

Information for Replacement of **MELIPM MD-CX Series**

Replacement model

FR-E700EX Series Sensorless Servo Drive Unit

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

1. Size

When the MELIPM MD-CX series drive unit are replaced with the FR-E700EX series sensorless servo drive unit, the required installation space of the FR-E700EX series is the same as that of the corresponding MELIPM MD-CX series.

For more information about the product size, refer to the outline dimension drawings on the following pages.

Applicable motor		Existing drive unit	Replacing drive unit	Installation size
MM-CF□□	MM-CF52	MD-CX520-0.5K	FR-E720EX-0.4K	Same
	MM-CF102	MD-CX520-1.0K	FR-E720EX-0.75K	Same
	MM-CF152	MD-CX520-1.5K	FR-E720EX-1.5K	Same
	MM-CF202	MD-CX520-2.0K	FR-E720EX-2.2K	Same
	MM-CF352	MD-CX520-3.5K	FR-E720EX-3.7K	Same
MM-BF□□ 7200 r/min	MM-BF47	MD-CX522-0.4K	FR-E720EX-0.4K	Same
	MM-BF77	MD-CX522-0.75K	FR-E720EX-0.75K	Same
	MM-BF157	MD-CX522-1.5K	FR-E720EX-1.5K	Same
	MM-BF227	MD-CX522-2.2K	FR-E720EX-2.2K	Same
	MM-BF377	MD-CX522-3.7K	FR-E720EX-3.7K	Same
MM-BF□□AC 10000 r/min	MM-BF4AC	MD-CX522-0.4K-A0	FR-E720EX-0.4K	Same
	MM-BF7AC	MD-CX522-0.75K-A0	FR-E720EX-0.75K	Same
	MM-BF15AC	MD-CX522-1.5K-A0	FR-E720EX-1.5K	Same
	MM-BF22AC	MD-CX522-2.2K-A0	FR-E720EX-2.2K	Same
	MM-BF37AC	MD-CX522-3.7K-A0	FR-E720EX-3.7K	Same

[CAUTION]

The MM-CF and MM-BF series motors can be driven by the FR-E700EX series drive unit manufactured in April 2015 or later. Check that the drive unit has the following SERIAL or later on the rating plate.

Example of SERIAL number

□ 5 4 ○○○○○○

Symbol Year Month Control number

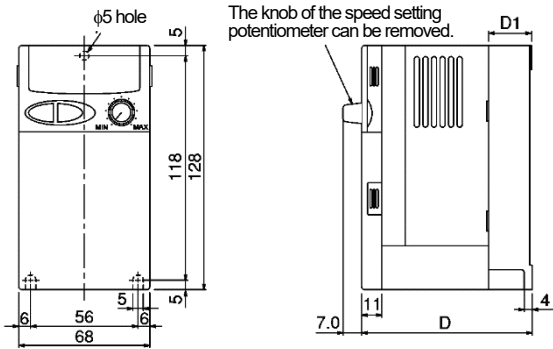
SERIAL

The SERIAL consists of one symbol, two characters indicating the production year and month, and six characters indicating the control number.

The last digit of the production year is indicated as the Year, and the Month is indicated by 1 to 9, X (October), Y (November), or Z (December).

Outline dimension drawings (Unit: mm)

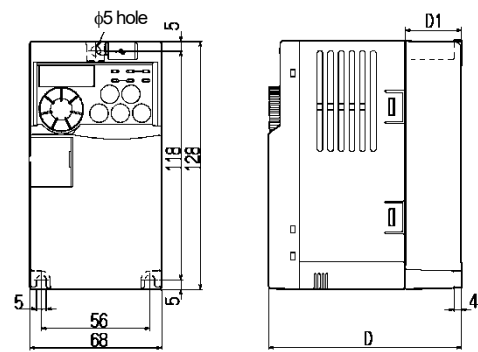
■ MD-CX520-0.5K, 1.0K



Drive unit model	D	D1
MD-CX520-0.5K	108	42
MD-CX520-1.0K	128	62

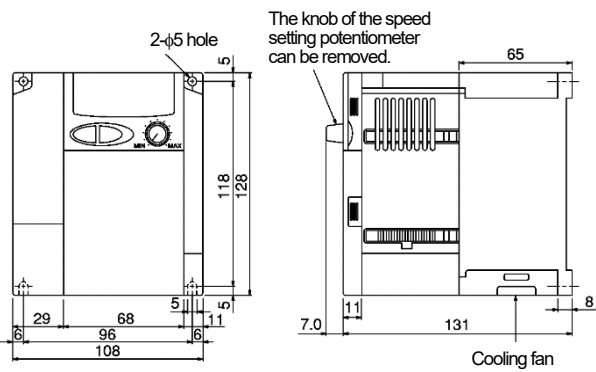
(Note) 1.0K has a cooling fan.

■ FR-E720EX-0.4K, 0.75K

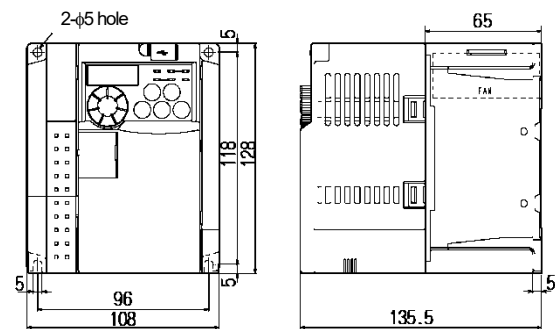


Drive unit model	D	D1
FR-E720EX-0.4K	112.5	42
FR-E720EX-0.75K	132.5	62

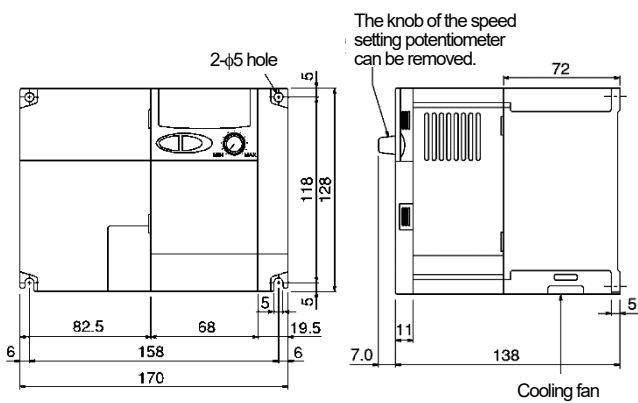
■ MD-CX520-1.5K, 2.0K



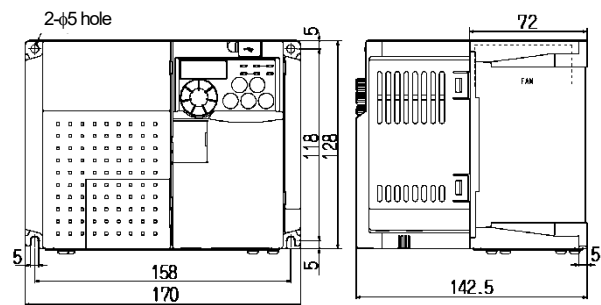
■ FR-E720EX-1.5K, 2.2K



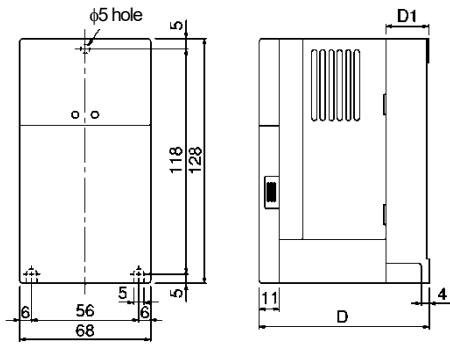
■ MD-CX520-3.5K



■ FR-E720EX-3.7K



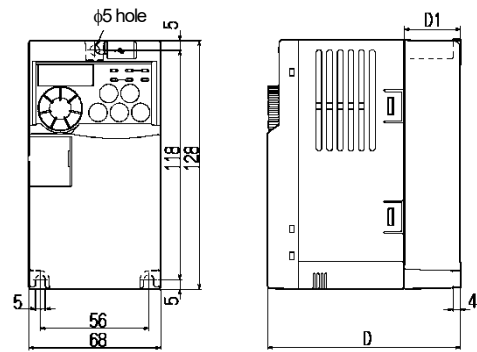
■ MD-CX522-0.4K, 0.75K(-A0)



Drive unit model	D	D1
MD-CX522-0.4K(-A0)	108	42
MD-CX522-0.75K(-A0)	128	62

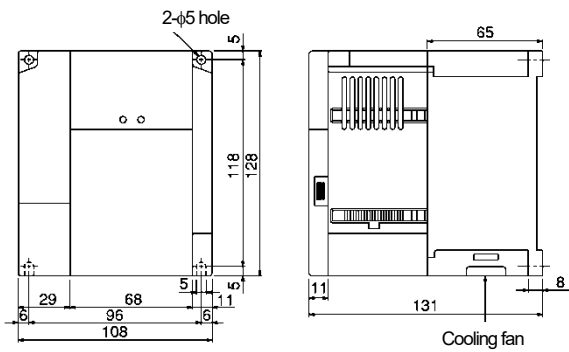
(Note) 0.75K has a cooling fan.

■ FR-E720EX-0.4K, 0.75K

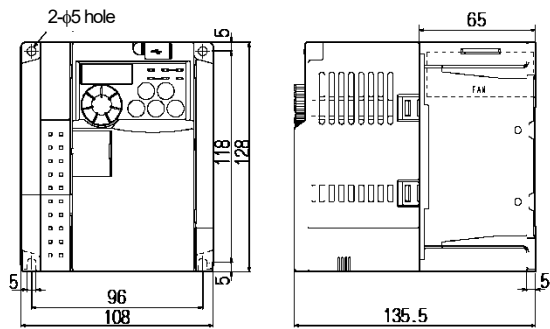


Drive unit model	D	D1
FR-E720EX-0.4K	112.5	42
FR-E720EX-0.75K	132.5	62

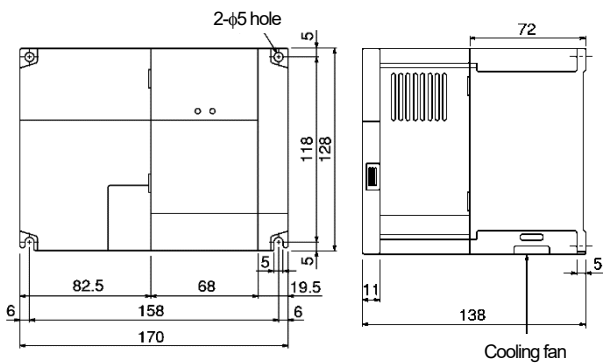
■ MD-CX522-1.5K, 2.2K(-A0)



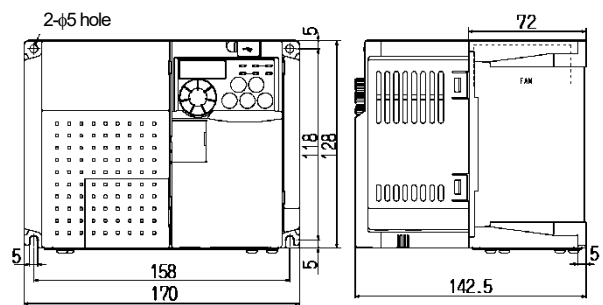
■ FR-E720EX-1.5K, 2.2K



■ MD-CX522-3.7K(-A0)



■ FR-E720EX-3.7K





The operation panel is not provided for the MD-CX522-□□K(-A0).
Use the FR-PU04 (option).

2. Wiring

The wiring of the new drive units can follow the one of the existing drive units as the terminal names between them are almost the same.

For the terminal screw size, refer to page 6.

Type		MD-CX500 terminal name	FR-E700EX compatible terminal name	Remarks
Main circuit		R, S, T	R/L1, S/L2, T/L3	
		U, V, W	U, V, W	
		P, PR	P/+, PR	
		P, N	P/+, N/-	
		P, P1	P/+, P1	
				
Control circuit / input signal	Contact	STF	STF	
		STR	STR	
		RH	RH	
		RM	RM	
		RL	RL	
		MRS	MRS	
		RES	RES	
		SD	SD	For the MD-CX500, the terminal is not isolated from terminal 5, but isolated from terminal SE. For the FR-E700EX, the terminal is isolated from terminals 5 and SE.
	PC	PC		
Analog	Frequency	10	10	
		2	2	
		5	5	For the MD-CX500, the terminal is not isolated from terminal SD, but isolated from terminal SE. For the FR-E700EX, the terminal is isolated from terminals SD and SE.
		4	4	Terminal 4 cannot be used for the MD-CX522(-A0).
Control circuit / output signal	Relay	A, B, C	A, B, C	
	Open collector	RUN	RUN	
		FU	FU	
		SE	SE	For both the MD-CX500 and FR-E700EX, the terminal is isolated from terminals 5 and SD.
	Pulse	FM	FM	
Communication	RS-485	PU connector	PU connector	

Terminal screw size

[Main circuit terminal]

Capacity	MD-CX500				FR-E700EX			
	R, S, T	U, V, W	P, N, P1, PR	⊕	R, S, T	U, V, W	P, N, P1, PR	⊕
0.4K to 1.0K	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
1.5K to 3.7K	M4	M4	M4	M4	M4	M4	M4	M4

[Control circuit terminal]

MD-CX500	FR-E700EX	
Control circuit	Control circuit	
	Other than A, B, C	A, B, C
M2.5 Insertion type ⊕ screw terminal	M2 Insertion type ⊖ screw terminal	M3 Insertion type ⊖ screw terminal

Note 1: When our authorized ferrules are used for the MD-CX500, they cannot be used for the FR-E700EX since the size of the control circuit terminal block is smaller. (Even other crimp terminals, they may not be used for the FR-E700EX if the terminal size is large.)

To use the existing wires, disconnect the existing crimp terminal at the end of each wire, and strip wires or use crimp terminals shown below. Check the applicable wire gauge.

Table. Applicable wire gauge (stripped wire) for the FR-E700EX control terminal block

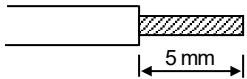
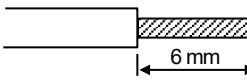
Terminal symbol	Wire strip length	Applicable stripped wire gauge	
		Stranded wire (mm ²)	Single wire (mm ²)
Other than A, B, C (M2)	 Twist the stripped end of wires to prevent them from fraying. Do not solder it.	0.25 to 1	0.25 to 1.5
A, B, C (M3)	 Twist the stripped end of wires to prevent them from fraying. Do not solder it.	0.25 to 1.5	0.25 to 1.5

Table. Applicable wire gauge (crimped wire) for the FR-E700EX control terminal block

• Phoenix Contact GmbH & Co. KG

Terminal symbol	Ferrule terminal model		Applicable stripped wire gauge (mm ²)
	With insulation sleeve	Without insulation sleeve	
Other than A, B, C (M2)	AI 0,5-6WH	A 0,5-6	0.3 to 0.5
A, B, C (M3)	AI 0,5-6WH	A 0,5-6	0.3 to 0.5
	AI 0,75-6GY	A 0,75-6	0.5 to 0.75

• NICHIFU Co., Ltd.

Terminal symbol	Blade terminal part No.	Cap part No.	Applicable stripped wire gauge (mm ²)
Other than A, B, C (M2) A, B, C (M3)	BT 0.75-7	VC 0.75	0.3 to 0.75

3. Comparison of the main specifications between the MD-CX series and the FR-E700EX series

(1) MD-CX520 (Applicable motor: MM-CF motor)

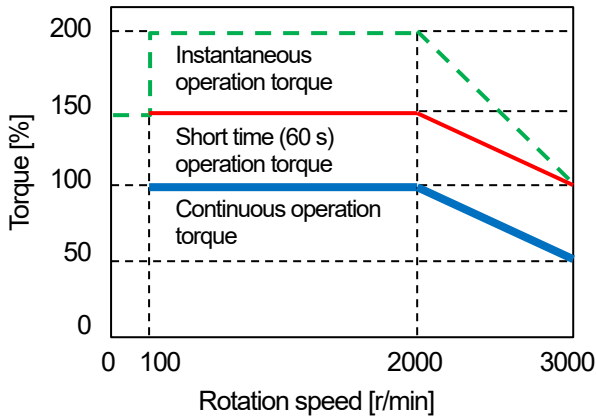
Item	MD-CX520	FR-E720EX
Model (three-phase 200 V class)	MD-CX520-0.5K to 3.5K (5 models)	FR-E720EX-0.4K to 3.7K (5 models)
Applicable motor	MM-CF□□ only	Select the motor using Pr.998. Pr.998 = "3003": MM-CF□□
Permissible load	150% 60 s, 200% 0.5 s (inverse-time characteristics)	150% 60 s, 200% 3 s (inverse-time characteristics)
Control method	Sensorless PWM control	PM sensorless vector control (low-speed range: current synchronization operation)
Control mode	Speed control	Speed control
Starting torque	150%	100% (initial value) * Adjustable in the range from 0% to 150% using Pr.785.
Speed control range	1:20	1:20
Carrier frequency	2 kHz (initial value), 6 kHz, 10 kHz, or 14 kHz can be set.	Fixed to 5 kHz.
Stall prevention operation level	150% (initial value) * Pr.22 can be used to select whether to enable the function.	150% (initial value) * Use Pr.22 to set 0.1% to 200% or disable the function.
Operation panel	Installed as standard (removable)	Installed as standard (not removable)

(2) MD-CX522(-A0) (Applicable motor: MM-BF(AC) motor)

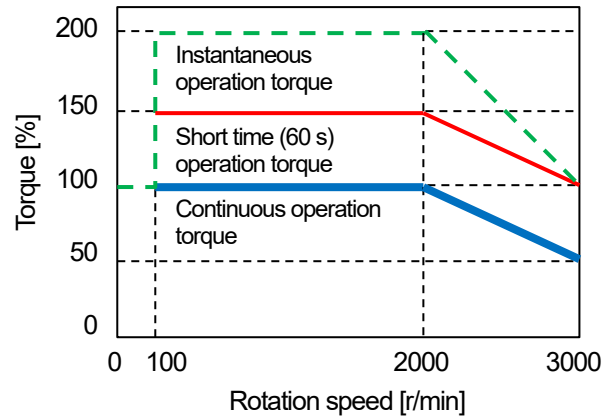
Item	MD-CX522(-A0)	FR-E720EX
Model (three-phase 200 V class)	MD-CX522-0.4K to 3.7K (5 models) MD-CX522-0.4K to 3.7K-A0 (5 models)	FR-E720EX-0.4K to 3.7K (5 models)
Applicable motor	MD-CX522: MM-BF□□ only MD-CX522-A0: MM-BF□□AC only	Select the motor using Pr.998. Pr.998 = "3016": MM-BF□□ Pr.998 = "3017": MM-BF□□AC
Permissible load	150% 60 s, 200% 0.5 s (inverse-time characteristics)	150% 60 s, 200% 3 s (inverse-time characteristics)
Control method	Sensorless PWM control	PM sensorless vector control (low-speed range: current synchronization operation)
Control mode	Speed control	Speed control
Starting torque	120%	100% (initial value) * Adjustable in the range from 0% to 150% using Pr.785.
Speed control range	1:10	1:10
Carrier frequency	Fixed to 7.5 kHz.	Fixed to 5 kHz.
Stall prevention operation level	150% (initial value) * Pr.22 can be used to set 60% to 200% or disable the function.	150% (initial value) * Use Pr.22 to set 0.1% to 200% or disable the function.
Operation panel	Not installed. For setting/monitoring, use the FR-PU04 (option).	Installed as standard (not removable) For setting/monitoring values that exceed five digits, select the frequency setting, or use the FR-PU07 (option).

(3) Torque characteristics

■ MD-CX520-□□K + MM-CF□□

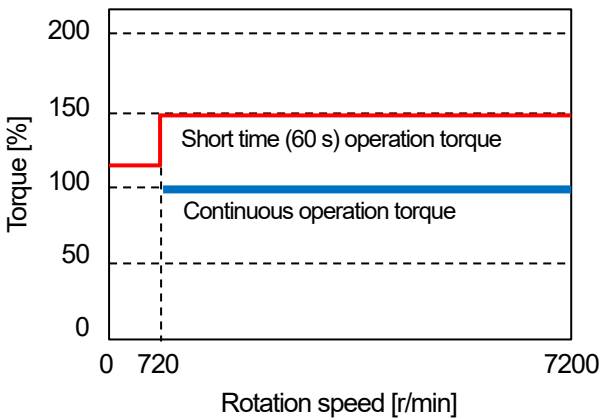


■ FR-E720EX-□□K + MM-CF□□

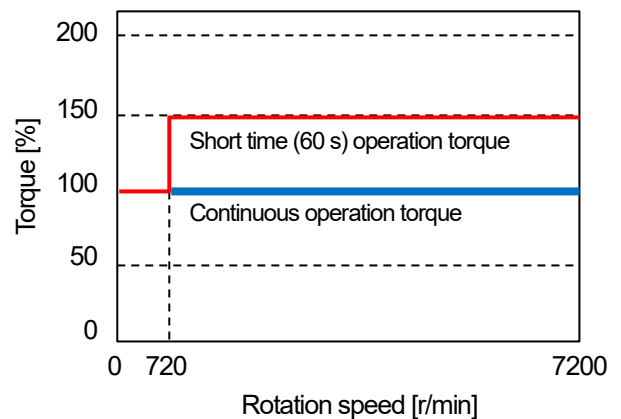


Note 1: The instantaneous operation torque for the speed less than 100 r/min can be set to 0% to 150% with Pr.785. For details, refer to the Instruction Manual.

■ MD-CX522-□□K + MM-BF□□

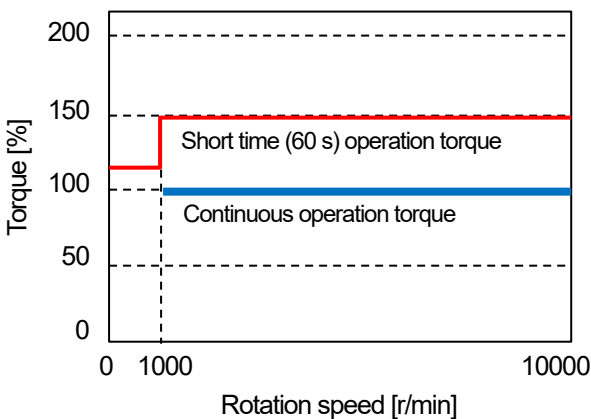


■ FR-E720EX-□□K + MM-BF□□

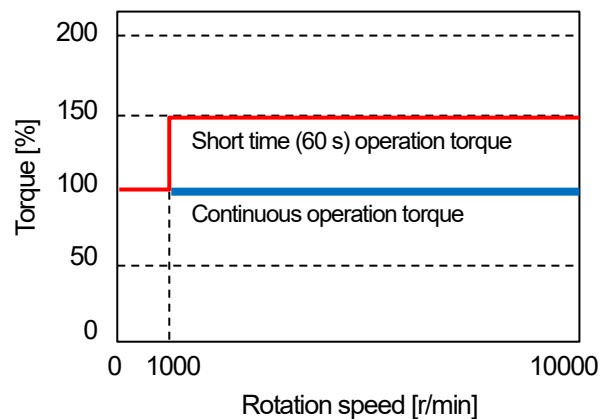


Note 2: The short time operation torque for the speed less than 720 r/min can be set to 0% to 150% with Pr.785. For details, refer to the Instruction Manual.

■ MD-CX522-□□K-A0 + MM-BF□□AC



■ FR-E720EX-□□K + MM-BF□□AC



Note 3: The short time operation torque for the speed less than 1000 r/min can be set to 0% to 150% with Pr.785. For details, refer to the Instruction Manual.

4. Parameter

Note that most parameter numbers of drive units in both series are the same but some setting values differ. Refer to the following table to set the parameters.

(1) List of FR-E700EX series parameters compatible with the MD-CX520 series (supporting MM-CF motors)

- The following table shows the parameter settings required when replacing the MD-CX520 series with the FR-E720EX series.
- For the communication operation control and the data for the instruction codes such as monitoring, refer to the Instruction Manual.
- When driving an MM-CF motor with the FR-E720EX series, always **set Pr.998 = "3003" (parameter settings for an MM-CF motor) first.**
- If the initial values differ between the MD-CX520 series and the FR-E720EX series, set the initial value for the FR-E720EX series according to the following table.
- The parameters with Δ are used for adjustment. Set them as required.
- The parameter replacement following the table below does not guarantee the drive unit characteristics or performance.

The parameter number of the parameters differs from that of the MD-CX520 series.

Setting \odot : Set the MD-CX520 parameter as it is.

Δ : Change the MD-CX520 parameter and set.

\times : Adjust and set the FR-E720EX parameter.

MD-CX520 parameter list				FR-E720EX compatible parameter				Parameter setting							
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks						
—	—	—	—	998	PM parameter initialization	3003, 3016, 3017, 3024, 3103, 3116, 3117, 3124, 6004, 6104, 8009, 8109, 9009, 9109	3024/6004 ↓ Set "3003".	\odot	When driving an MM-CF motor with the FR-E700EX series, always set Pr.998 = "3003" (parameter settings for an MM-CF motor) first, then set other parameters.						
1	Maximum speed	0 to 3000 r/min	3000 r/min	1	Maximum setting	0 to 6000 r/min *1	3000 r/min *1	\odot							
2	Minimum speed	0 to 3000 r/min	0 r/min	2	Minimum setting	0 to 6000 r/min *1	0 r/min	\odot							
4	Three-speed setting (high speed)	0 to 3000 r/min	2000 r/min	4	Multi-speed setting (high speed)	0 to 6000 r/min *1	2000 r/min *1	\odot							
5	Three-speed setting (middle speed)	0 to 3000 r/min	1000 r/min	5	Multi-speed setting (middle speed)	0 to 6000 r/min *1	1000 r/min *1	\odot							
6	Three-speed setting (low speed)	0 to 3000 r/min	500 r/min	6	Multi-speed setting (low speed)	0 to 6000 r/min *1	200 r/min *1	\odot	The initial values for both series differ.						
7	Acceleration time	0 to 3600 / 0 to 360 s	5 s	7	Acceleration time	0 to 360 s	5 s	\odot	For the FR-E720EX, the setting increment is 0.01 s only.						
8	Deceleration time	0 to 3600 / 0 to 360 s	5 s	8	Deceleration time	0 to 360 s	5 s	\odot	The acceleration/deceleration characteristics at low speed differ. Refer to the precautions in page 19.						
9	Electronic thermal O/L relay selection	0, 1	1	9	Electronic thermal O/L relay	0 to 500 A	Rated motor current *1	Δ	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <th>MD-CX520 Pr.9 setting</th> <th>FR-E720EX Pr.9 setting</th> </tr> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>Not changed (rated motor current)</td> </tr> </table>	MD-CX520 Pr.9 setting	FR-E720EX Pr.9 setting	0	0	1	Not changed (rated motor current)
MD-CX520 Pr.9 setting	FR-E720EX Pr.9 setting														
0	0														
1	Not changed (rated motor current)														
10	Voltage braking speed	40 to 200 r/min	100 r/min	10	Coasting speed	0 to 6000 r/min *1	60 r/min *1	\times	For the FR-E720EX, set the speed where the motor starts coasting during deceleration while Pr.11 = 0 s. If Pr.11 is not set to 0 s, the motor decelerates to 0 r/min and then the brake operation starts.						
11	Voltage braking time period	0 to 60 s, 9999	9999	11	DC injection brake operation time	0 to 10 s	0.5 s	Δ	When the MD-CX520 setting is "9999" (automatic adjustment), adjust the value as required for the FR-E720EX.						
13	Minimum motor speed	40 to 100 r/min	100 r/min	13	Starting speed	0 to 6000 r/min *1	10 r/min *1	\odot	The initial values for both series differ.						
20	Acceleration/deceleration reference speed	1 to 3000 r/min	2000 r/min	20	Acceleration/deceleration reference speed	15 to 6000 r/min *1	2000 r/min *1	\odot							
21	Acceleration/deceleration time unit	0, 1	0	—	—	—	—	\times	For the FR-E720EX, the setting increment is 0.01 s only.						
22	Stall prevention operation level	0, 150%	150%	22	Torque limit level	0% to 200%, 9999	150% *1	\odot							
24	Multi-speed setting (speed 4)	0 to 3000 r/min, 9999	9999	24	Multi-speed setting (speed 4)	0 to 6000 r/min *1, 9999	9999	\odot							
25	Multi-speed setting (speed 5)	0 to 3000 r/min, 9999	9999	25	Multi-speed setting (speed 5)	0 to 6000 r/min *1, 9999	9999	\odot							
26	Multi-speed setting (speed 6)	0 to 3000 r/min, 9999	9999	26	Multi-speed setting (speed 6)	0 to 6000 r/min *1, 9999	9999	\odot							
27	Multi-speed setting (speed 7)	0 to 3000 r/min, 9999	9999	27	Multi-speed setting (speed 7)	0 to 6000 r/min *1, 9999	9999	\odot							
30	Regenerative brake option selection	0, 1	0	30	Regenerative function selection	0, 1	0	\odot							
31	Speed command jump 1A	0 to 3000 r/min, 9999	9999	31	Speed jump 1A	0 to 6000 r/min *1, 9999	9999	\odot							
32	Speed command jump 1B	0 to 3000 r/min, 9999	9999	32	Speed jump 1B	0 to 6000 r/min *1, 9999	9999	\odot							
33	Speed command jump 2A	0 to 3000 r/min, 9999	9999	33	Speed jump 2A	0 to 6000 r/min *1, 9999	9999	\odot							
34	Speed command jump 2B	0 to 3000 r/min, 9999	9999	34	Speed jump 2B	0 to 6000 r/min *1, 9999	9999	\odot							
35	Speed command jump 3A	0 to 3000 r/min, 9999	9999	35	Speed jump 3A	0 to 6000 r/min *1, 9999	9999	\odot							
36	Speed command jump 3B	0 to 3000 r/min, 9999	9999	36	Speed jump 3B	0 to 6000 r/min *1, 9999	9999	\odot							

*1 The setting range and initial value when Pr.998 = 3003 (MM-CF motor).

MD-CX520 parameter list				FR-E720EX compatible parameter				Parameter setting																																									
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks																																								
37	Speed unit switch-over 1	0 to 9998	0	37	Speed display	0, 0.01 to 9998	0 ^{*1}	△	<table border="1"> <thead> <tr> <th colspan="2">MD-CX520</th> <th colspan="2">FR-E720EX</th> </tr> <tr> <th>Pr.37 setting</th> <th>Pr.144 setting</th> <th>Pr.37 setting</th> <th>Pr.144 setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>108</td> </tr> <tr> <td>1 to 9998</td> <td>0</td> <td>0.01 to 9998</td> <td>8</td> </tr> <tr> <td>Any value in the setting range</td> <td>1</td> <td>0</td> <td>8</td> </tr> </tbody> </table>	MD-CX520		FR-E720EX		Pr.37 setting	Pr.144 setting	Pr.37 setting	Pr.144 setting	0	0	0	108	1 to 9998	0	0.01 to 9998	8	Any value in the setting range	1	0	8																				
MD-CX520		FR-E720EX																																															
Pr.37 setting	Pr.144 setting	Pr.37 setting	Pr.144 setting																																														
0	0	0	108																																														
1 to 9998	0	0.01 to 9998	8																																														
Any value in the setting range	1	0	8																																														
38	Speed at 10V(5V) input	1 to 3000 r/min	2000 r/min	125	Terminal 2 speed setting gain speed	0 to 6000 r/min ^{*1}	2000 r/min ^{*1}	⊙																																									
39	Speed at 20mA input	1 to 3000 r/min	2000 r/min	126	Terminal 4 speed setting gain speed	0 to 6000 r/min ^{*1}	2000 r/min ^{*1}	⊙																																									
41	Detected speed range	0% to 100%	10%	41	Up-to-speed sensitivity	0% to 100%	10%	⊙																																									
42	Speed detection	0 to 3000 r/min	180 r/min	42	Speed detection	0 to 6000 r/min ^{*1}	120 r/min ^{*1}	⊙				The initial values for both series differ.																																					
43	Speed detection for reverse rotation	0 to 3000 r/min, 9999	9999	43	Speed detection for reverse rotation	0 to 6000 r/min ^{*1} , 9999	9999	⊙																																									
52	Main display screen data selection	0, 5, 6, 23, 100	0	52	DU/PU main display data selection	0, 5, 8 to 12, 14, 19, 20, 23 to 31, 36, 37, 52 to 55, 61, 62, 100	0	△				When the MD-CX520 setting is "6" (motor speed), set "0" (rotation speed) for the FR-E720EX.																																					
54	FM terminal function selection	1, 2, 5	1	54	FM terminal function selection	1 to 3, 5, 8 to 12, 14, 21, 24, 36, 37, 52, 53, 61, 62	1	⊙																																									
55	Speed monitoring reference	0 to 3000 r/min	2000 r/min	55	Speed monitoring reference	0 to 6000 r/min ^{*1}	2000 r/min ^{*1}	⊙																																									
56	Current monitoring reference	0 to 500 A	Rated motor current	56	Current monitoring reference	0 to 500 A	Rated motor current ^{*1}	⊙																																									
70	Regenerative brake duty	0% to 15%	3%	70	Special regenerative brake duty	0% to 30%	0%	⊙				The initial values for both series differ.																																					
72	Motor sound selection	1 to 4	1	—	—	—	—	×				For the FR-E720EX, the PWM carrier frequency is fixed at 5 kHz.																																					
73	Speed command range selection	0, 1	0	73	Analog input selection	0, 1, 10, 11	1	⊙				The initial values for both series differ.																																					
74	Filter time constant	0 to 8	1	74	Input filter time constant	0 to 8	1	⊙																																									
75	Disconnected PU detection/PU stop selection	0 to 3	0	75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	14	△	<table border="1"> <thead> <tr> <th colspan="2">MD-CX520</th> <th colspan="2">FR-E720EX</th> </tr> <tr> <th>Pr.75 setting</th> <th>Pr.188 setting</th> <th colspan="2">Pr.75 setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td colspan="2">14</td> </tr> <tr> <td>0</td> <td>1</td> <td colspan="2">15</td> </tr> <tr> <td>1</td> <td>0</td> <td colspan="2">16</td> </tr> <tr> <td>1</td> <td>1</td> <td colspan="2">17</td> </tr> <tr> <td>2</td> <td>0</td> <td colspan="2">0</td> </tr> <tr> <td>2</td> <td>1</td> <td colspan="2">1</td> </tr> <tr> <td>3</td> <td>0</td> <td colspan="2">2</td> </tr> <tr> <td>3</td> <td>1</td> <td colspan="2">3</td> </tr> </tbody> </table>	MD-CX520		FR-E720EX		Pr.75 setting	Pr.188 setting	Pr.75 setting		0	0	14		0	1	15		1	0	16		1	1	17		2	0	0		2	1	1		3	0	2		3	1	3	
MD-CX520		FR-E720EX																																															
Pr.75 setting	Pr.188 setting	Pr.75 setting																																															
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1	0	16																																															
1	1	17																																															
2	0	0																																															
2	1	1																																															
3	0	2																																															
3	1	3																																															
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	1	79	Operation mode selection	0 to 4, 6, 7	0	⊙				The initial values for both series differ.																																					
84	Rated motor speed	Read only		84	Rated motor speed	0 to 6000 r/min ^{*1} , 9999	9999	×				There is no dedicated read-only monitor (Pr.) for the rated motor speed.																																					
117	Station number	0 to 31	0	117	PU communication station number	0 to 31 (0 to 247)	0	⊙																																									
118	Communication speed	48, 96, 192	192	118	PU communication speed	48, 96, 192, 384	192	⊙																																									
119	Stop bit length/data length	0, 1, 10, 11	1	119	PU communication stop bit length	0, 1, 10, 11	1	⊙																																									
120	Parity check presence/absence	0, 1, 2	2	120	PU communication parity check	0, 1, 2	2	⊙																																									
121	Number of communication retries	0 to 10, 9999	1	121	Number of PU communication retries	0 to 10, 9999	1	⊙																																									
122	Communication check time interval	0, 0.1 to 999.8, 9999	0	122	PU communication check time interval	0, 0.1 to 999.8 s, 9999	0	⊙																																									
123	Waiting time setting	0 to 150, 9999	9999	123	PU communication waiting time	0 to 150 ms, 9999	9999	⊙																																									

*1 The setting range and initial value when Pr.998 = 3003 (MM-CF motor).

MD-CX520 parameter list				FREQROL-E700EX compatible parameter				Parameter setting							
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks						
124	CR-LF presence/absence selection	0, 1, 2	1	124	PU communication CR/LF selection	0, 1, 2	1	⊙							
144	Speed unit switch-over 2	0, 1	0	144	Speed setting switchover	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124	108 ^{*1}	⊙	Refer to the remarks on Pr.37.						
146	Speed command source selection	0, 1	0	—	—	—	—	×	Operation panel for the MD-CX520 cannot be used.						
150	Output current detection level	0.0% to 200.0%	150%	150	Output current detection level	0% to 200%	150%	△	For the FR-E720EX, set the value calculated by the following formula. MD-CX520 setting value × $\frac{\text{Rated motor current}}{\text{Drive unit rated current}}$						
151	Output current detection time	0.0 to 10.0 s	0 s	151	Output current detection signal delay time	0 to 10 s	0 s	⊙							
180	RL terminal function selection	0, 1, 2, 4, 7, 8, 24, 25, 9999	0	180	RL terminal function selection	0 to 5, 7, 8, 10, 12, 14, 16, 23 to 26, 29, 30, 44, 62, 65 to 67, 76, 86 to 89, 9999	0	⊙							
181	RM terminal function selection		1	181	RM terminal function selection		1	⊙							
182	RH terminal function selection		2	182	RH terminal function selection		2	⊙							
187	MRS terminal function selection		24	183	MRS terminal function selection		24	⊙							
188	RES terminal operation selection	0, 1	0	75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	14	△	Refer to the remarks on Pr.75.						
189	STF, STR terminal operation selection	0, 1	0	250	Stop selection	0 to 100 s, 1000 to 1100 s, 8888, 9999	9999	△	<table border="1"> <thead> <tr> <th>MD-CX520 Pr.189 setting</th> <th>FR-E720EX Pr.250 setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>9999</td> </tr> <tr> <td>1</td> <td>8888</td> </tr> </tbody> </table>	MD-CX520 Pr.189 setting	FR-E720EX Pr.250 setting	0	9999	1	8888
MD-CX520 Pr.189 setting	FR-E720EX Pr.250 setting														
0	9999														
1	8888														
190	RUN terminal function selection	0, 1, 3, 4, 11, 12, 21, 25, 98, 99, 9999	0	190	RUN terminal function selection	0, 1, 3, 4, 7, 8, 11 to 16, 20, 21, 24 to 26, 33, 34, 36 to 38, 47, 55, 56, 60, 61, 63, 64, 68, 90, 91, 93 (Pr.190, Pr.191), 95, 96, 98, 99, 100, 101, 103, 104, 107, 108, 111 to 116, 120, 121, 124 to 126, 133, 134, 136 to 138, 147, 155, 156, 160, 161, 163, 164, 168, 190, 191, 193 (Pr.190, Pr.191), 195, 196, 198, 199, 9999	0	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX520 setting "21" (UVT).						
194	FU terminal function selection		4	191	FU terminal function selection		4	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX520 setting "21" (UVT).						
195	A, B, C terminal function selection		99	192	ABC terminal function selection		99	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX520 setting "21" (UVT).						
232	Multi-speed setting (speed 8)	0 to 3000 r/min, 9999	9999	232	Multi-speed setting (speed 8)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
233	Multi-speed setting (speed 9)	0 to 3000 r/min, 9999	9999	233	Multi-speed setting (speed 9)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
234	Multi-speed setting (speed 10)	0 to 3000 r/min, 9999	9999	234	Multi-speed setting (speed 10)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
235	Multi-speed setting (speed 11)	0 to 3000 r/min, 9999	9999	235	Multi-speed setting (speed 11)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
236	Multi-speed setting (speed 12)	0 to 3000 r/min, 9999	9999	236	Multi-speed setting (speed 12)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
237	Multi-speed setting (speed 13)	0 to 3000 r/min, 9999	9999	237	Multi-speed setting (speed 13)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
238	Multi-speed setting (speed 14)	0 to 3000 r/min, 9999	9999	238	Multi-speed setting (speed 14)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
239	Multi-speed setting (speed 15)	0 to 3000 r/min, 9999	9999	239	Multi-speed setting (speed 15)	0 to 6000 r/min ^{*1} , 9999	9999	⊙							
244	Cooling fan operation selection	0, 1	0	244	Cooling fan operation selection	0, 1	1	△	The initial value for the FR-E720EX has been changed.						

*1 The setting range and initial value when Pr.998 = 3003 (MM-CF motor).

MD-CX520 parameter list				FREQROL-E700EX compatible parameter				Parameter setting	
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks
900	FM terminal calibration	—	—	C0 (900)	FM terminal calibration	—	—	⊙	
902	Speed setting voltage bias	0.0% to 300.0% 0 to 2000 r/min	About 0% 0 r/min	C2 (902)	Terminal 2 speed setting bias speed	0 to 6000 r/min *1	0 r/min	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C3 (902)	Terminal 2 speed setting bias	0% to 300%	0%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
903	Speed setting voltage gain	0.0% to 300.0% 1 to 3000 r/min	100% 2000 r/min	125 (903)	Terminal 2 speed setting gain speed	0 to 6000 r/min *1	2000 r/min *1	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C4 (903)	Terminal 2 speed setting gain	0% to 300%	100%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
904	Speed setting current bias	0.0% to 300.0% 0 to 2000 r/min	About 20% 0 r/min	C5 (904)	Terminal 4 speed setting bias speed	0 to 6000 r/min *1	0 r/min	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C6 (904)	Terminal 4 speed setting bias	0% to 300%	20%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
905	Speed setting current gain	0.0% to 300.0% 1 to 3000 r/min	100% 2000 r/min	126 (905)	Terminal 4 speed setting gain speed	0 to 6000 r/min *1	2000 r/min *1	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C7 (905)	Terminal 4 speed setting gain	0% to 300%	100%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
922	Operation panel potentiometer bias	0.0% to 300.0% 0 to 2000 r/min	About 0% 0 r/min	—	—	—	—	×	Operation panel for the MD-CX520 cannot be used.
923	Operation panel potentiometer gain	0.0% to 300.0% 1 to 3000 r/min	100% 2000 r/min	—	—	—	—	×	Operation panel for the MD-CX520 cannot be used.
991	LCD contrast	Available for option (FR-PU04).		991	PU contrast adjustment	0 to 63	58	△	The FR-PU07 is the parameter unit compatible with the FR-E720EX. Connect the FR-PU07 and adjust the parameter settings.

*1 The setting range and initial value when Pr.998 = 3003 (MM-CF motor).

(2) List of FR-E700EX series parameters compatible with the MD-CX522 series (supporting MM-BF (7200 r/min) motors)

- The following table shows the parameter settings required when replacing the MD-CX522 series with the FR-E720EX series. For the communication operation control and the data for the instruction codes such as monitoring, refer to the Instruction Manual.
- When driving an MM-BF (7200 r/min) motor with the FR-E720EX series, always set **Pr.998 = "3016" (parameter settings for an MM-BF (7200 r/min) motor) first**.
- If the initial values differ between the MD-CX522 series and the FR-E720EX series, set the initial value for the FR-E720EX series according to the following table.
- The parameters with Δ are used for adjustment. Set them as required.
- The parameter replacement following the table below does not guarantee the drive unit characteristics or performance.

The parameter number of the parameters differs from that of the MD-CX522 series.

Setting ◎: Set the MD-CX522 parameter as it is.

Δ: Change the MD-CX522 parameter and set.

×: Adjust and set the FR-E720EX parameter.

MD-CX522 parameter list				FR-E720EX compatible parameter				Parameter setting																					
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks																				
—	—	—	—	998	PM parameter initialization	3003, 3016, 3017, 3024, 3103, 3116, 3117, 3124, 6004, 6104, 8009, 8109, 9009, 9109	3024/6004 ↓ Set "3016".		When driving an MM-BF motor with the FR-E700EX series, always set Pr.998 = "3016" (parameter settings for an MM-BF (7200 r/min) motor) first, then set other parameters.																				
1	Maximum speed	0 to 7200 r/min	7200 r/min	1	Maximum setting	0 to 12000 r/min *1	7200 r/min *1	◎																					
2	Minimum speed	0 to 7200 r/min	0 r/min	2	Minimum setting	0 to 12000 r/min *1	0 r/min	◎																					
4	Three-speed setting (high speed)	0 to 7200 r/min	7200 r/min	4	Multi-speed setting (high speed)	0 to 12000 r/min *1	7200 r/min*1	◎																					
5	Three-speed setting (middle speed)	0 to 7200 r/min	3600 r/min	5	Multi-speed setting (middle speed)	0 to 12000 r/min *1	3600 r/min*1	◎																					
6	Three-speed setting (low speed)	0 to 7200 r/min	1200 r/min	6	Multi-speed setting (low speed)	0 to 12000 r/min *1	720 r/min*1	◎	The initial values for both series differ.																				
7	Acceleration time	0.00 to 60.00 s	40 s	7	Acceleration time	0 to 360 s	5 s	◎	The initial values for both series differ. The acceleration/deceleration characteristics at low speed differ. Refer to the precautions in page 19.																				
8	Deceleration time	0.00 to 60.00 s	40 s	8	Deceleration time	0 to 360 s	5 s	◎																					
20	Acceleration/deceleration reference speed	1 to 7200 r/min	7200 r/min	20	Acceleration/deceleration reference speed	30 to 12000 r/min *1	7200 r/min*1	◎																					
22	Stall prevention operation level	0%, 60.0% to 200.0%	150%	22	Torque limit level	0% to 200%, 9999	150%*1	◎																					
24	Multi-speed setting (speed 4)	0 to 7200 r/min, 9999	9999	24	Multi-speed setting (speed 4)	0 to 12000 r/min *1, 9999	9999	◎																					
25	Multi-speed setting (speed 5)	0 to 7200 r/min, 9999	9999	25	Multi-speed setting (speed 5)	0 to 12000 r/min *1, 9999	9999	◎																					
26	Multi-speed setting (speed 6)	0 to 7200 r/min, 9999	9999	26	Multi-speed setting (speed 6)	0 to 12000 r/min *1, 9999	9999	◎																					
27	Multi-speed setting (speed 7)	0 to 7200 r/min, 9999	9999	27	Multi-speed setting (speed 7)	0 to 12000 r/min *1, 9999	9999	◎																					
30	Regenerative brake option selection	0, 1	1	30	Regenerative function selection	0, 1	0	◎																					
31	Speed command jump 1A	0 to 7200 r/min, 9999	9999	31	Speed jump 1A	0 to 12000 r/min *1, 9999	9999	◎																					
32	Speed command jump 1B	0 to 7200 r/min, 9999	9999	32	Speed jump 1B	0 to 12000 r/min *1, 9999	9999	◎																					
33	Speed command jump 2A	0 to 7200 r/min, 9999	9999	33	Speed jump 2A	0 to 12000 r/min *1, 9999	9999	◎																					
34	Speed command jump 2B	0 to 7200 r/min, 9999	9999	34	Speed jump 2B	0 to 12000 r/min *1, 9999	9999	◎																					
35	Speed command jump 3A	0 to 7200 r/min, 9999	9999	35	Speed jump 3A	0 to 12000 r/min *1, 9999	9999	◎																					
36	Speed command jump 3B	0 to 7200 r/min, 9999	9999	36	Speed jump 3B	0 to 12000 r/min *1, 9999	9999	◎																					
37	Speed unit switch-over 1	0 to 9998	0	37	Speed display	0, 0.01 to 9998	0*1	Δ	<table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">MD-CX522</th> <th colspan="2">FR-E720EX</th> </tr> <tr> <th>Pr.37 setting</th> <th>Pr.144 setting</th> <th>Pr.37 setting</th> <th>Pr.144 setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>104</td> </tr> <tr> <td>1 to 9998</td> <td>0</td> <td>0.01 to 9998</td> <td>4</td> </tr> <tr> <td>Any value in the setting range</td> <td>1</td> <td>0</td> <td>4</td> </tr> </tbody> </table>	MD-CX522		FR-E720EX		Pr.37 setting	Pr.144 setting	Pr.37 setting	Pr.144 setting	0	0	0	104	1 to 9998	0	0.01 to 9998	4	Any value in the setting range	1	0	4
MD-CX522		FR-E720EX																											
Pr.37 setting	Pr.144 setting	Pr.37 setting	Pr.144 setting																										
0	0	0	104																										
1 to 9998	0	0.01 to 9998	4																										
Any value in the setting range	1	0	4																										
42	Speed detection	0 to 7200 r/min	720 r/min	42	Speed detection	0 to 12000 r/min *1	432 r/min*1	◎	The initial values for both series differ.																				
43	Speed detection for reverse rotation	0 to 7200 r/min, 9999	9999	43	Speed detection for reverse rotation	0 to 12000 r/min *1, 9999	9999	◎																					
52	Main display screen data selection	0, 5, 6, 100	0	52	DU/PU main display data selection	0, 5, 8 to 12, 14, 19, 20, 23 to 31, 36, 37, 52 to 55, 61, 62, 100	0	Δ	When the MD-CX522 setting is "6" (motor speed), set "0" (rotation speed) for the FR-E720EX.																				
54	FM terminal function selection	1, 2, 5	1	54	FM terminal function selection	1 to 3, 5, 8 to 12, 14, 21, 24, 36, 37, 52, 53, 61, 62	1	◎																					

*1 The setting range and initial value when Pr.998 = 3016 (MM-BF (7200 r/min) motor).

MD-CX522 parameter list				FR-E720EX compatible parameter				Parameter setting																																								
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks																																							
55	Speed monitoring reference	0 to 7200 r/min	7200 r/min	55	Speed monitoring reference	0 to 12000 r/min *1	7200 r/min*1	⊙																																								
56	Current monitoring reference	0.00 to 500.00 A	Rated motor current	56	Current monitoring reference	0 to 500 A	Rated motor current *1	⊙																																								
70	Regenerative brake duty	0.0% to 15.0%	10%	70	Special regenerative brake duty	0% to 30%	0%	⊙	The initial values for both series differ.																																							
73	Speed command range selection	0, 1	0	73	Analog input selection	0, 1, 10, 11	1	⊙	The initial values for both series differ.																																							
74	Filter time constant	0 to 8	1	74	Input filter time constant	0 to 8	1	⊙																																								
75	Disconnected PU detection/PU stop selection	0 to 3	0	75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	14	△	<table border="1"> <thead> <tr> <th colspan="2">MD-CX522</th> <th rowspan="2">→</th> <th>FR-E720EX</th> </tr> <tr> <th>Pr.75 setting</th> <th>Pr.188 setting</th> <th>Pr.75 setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>→</td> <td>14</td> </tr> <tr> <td>0</td> <td>1</td> <td>→</td> <td>15</td> </tr> <tr> <td>1</td> <td>0</td> <td>→</td> <td>16</td> </tr> <tr> <td>1</td> <td>1</td> <td>→</td> <td>17</td> </tr> <tr> <td>2</td> <td>0</td> <td>→</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> <td>→</td> <td>1</td> </tr> <tr> <td>3</td> <td>0</td> <td>→</td> <td>2</td> </tr> <tr> <td>3</td> <td>1</td> <td>→</td> <td>3</td> </tr> </tbody> </table>	MD-CX522		→	FR-E720EX	Pr.75 setting	Pr.188 setting	Pr.75 setting	0	0	→	14	0	1	→	15	1	0	→	16	1	1	→	17	2	0	→	0	2	1	→	1	3	0	→	2	3	1	→	3
MD-CX522		→	FR-E720EX																																													
Pr.75 setting	Pr.188 setting		Pr.75 setting																																													
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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	1	78	Reverse rotation prevention selection	0, 1, 2	0	⊙																																								
84	Rated motor speed	Read only		84	Rated motor speed	0 to 12000 r/min *1, 9999	9999	×	There is no dedicated read-only monitor (Pr.) for the rated motor speed.																																							
117	Station number	0 to 31	0	117	PU communication station number	0 to 31 (0 to 247)	0	⊙																																								
118	Communication speed	48, 96, 192	192	118	PU communication speed	48, 96, 192, 384	192	⊙																																								
119	Stop bit length/data length	0, 1, 10, 11	1	119	PU communication stop bit length	0, 1, 10, 11	1	⊙																																								
120	Parity check presence/absence	0, 1, 2	2	120	PU communication parity check	0, 1, 2	2	⊙																																								
121	Number of communication retries	0 to 10, 9999	1	121	Number of PU communication retries	0 to 10, 9999	1	⊙																																								
122	Communication check time interval	0, 0.1 to 999.8, 9999	0	122	PU communication check time interval	0, 0.1 to 999.8 s, 9999	0	⊙																																								
123	Waiting time setting	0 to 150, 9999	9999	123	PU communication waiting time	0 to 150 ms, 9999	9999	⊙																																								
124	CR-LF presence/absence selection	0, 1, 2	1	124	PU communication CR/LF selection	0, 1, 2	1	⊙																																								
144	Speed unit switch-over 2	0, 1	0	144	Speed setting switchover	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124	104*1	⊙	Refer to the remarks on Pr.37.																																							
150	Output current detection level	0.0% to 200.0%	150%	150	Output current detection level	0% to 200%	150%	△	For the FR-E720EX, set the value calculated by the following formula. $\text{MD-CX522 setting value} \times \frac{\text{Rated motor current}}{\text{Drive unit rated current}}$																																							
151	Output current detection time	0.0 to 10.0 s	0	151	Output current detection signal delay time	0 to 10 s	0 s	⊙																																								
188	RES terminal operation selection	0, 1	0	75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	14	△	Refer to the remarks on Pr.75.																																							
189	STF, STR terminal operation selection	0, 1	0	250	Stop selection	0 to 100 s, 1000 to 1100 s, 8888, 9999	9999	△	<table border="1"> <thead> <tr> <th colspan="2">MD-CX522</th> <th rowspan="2">→</th> <th>FR-E720EX</th> </tr> <tr> <th colspan="2">Pr.189 setting</th> <th>Pr.250 setting</th> </tr> </thead> <tbody> <tr> <td colspan="2">0</td> <td>→</td> <td>9999</td> </tr> <tr> <td colspan="2">1</td> <td>→</td> <td>8888</td> </tr> </tbody> </table>	MD-CX522		→	FR-E720EX	Pr.189 setting		Pr.250 setting	0		→	9999	1		→	8888																								
MD-CX522		→	FR-E720EX																																													
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*1 The setting range and initial value when Pr.998 = 3016 (MM-BF (7200 r/min) motor).

MD-CX522 parameter list				FREQROL-E700EX compatible parameter				Parameter setting	
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks
190	RUN terminal function selection	0, 3, 4, 12, 21, 25, 99, 9999	0	190	RUN terminal function selection	0, 1, 3, 4, 7, 8, 11 to 16, 20, 21, 24 to 26, 33, 34, 36 to 38, 47, 55, 56, 60, 61, 63, 64, 68, 90, 91, 93 (Pr.190, Pr.191), 95, 96, 98, 99, 100, 101, 103, 104, 107, 108, 111 to 116, 120, 121, 124 to 126, 133, 134, 136 to 138, 147, 155, 156, 160, 161, 163, 164, 168, 190, 191, 193 (Pr.190, Pr.191), 195, 196, 198, 199, 9999	0	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX522 setting "21" (UVT).
194	FU terminal function selection		4	191	FU terminal function selection		4	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX522 setting "21" (UVT).
244	Cooling fan operation selection	0, 1	0	244	Cooling fan operation selection	0, 1	1	△	The initial value for the FR-E720EX has been changed.
900	FM terminal calibration	—	—	C0 (900)	FM terminal calibration	—	—	⊙	
902	Speed setting voltage bias	0.0% to 300.0% 0 to 7200 r/min	About 0% 0 r/min	C2 (902)	Terminal 2 speed setting bias speed	0 to 12000 r/min *1	0 r/min	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C3 (902)	Terminal 2 speed setting bias	0% to 300%	0%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
903	Speed setting voltage gain	0.0% to 300.0% 1 to 7200 r/min	100% 7200 r/min	125 (903)	Terminal 2 speed setting gain speed	0 to 12000 r/min *1	7200 r/min*1	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C4 (903)	Terminal 2 speed setting gain	0% to 300%	100%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).

*1 The setting range and initial value when Pr.998 = 3016 (MM-BF (7200 r/min) motor).

(3) List of FR-E700EX series parameters compatible with the MD-CX522-A0 series (supporting MM-BF (10000 r/min) motors)

- The following table shows the parameter settings required when replacing the MD-CX522-A0 series with the FR-E720EX series.
For the communication operation control and the data for the instruction codes such as monitoring, refer to the Instruction Manual.
- When driving an MM-BF (10000 r/min) motor with the FR-E720EX series, always set **Pr.998 = "3017" (parameter settings for an MM-BF (10000 r/min) motor) first.**
- If the initial values differ between the MD-CX522-A0 series and the FR-E720EX series, set the initial value for the FR-E720EX series according to the following table.
- The parameters with Δ are used for adjustment. Set them as required.
- The parameter replacement following the table below does not guarantee the drive unit characteristics or performance.

The parameter number of the parameters differs from that of the MD-CX522-A0 series.

Setting ◎: Set the MD-CX522-A0 parameter as it is.
 Δ: Change the MD-CX522-A0 parameter and set.
 ×: Adjust and set the FR-E720EX parameter.

MD-CX522-A0 parameter list				FR-E720EX compatible parameter				Parameter setting																					
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks																				
—	—	—	—	998	PM parameter initialization	3003, 3016, 3017, 3024, 3103, 3116, 3117, 3124, 6004, 6104, 8009, 8109, 9009, 9109	3024/6004 ↓ Set "3017"		When driving an MM-BF motor with the FR-E700EX series, always set Pr.998 = "3017" (parameter settings for an MM-BF (10000 r/min) motor) first, then set other parameters.																				
1	Maximum speed	0 to 10000 r/min	10000 r/min	1	Maximum setting	0 to 12000 r/min *1	10000 r/min*1	◎																					
2	Minimum speed	0 to 10000 r/min	0 r/min	2	Minimum setting	0 to 12000 r/min *1	0 r/min	◎																					
4	Three-speed setting (high speed)	0 to 10000 r/min	10000 r/min	4	Multi-speed setting (high speed)	0 to 12000 r/min *1	10000 r/min*1	◎																					
5	Three-speed setting (middle speed)	0 to 10000 r/min	5000 r/min	5	Multi-speed setting (middle speed)	0 to 12000 r/min *1	5000 r/min*1	◎																					
6	Three-speed setting (low speed)	0 to 10000 r/min	2000 r/min	6	Multi-speed setting (low speed)	0 to 12000 r/min *1	1000 r/min *1	◎	The initial values for both series differ.																				
7	Acceleration time	0.00 to 60.00 s	40 s	7	Acceleration time	0 to 360 s	5 s	◎	The initial values for both series differ. The acceleration/deceleration characteristics at low speed differ. Refer to the precautions in page 19.																				
8	Deceleration time	0.00 to 60.00 s	40 s	8	Deceleration time	0 to 360 s	5 s	◎																					
20	Acceleration/deceleration reference speed	1 to 10000 r/min	10000 r/min	20	Acceleration/deceleration reference speed	30 to 12000 r/min *1	10000 r/min*1	◎																					
22	Stall prevention operation level	0%, 60.0% to 200.0%	150%	22	Torque limit level	0% to 200%, 9999	150%*1	◎																					
24	Multi-speed setting (speed 4)	0 to 10000 r/min, 9999	9999	24	Multi-speed setting (speed 4)	0 to 12000 r/min *1, 9999	9999	◎																					
25	Multi-speed setting (speed 5)	0 to 10000 r/min, 9999	9999	25	Multi-speed setting (speed 5)	0 to 12000 r/min *1, 9999	9999	◎																					
26	Multi-speed setting (speed 6)	0 to 10000 r/min, 9999	9999	26	Multi-speed setting (speed 6)	0 to 12000 r/min *1, 9999	9999	◎																					
27	Multi-speed setting (speed 7)	0 to 10000 r/min, 9999	9999	27	Multi-speed setting (speed 7)	0 to 12000 r/min *1, 9999	9999	◎																					
30	Regenerative brake option selection	0, 1	1	30	Regenerative function selection	0, 1	0	◎																					
31	Speed command jump 1A	0 to 10000 r/min, 9999	9999	31	Speed jump 1A	0 to 12000 r/min *1, 9999	9999	◎																					
32	Speed command jump 1B	0 to 10000 r/min, 9999	9999	32	Speed jump 1B	0 to 12000 r/min *1, 9999	9999	◎																					
33	Speed command jump 2A	0 to 10000 r/min, 9999	9999	33	Speed jump 2A	0 to 12000 r/min *1, 9999	9999	◎																					
34	Speed command jump 2B	0 to 10000 r/min, 9999	9999	34	Speed jump 2B	0 to 12000 r/min *1, 9999	9999	◎																					
35	Speed command jump 3A	0 to 10000 r/min, 9999	9999	35	Speed jump 3A	0 to 12000 r/min *1, 9999	9999	◎																					
36	Speed command jump 3B	0 to 10000 r/min, 9999	9999	36	Speed jump 3B	0 to 12000 r/min *1, 9999	9999	◎																					
37	Speed unit switch-over 1	0 to 9998	0	37	Speed display	0, 0.01 to 9998	0*1	Δ	<table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th colspan="2">MD-CX522-A0</th> <th colspan="2">FR-E720EX</th> </tr> <tr> <th>Pr.37 setting</th> <th>Pr.144 setting</th> <th>Pr.37 setting</th> <th>Pr.144 setting</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> <td>104</td> </tr> <tr> <td>1 to 9998</td> <td>0</td> <td>0.01 to 9998</td> <td>4</td> </tr> <tr> <td>Any value in the setting range</td> <td>1</td> <td>0</td> <td>4</td> </tr> </tbody> </table>	MD-CX522-A0		FR-E720EX		Pr.37 setting	Pr.144 setting	Pr.37 setting	Pr.144 setting	0	0	0	104	1 to 9998	0	0.01 to 9998	4	Any value in the setting range	1	0	4
MD-CX522-A0		FR-E720EX																											
Pr.37 setting	Pr.144 setting	Pr.37 setting	Pr.144 setting																										
0	0	0	104																										
1 to 9998	0	0.01 to 9998	4																										
Any value in the setting range	1	0	4																										
42	Speed detection	0 to 10000 r/min	1000 r/min	42	Speed detection	0 to 12000 r/min *1	600 r/min*1	◎	The initial values for both series differ.																				
43	Speed detection for reverse rotation	0 to 10000 r/min, 9999	9999	43	Speed detection for reverse rotation	0 to 12000 r/min *1, 9999	9999	◎																					
52	Main display screen data selection	0, 5, 6, 100	0	52	DU/PU main display data selection	0, 5, 8 to 12, 14, 19, 20, 23 to 31, 36, 37, 52 to 55, 61, 62, 100	0	Δ	When the MD-CX522-A0 setting is "6" (motor speed), set "0" (rotation speed) for the FR-E720EX.																				
54	FM terminal function selection	1, 2, 5	1	54	FM terminal function selection	1 to 3, 5, 8 to 12, 14, 21, 24, 36, 37, 52, 53, 61, 62	1	◎																					
55	Speed monitoring reference	0 to 10000 r/min	10000 r/min	55	Speed monitoring reference	0 to 12000 r/min *1	10000 r/min*1	◎																					

*1 The setting range and initial value when Pr.998 = 3017 (MM-BF (10000 r/min) motor).

MD-CX522-A0 parameter list				FR-E720EX compatible parameter				Parameter setting																																								
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks																																							
56	Current monitoring reference	0.00 to 500.00 A	Rated motor current	56	Current monitoring reference	0 to 500 A	Rated motor current *1	⊙																																								
70	Regenerative brake duty	0.0% to 15.0%	10%	70	Special regenerative brake duty	0% to 30%	0%	⊙	The initial values for both series differ.																																							
73	Speed command range selection	0, 1	0	73	Analog input selection	0, 1, 10, 11	1	⊙	The initial values for both series differ.																																							
74	Filter time constant	0 to 8	1	74	Input filter time constant	0 to 8	1	⊙																																								
75	Disconnected PU detection/PU stop selection	0 to 3	0	75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	14	△	<table border="1"> <thead> <tr> <th colspan="2">MD-CX522-A0</th> <th rowspan="2">→</th> <th>FR-E720EX</th> </tr> <tr> <th>Pr.75 setting</th> <th>Pr.188 setting</th> <th>Pr.75 setting</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>→</td><td>14</td></tr> <tr><td>0</td><td>1</td><td>→</td><td>15</td></tr> <tr><td>1</td><td>0</td><td>→</td><td>16</td></tr> <tr><td>1</td><td>1</td><td>→</td><td>17</td></tr> <tr><td>2</td><td>0</td><td>→</td><td>0</td></tr> <tr><td>2</td><td>1</td><td>→</td><td>1</td></tr> <tr><td>3</td><td>0</td><td>→</td><td>2</td></tr> <tr><td>3</td><td>1</td><td>→</td><td>3</td></tr> </tbody> </table>	MD-CX522-A0		→	FR-E720EX	Pr.75 setting	Pr.188 setting	Pr.75 setting	0	0	→	14	0	1	→	15	1	0	→	16	1	1	→	17	2	0	→	0	2	1	→	1	3	0	→	2	3	1	→	3
MD-CX522-A0		→	FR-E720EX																																													
Pr.75 setting	Pr.188 setting		Pr.75 setting																																													
0	0	→	14																																													
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1	0	→	16																																													
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2	0	→	0																																													
2	1	→	1																																													
3	0	→	2																																													
3	1	→	3																																													
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	1	78	Reverse rotation prevention selection	0, 1, 2	0	⊙																																								
84	Rated motor speed	Read only		84	Rated motor speed	0 to 12000 r/min *1, 9999	9999	×	There is no dedicated read-only monitor (Pr.) for the rated motor speed.																																							
117	Station number	0 to 31	0	117	PU communication station number	0 to 31 (0 to 247)	0	⊙																																								
118	Communication speed	48, 96, 192	192	118	PU communication speed	48, 96, 192, 384	192	⊙																																								
119	Stop bit length/data length	0, 1, 10, 11	1	119	PU communication stop bit length	0, 1, 10, 11	1	⊙																																								
120	Parity check presence/absence	0, 1, 2	2	120	PU communication parity check	0, 1, 2	2	⊙																																								
121	Number of communication retries	0 to 10, 9999	1	121	Number of PU communication retries	0 to 10, 9999	1	⊙																																								
122	Communication check time interval	0, 0.1 to 999.8, 9999	0	122	PU communication check time interval	0, 0.1 to 999.8 s, 9999	0	⊙																																								
123	Waiting time setting	0 to 150, 9999	9999	123	PU communication waiting time	0 to 150 ms, 9999	9999	⊙																																								
124	CR-LF presence/absence selection	0, 1, 2	1	124	PU communication CR/LF selection	0, 1, 2	1	⊙																																								
144	Speed unit switch-over 2	0, 1	0	144	Speed setting switchover	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124	104*1	⊙	Refer to the remarks on Pr.37.																																							
150	Output current detection level	0.0% to 200.0%	150%	150	Output current detection level	0% to 200%	150%	△	For the FR-E720EX, set the value calculated by the following formula. MD-CX522-A0 setting value × $\frac{\text{Rated motor current}}{\text{Drive unit rated current}}$																																							
151	Output current detection time	0.0 to 10.0 s	0	151	Output current detection signal delay time	0 to 10 s	0 s	⊙																																								
188	RES terminal operation selection	0, 1	0	75	Reset selection/disconnected PU detection/PU stop selection	0 to 3, 14 to 17	14	△	Refer to the remarks on Pr.75.																																							
189	STF, STR terminal operation selection	0, 1	0	250	Stop selection	0 to 100 s, 1000 to 1100 s, 8888, 9999	9999	△	<table border="1"> <thead> <tr> <th>MD-CX522-A0</th> <th rowspan="2">→</th> <th>FR-E720EX</th> </tr> <tr> <th>Pr.189 setting</th> <th>Pr.250 setting</th> </tr> </thead> <tbody> <tr><td>0</td><td>→</td><td>9999</td></tr> <tr><td>1</td><td>→</td><td>8888</td></tr> </tbody> </table>	MD-CX522-A0	→	FR-E720EX	Pr.189 setting	Pr.250 setting	0	→	9999	1	→	8888																												
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*1 The setting range and initial value when Pr.998 = 3017 (MM-BF (10000 r/min) motor).

MD-CX522-A0 parameter list				FREQROL-E700EX compatible parameter				Parameter setting	
Pr.	Name	Setting range	Initial value	Pr.	Name	Setting range	Initial value	Setting	Remarks
190	RUN terminal function selection	0, 3, 4, 12, 21, 25, 98, 99, 9999	0	190	RUN terminal function selection	0, 1, 3, 4, 7, 8, 11 to 16, 20, 21, 24 to 26, 33, 34, 36 to 38, 47, 55, 56, 60, 61, 63, 64, 68, 90, 91, 93 (Pr.190, Pr.191), 95, 96, 98, 99, 100, 101, 103, 104, 107, 108, 111 to 116, 120, 121, 124 to 126, 133, 134, 136 to 138, 147, 155, 156, 160, 161, 163, 164, 168, 190, 191, 193 (Pr.190, Pr.191), 195, 196, 198, 199, 9999	0	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX522-A0 setting "21" (UVT).
194	FU terminal function selection		4	191	FU terminal function selection		4	⊙	Do not set "21" as the FR-E720EX does not have the setting value corresponding to the MD-CX522-A0 setting "21" (UVT).
244	Cooling fan operation selection	0, 1	0	244	Cooling fan operation selection	0, 1	1	△	The initial value for the FR-E720EX has been changed.
900	FM terminal calibration	—	—	C0 (900)	FM terminal calibration	—	—	⊙	
902	Speed setting voltage bias	0.0% to 300.0% 0 to 10000 r/min	About 0% 0 r/min	C2 (902)	Terminal 2 speed setting bias speed	0 to 12000 r/min *1	0 r/min	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C3 (902)	Terminal 2 speed setting bias	0% to 300%	0%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
903	Speed setting voltage gain	0.0% to 300.0% 1 to 10000 r/min	100% 10000 r/min	125 (903)	Terminal 2 speed setting gain speed	0 to 12000 r/min *1	10000 r/min*1	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).
				C4 (903)	Terminal 2 speed setting gain	0% to 300%	100%	△	As the operation panel is changed, the setting method differs. For details, refer to the Instruction Manual (Applied).

*1 The setting range and initial value when Pr.998 = 3017 (MM-BF (10000 r/min) motor).

* Notes

For replacement, note that the acceleration/deceleration characteristics differ between the MD-CX500 series and the FR-E700EX series as follows.

(1) MD-CX520

	MD-CX520	FR-E700EX
Acceleration time	<p>When the acceleration time setting (Pr.7 setting) is 5 seconds or more, the required acceleration time to the set speed is expressed by the following formula and is shorter than the set acceleration time.</p> <p>Required acceleration time (s) = 0.25 + T1</p> $T1(s) = (\text{Set speed command} - 100) \times \frac{\text{Pr. 7 setting}}{\text{Pr. 20 setting}}$	<p>Regardless of the acceleration time setting (Pr.7 setting), the required acceleration time to the set speed is expressed by the following formula.</p> <p>Required acceleration time (s)</p> $= \text{Set speed command} \times \frac{\text{Pr. 7 setting}}{\text{Pr. 20 setting}}$

(2) MD-CX522(-A0)

	MD-CX522(-A0)	FR-E700EX						
Acceleration time	<p>When the acceleration time setting (Pr.7 setting) is 20 seconds or more, the required acceleration time to the set speed is expressed by the following formula and is shorter than the set acceleration time.</p> <p>Required acceleration time (s) = 1.4 + T1</p> $T1(s) = (\text{Set speed command} - 500) \times \frac{\text{Pr. 7 setting}}{\text{Pr. 20 setting}}$	<p>Regardless of the acceleration time setting (Pr.7 setting), the required acceleration time to the set speed is expressed by the following formula.</p> <p>Required acceleration time (s)</p> $= \text{Set speed command} \times \frac{\text{Pr. 7 setting}}{\text{Pr. 20 setting}}$						
Deceleration time	<p>During deceleration, the motor coasts at 300 r/min or lower. Therefore, the required deceleration time up to 300 r/min is as follows.</p> <p>Required deceleration time</p> $= (\text{Set speed command} - 300) \times \frac{\text{Pr. 8 setting}}{\text{Pr. 20 setting}}$	<p>In the initial state, the DC injection brake operates at 0 r/min for 0.5 seconds. Changing the settings as follows makes the operation the same as the one for the MD-CX522(-A0).</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Pr.</th> <th>Setting value</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>300 r/min</td> </tr> <tr> <td>11</td> <td>0</td> </tr> </tbody> </table>	Pr.	Setting value	10	300 r/min	11	0
Pr.	Setting value							
10	300 r/min							
11	0							