Firmware Update for the FR-E800 Series General-Purpose Inverters

Thank you for your continued patronage of Mitsubishi Electric drive control products.
The firmware of the FR-E800 series general-purpose inverters will be updated to improve functionality.

1. Products Affected
FR-E800 series

2. Details of Change
(1) Supporting the functions of the FR-E700EX
Due to production discontinuation of the FR-E700EX in December 2025, the FR-E800 will support the functions of the FR-E700EX.

1) Enhanced functions for Pr.998 (PM parameter initialization) and Pr.800 (Control method selection)
Parameter settings for the PM motor MM-GKR (E700EX compatible mode) will be added.
This mode will provide more quietness than using the conventional setting of the FR-E800.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
998 (E430)	PM parameter initialization	0	3054	Parameter setting (in rotations per minute) for the MM-GKR motor (E700EX compatible mode)
			3154	Parameter setting (in frequencies) for the MM-GKR motor (E700EX compatible mode)

When a parameter setting for the MM-GKR motor (E700EX compatible mode) is selected for Pr.998, Pr.800 is automatically set to the E700EX compatible mode setting.

Pr. (Pr. group)	Name	Initial value	Setting range	Description	
800 (G200)	Control method selection	40	210	PM sensorless vector control (E700EX compatible mode)	Speed control
			213		Position control
			214		Speed control / position control switchover

2) Enhanced position control function
  ◆ Enhanced home position return function
    The following setting values will be added.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1095 (B110)	Home position return function selection	9999	10000, 10001, 10010, 10011, 10100, 10101, 10110, 10111, 11000, 11001, 11010, 11011, 11100, 11101, 11110, 11111	Select the function at home position return operation.
1282 (B180)	Home position return method selection	4	5, 105, 205	Dog type back end reference
			9, 109, 209	Dog type front end reference

The following parameters will be added.
  ◆ Pr.1284 (Home position return creep speed)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1284 (B182)	Home position return creep speed	3 Hz	0 to 400 Hz	Set the speed immediately before the home position return.

  ◆ Pr.1419 (Position control rotation direction selection)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1419 (B019)	Position control rotation direction selection	0	0	The position pulse increases when the motor rotates in the counterclockwise (CCW) direction. The position pulse decreases when the motor rotates in the clockwise (CW) direction.
			1	The position pulse decreases when the motor rotates in the counterclockwise (CCW) direction. The position pulse increases when the motor rotates in the clockwise (CW) direction.

3) Enhanced functions for Pr.81 (Number of motor poles) and Pr.454 (Number of second motor poles)
    The following setting values will be added.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
81 (C102)	Number of motor poles	9999	14, 16, 18, 20, 22, 24	Set the number of motor poles.
454 (C202)	Number of second motor poles	9999		Set the number of poles of the second motor.

4) Addition of Pr.795 (DC injection brake operation current level)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
795 (G111)	DC injection brake operation current level	9999	0% to 200%	Set the excitation current command during DC injection brake operation as the percentage against the rated motor current.
			9999	100% is applied.

5) Addition of Pr.1493 (Automatic servo-ON selection)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1493 (T749)	Automatic servo-ON selection	9999	1	Automatic servo-ON enabled
			9999	Automatic servo-ON disabled

6) Addition of stopper control function
◆ Addition of Pr.1414 (Stopper control function selection)
 Set a condition to apply the Pr.1415 (Stopper control torque limit) setting described below and prevent activation of E.OLT.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1414 (B116)	Stopper control function selection	0	0	Stopper control disabled
			1	When the X29 signal is turned ON (speed control / position control)
			10	During position control, Current position [before electronic gear] ≥ Pr.1418 + Pr.1417, or Current position [before electronic gear] ≤ -(Pr.1418 + Pr.1417)
			11	During position control, Current position [before electronic gear] ≥ Pr.1418 + Pr.1417
			12	During position control, Current position [before electronic gear] ≤ -(Pr.1418 + Pr.1417)

◆ Addition of Pr.1415 (Stopper control torque limit)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1415 (B117)	Stopper control torque limit	40%	0% to 200%	Set the torque limit value during stopper control.
			9999	The torque limit value is the analog input value.

◆ Addition of Pr.1417 and Pr.1418 (Stopper control operation position)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1417 (B118)	Stopper control operation position lower 4 digits	0	0 to 9999	Set the stopper control operation position.
1418 (B119)	Stopper control operation position upper 4 digits	0	0 to 9999	Stopper control operation position = Pr.1418 × 10000 + Pr.1417

7) Enhanced functions for input terminal function selection
   The following functions will be added to Pr.178 to Pr.189 and Pr.525 to Pr.531.

Function	Signal name	Setting value
Stopper control switchover	X29	29
P/PI control switchover (P control by turning ON the X44 signal)	X44	44
Servo-ON	SON	86

8) Enhanced functions for output terminal function selection
   The following function will be added to Pr.190 to Pr.197 and Pr.313 to Pr.319.

Function	Signal name	Setting value	
		Positive logic	Negative logic
Operation ready 3	RY3	37	137

   The following function will be added to Pr.320 to Pr.322.

Function	Signal name	Setting value
Operation ready 3	RY3	37

9) Enhanced functions for monitor display selection
   The following monitor item will be added to Pr.52, Pr.54, Pr.158, Pr.306, Pr.310, Pr.774 to Pr.776, Pr.992, Pr.1027 to Pr.1034.

Monitor item	Increment and unit	Setting value	Description
Speed command	0.01 Hz	66	The speed command to be input to the speed controller is displayed. (0 Hz is displayed under V/F control or Advanced magnetic flux vector control.)

   * The increment varies depending on the Pr.53 setting.

10) Addition of the notch filter

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1003 (G601)	Notch filter frequency	0	0	No notch filter
			10 to 625 Hz	Set the frequency for the center of gain attenuation.
1004 (G602)	Notch filter depth	0	0 to 3	0 (Deep) → 3 (Shallow)
1005 (G603)	Notch filter width	0	0 to 3	0 (Narrow) → 3 (Wide)

11) Addition of Pr.146 (Low-speed range response level setting)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
146 (C115)	Low-speed range response level setting	2	1 to 10	Adjust the response level during control in the low-speed range. (Available for the MM-GKR motor only)

12) Addition of the easy gain tuning function

Pr. (Pr. group)	Name	Initial value	Setting range	Description
818 (C112)	Easy gain tuning response level setting	9 (0.75K or lower), 4 (1.5K or higher)	1 to 15	Set the response level. 1 (Low response) to 15 (High response)
819 (C113)	No easy gain tuning	0	0	No easy gain tuning
			1	Gain is calculated with load calculation (Available for the MM-GKR motor only)
			2	Gain is calculated with load (Pr.880) manual input. (Available for the MM-GKR motor only)

13) Enhanced brake sequence function

   The setting value "20" will be added for Pr.292.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
292 (F500, A110)	Automatic acceleration/deceleration	0	20	Brake signal mode

   Pr.1494 (Brake operation time at start 2) and Pr.1495 (Brake operation time at stop 2) will be added.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
1494 (A111)	Brake operation time at start 2	9999	0 to 5 s	Set the mechanical delay time until braking eases in increments of 0.01 s.
			9999	The Pr.281 (Brake operation time at start) setting is applied.
1495 (A112)	Brake operation time at stop 2	9999	0 to 5 s	Set the mechanical delay time until the brake closes in increments of 0.01 s.
			9999	The Pr.283 (Brake operation time at stop) setting is applied.

14) Addition of "HP3" warning

Operation panel indication	**HP3**
Name	Home position return parameter setting error
Description	Appears when an error occurs during the home position return operation under position control.

15) Enhanced functions for Pr.820 and Pr.830 (Speed control P gain)

The setting ranges of Pr.820 and Pr.830 will be changed from "0 to 1000" to "0 to 5000" to be the same as those of the FR-E700EX.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
820 (G211)	Speed control P gain 1	60%	0% to 5000%	The proportional gain during speed control is set. (Setting this parameter higher improves the trackability for speed command changes. It also reduces the speed fluctuation caused by external disturbance.)
830 (G311)	Speed control P gain 2	9999	0% to 5000%	Second function of Pr.820 (Valid when the RT signal is ON)
			9999	The Pr.820 setting is applied to the operation.

* When an induction motor is driven, the upper limit is 1000%.

16) Addition of Pr.730 (Speed estimation P gain)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
730 (G900)	Speed estimation P gain	9999	0% to 300%	Set the proportional gain for the speed estimator.
			9999	MM-GKR: 200% is applied for 0.1 kW. 125% is applied for the other capacities. A motor other than the MM-GKR: 100% is applied.

17) Addition of Pr.785 (Increased magnetic excitation current level)

Pr. (Pr. group)	Name	Initial value	Setting range	Description
785 (G272)	Increased magnetic excitation current level	9999	0% to 200%	Set the maximum possible torque generated in the low-speed range lower than 10% of the rated motor frequency.
			9999	100% is applied.

(2) Addition of SD devices for analog terminals

Special registers for control used for the PLC function will be added.

The analog input values of terminals are stored.

Device No.	Name	Description
SD1330	Terminal 1 input	When the FR-E8AXY is installed, the normalized analog value input via terminal 1 of the FR-E8AXY is stored. The analog input is voltage input. Monitor range: -4095 to 4095
SD1331	Terminal 2 input	The normalized analog value input via terminal 2 is stored. Voltage/current input switch Monitor range when switch 2 is set to "I" (current input): 0 to 4095 Monitor range when switch 2 is set to "V" (voltage input): 0 to 4095
SD1332	Terminal 4 input	The normalized analog value input via terminal 4 is stored. Voltage/current input switch Monitor range when switch 4 is set to "I" (current input): 0 to 4095 Monitor range when switch 4 is set to "V" (voltage input): 0 to 4095

(3) Enhanced functions for Pr.571 (Holding time at a start)

The setting range of Pr.571 will be changed from "0 to 10" to "0 to 60".

Pr. (Pr. group)	Name	Initial value	Setting range	Description
571 (F103)	Holding time at a start	9999	0 to 60 s	Set the holding time of the frequency set in Pr.13.
			9999	The holding function at start is disabled.

(4) Enhanced functions for Pr.430 (Pulse monitor selection)

The following setting value will be added. A pulse condition is monitored in the number of pulses during operation.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
430 (B011)	Pulse monitor selection	9999	4000 to 4005, 4100 to 4105	· Displays the value before electronic gear for position command or current position to be monitored (multifunction monitor). · Displays the value after electronic gear for droop pulses to be monitored (multifunction monitor). · Displays the value before electronic gear for position command or current position to be monitored (PLC function special register). · Displays the value after electronic gear for droop pulses to be monitored (PLC function special register).

(5) Applying changes made in firmware version 15 or later to mass production inverters

Changes made in firmware version 15 or later which are described in Sales and Service No. 814E (refer to the following website) will be applied to mass production inverters.

https://www.MitsubishiElectric.com/app/fa/download/search.do?mode=techinfo&kisyu=%2Finv&c1=0&c2=&c3=&c4=3

3. Date of Change

Country of origin	Date of change
MADE IN JAPAN	The change will be sequentially applied to the September 2025 production or later.
MADE IN CHINA	The change will be sequentially applied to the October 2025 production or later.

4. Product Identification

The SERIAL (determined by date of production) can be checked on the rating plate or packaging plate.

SERIAL example on rating plate

□□ <u>25</u> <u>9</u> ○○○○○○
<u>Symbol Year Month Control number</u>

SERIAL

SERIAL example on packaging plate

□□ <u>25</u> <u>9</u> ○○○
<u>Symbol Year Month Control number</u>

SERIAL

The SERIAL consists of two symbols, three characters indicating the production year and month, and the control number

(six characters for the rating plate, three characters for the packaging plate).

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

5. Firmware Version

The inverter firmware version to which the change described will be applied is as follows:

Series	Firmware version
FR-E800	18 or later

For how to install the firmware, refer to the FR Configurator2 (SW1DND-FRC2-E) Instruction Manual (IB-0600516ENG).