Flathead screw M2: except for ABC terminal	Spring clamp terminal
Control terminal cable size when bar terminal is used		0.3 to 0.75mm <sup>2</sup>	0.3 to 1.5mm <sup>2</sup>
Cooling fan position		Placed below the inverter	For all capacities, fans are placed on top of the inverter. Clearance is necessary in the above for replacement of the cooling fan.
Operation panel		Integrated to the body, not removable.	Integrated to the body, not removable.
Parameter (function)		Compatible with the conventional models (some functions were partially changed or deleted)	
Parameter unit	FR-PU07	Compatible	Compatible
	FR-PU04	Compatible	Compatible (partially restricted)
	FR-PU03 /FR-ARW03	Not compatible	Not compatible
	FR-DU01 FR-PU02/FR-ARW		
PU connection cable	FR-CB2□□	Compatible	Compatible
	FR-CBL□□	Not compatible	Not compatible
Plug-in option		Not compatible	Not compatible
Inrush current limit circuit		Provided with all capacity	Provided with all capacity
Design life	Cooling fan	2 to 3 years	10 years
	Electrolytic capacitor	5 years	10 years
Stand-alone option (noise filter, reactor, etc.)		Compatible	Refer to 4. Option

Refer to 1. Size

Refer to 4. Option

2) Parameter comparison description and main difference

Item	Parameter Comparison Description	Main differences with the FR-S500 and S500E				Remarks
		Added function	Function change	Name change	Parameter number change	
1	Torque boost (Pr.0)		○			Change: Initial value change FR-S500, S500E Other than below: 6% S540, S540E-1.5K, 2.2K: 5% S540, S540E-3.7K: 4% FR-D700 0.75K or less: 6% 1.5K to 3.7K: 4% 5.5K, 7.5K: 3%
2	DC injection brake operation voltage (Pr.12)		○			Change: Initial value change FR-D700 S540, S540E-0.4K to 3.7K: 6% 0.1K, 0.2K: 6% 0.4K to 7.5K: 4%
3	MRS input selection	○				Selection of a, b contact input of the MRS signal
4	Operation panel	○				RUN key rotation direction selection (Pr.40), frequency setting/key lock operation selection (Pr.161), and monitor digits selection (Pr.268) have added
5	Stall prevention function	○	○			1) Addition: Setting of second stall prevention operation level (Pr.48) 2) Addition: Selection of fast-response current limit operation at driving (Pr.156) 3) Addition: Setting of OL signal output timer (Pr.157)
6	Second electronic thermal O/L relay				○	Changed from H7 (559) to Pr.51
7	Monitor function (DU/PU monitor display, terminal FM output)	○	○			1) Addition/change: Monitor item of operation panel and terminal FM (Pr.52 and Pr.54) 2) Addition: Setting of watt-hour meter clear (Pr.170) 3) Addition: Energization time and operating time carrying-over times (Pr.563, Pr.564)
8	Remote setting function		○			Addition: Clear of remotely set frequency by turning OFF STF and STR (Pr.59)
9	Energy saving control selection	○				Optimum excitation control can be selected under V/F control (Pr.60)
10	Retry selection		○			Addition: Description of fault which perform retry
11	Applied motor (second applied motor)	○	○			1) Addition: Selection of SF-HR, SF-HRCA (Pr.71) 2) Addition: Selection for reading and changing of offline auto tuning data 3) Addition: Setting of second stall prevention operation level (Pr.450) 4) Change: Change applied motor (Pr.71) to the second applied motor (Pr.450) by turning ON/OFF of RT signal

Item	Parameter Comparison Description	Main differences with the FR-S500 and S500E				Remarks						
		Added function	Function change	Name change	Parameter number change							
12	Selection of analog input specifications	○	○	○		1) Name: Change of 0 to 5, 0 to 10V selection to analog input selection 2) Change: Change of the Pr.73 setting value and initial value  <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">FR-S500、S500E</td> <td style="width: 50%;">FR-D700</td> </tr> <tr> <td>0: 0 to 5V (initial value)</td> <td>0: 0 to 10V</td> </tr> <tr> <td>1: 0 to 10V</td> <td>1: 0 to 5V (initial value)</td> </tr> </table> 2) Addition: Terminal 4 input selection (Pr.267)	FR-S500、S500E	FR-D700	0: 0 to 5V (initial value)	0: 0 to 10V	1: 0 to 10V	1: 0 to 5V (initial value)
FR-S500、S500E	FR-D700											
0: 0 to 5V (initial value)	0: 0 to 10V											
1: 0 to 10V	1: 0 to 5V (initial value)											
13	Selection of operation mode, command source, and control source	○	○			1) Addition/change: Operation command source, speed command source selection (Pr.338, Pr.339) 2) Addition/change: Link startup mode selection (Pr.340) 3) Addition: PU mode operation command selection (Pr.551) 4) Change: Operation mode setting 8 was deleted, but compatible with using X16 signal						
14	Offline auto tuning function	○	○			1) Addition: Setting of motor constants (R1) (Pr.90) 2) Addition: Selection of auto tuning setting of motor constants of motor constants (R1) (Pr.96) 3) Change: Setting range of the rated motor frequency (Pr.84)						
15	Communication setting	○	○			1) Addition: Setting of communication speed 38400bps (Pr.118) 2) Addition: Modbus RTU communication setting (Pr.549) 3) Addition: Stop mode at fault selection (Pr.502) 4) Addition: Addition of "multi command mode" 5) Change: Setting range of communication station number (Pr.117)						

Item	Parameter Comparison Description	Main differences with the FR-S500 and S500E				Remarks
		Added function	Function change	Name change	Parameter number change	
16	Terminal 2 (terminal 4) frequency setting bias (frequency), Terminal 2 (terminal 4) frequency setting gain (frequency) (Pr.902 to 905)	○	○	○		1) Name: Frequency setting voltage (current) bias and gain changed to Terminal 2 (terminal 4) frequency setting bias and gain 2) Addition: Setting of analog input display unit switchover (Pr.241) 3) Change: Setting range of bias and gain of terminal 2 and terminal 4 4) Change: Frequency setting of the maximum voltage (current) input • Change from Pr.38 to Pr.125 • Change from Pr.39 to Pr.126
17	PID control function	○	○			1) Addition: PID control automatic switchover function (Pr.127) 2) Addition: PID action selection item (Pr.128) 3) Addition: Input signal (PID control valid terminal: X14), Output signal (during PID control: Y47)
18	Output current detection function		○			Change: Setting range of zero current detection time (Pr.153)
19	Extended function display selection (Pr.160)				○	Change: Parameter number is changed from Pr.30 to Pr.160
20	Automatic restart after instantaneous power failure function	○				Setting of automatic restart after instantaneous power failure selection (Pr.162), stall prevention operation level for restart (Pr.165), rotation direction detection selection at restarting (Pr.299), acceleration time at a restart (Pr.611)
21	Function selection of input terminal (Pr. 178 to Pr.182)		○			1) Addition: STF terminal function selection 2) Addition: Item of input terminal assigned function
22	Function selection of output terminal (Pr.190, 192)		○			Addition: Item of output terminal assigned function
23	Cooling fan		○			Change: The initial value is for cooling fan on/off control valid (Pr.244)
24	Soft-PWM, long wiring mode		○			Long wiring mode became unnecessary and was deleted.
25	Display function of the life of the inverter parts	○				Inrush current limit circuit, control circuit capacitor, main circuit capacitor, estimation and display of the cooling fan life (Pr.255 to Pr.259)
26	Power failure stop selection	○				Selection of power failure stop function (Pr.261)

Item	Parameter Comparison Description	Main differences with the FR-S500 and S500E				Remarks
		Added function	Function change	Name change	Parameter number change	
27	Stop selection	<input type="radio"/>				Selection of operation when the start signal is turned OFF (Pr.250)
28	Maintenance timer alarm			<input type="radio"/>		Name: Capacitor life timer and Capacitor life alarm output set time changed to Maintenance timer and Maintenance timer alarm output set time
29	Current average value monitor function	<input type="radio"/>				Setting of average value of the output current at a constant speed operation and pulse output function of the maintenance timer value (Pr.555 to Pr.557)
30	Start-time hold function	<input type="radio"/>				Setting of time to hold the starting frequency
31	General-purpose magnetic flux vector control	<input type="radio"/>				For selecting general-purpose magnetic flux vector control (Pr.80, 82 to 84)
32	Speed smoothing control	<input type="radio"/>				Function to suppress vibration generated between the mechanical system and electrical system (Pr.653)
33	Input phase loss protection function	<input type="radio"/>				Setting of Input/output phase loss protection function operation selection (Pr.251, Pr.872)
34	Regeneration avoidance function	<input type="radio"/>				Setting of regeneration avoidance function operation selection, operation level (Pr.882 to Pr.886)
35	Free parameter	<input type="radio"/>				Available for any purposes by users (Pr.888, Pr.889)