

Firmware Upgrade for the FR-E700EX Series Sensorless Servo Drive Units

Thank you for your continued patronage of Mitsubishi Electric drive control products.
The firmware of the FR-E700EX series sensorless servo drive units will be upgraded to improve the usability.

The initial setting of the low-speed range torque characteristic selection for the MM-GKR motor has changed as follows. Consequently, the sound of the motor has also changed.
Manufactured in May 2019 or earlier: Low-speed range high-torque characteristic enabled
Manufactured in June 2019 or later: Low-speed range high-torque characteristic enabled (fast-response)
For the details, refer to "2. (1) Change of the low-speed range torque characteristic of the MM-GKR motor".

1. Products Affected

FR-E700EX series drive units

2. Details of the Change

(1) Change of the low-speed range torque characteristic of the MM-GKR motor

The setting range and initial value of Pr.788 Low-speed range torque characteristic selection will be changed.

The sound of the motor (high-frequency tone generated during high frequency superposition control in the low-speed range) will change due to a change of the initial setting.

Set Pr.788 = "9999" (previous initial value) to drive the motor with the same tone as the one set in the initial setting for drive units manufactured in May or earlier.

Pr.	Name	Initial value	Setting range	Operation
788	Low-speed range torque characteristic selection	8888	101	MM-GKR/EM-A/MM-CF/MM-BF: Low-speed range high-torque characteristic enabled (fast-response) Motors other than the above: Low-speed range high-torque characteristic disabled
			8888	MM-GKR/EM-A: Low-speed range high-torque characteristic enabled (fast-response) Motors other than the above: Low-speed range high-torque characteristic disabled
			9999	MM-GKR: Low-speed range high-torque characteristic enabled EM-A: Low-speed range high-torque characteristic enabled (fast-response) Motors other than the above: Low-speed range high-torque characteristic disabled

Date of issue	May 2019	Title	Firmware Upgrade for the FR-E700EX Series Sensorless Servo Drive Units	Mitsubishi Electric Corp., Nagoya Works 5-1-14 Yada-minami, Higashi-ku, Nagoya 461-8670 Tel.: +81 (52) 721-2111 Main line
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(2) Compatibility with EM-A motors (0.1 to 0.75 kW)

Parameter setting values and functions for an EM-A motor will be added.

- Additional setting values for Pr.998 PM parameter initialization

Performing PM parameter initialization automatically adjusts the parameter initial settings and setting increments required to drive an EM-A motor.

Pr.998 setting value	Description
3044*	Parameter settings for an EM-A motor (rotations per minute)
3144	Parameter settings for an EM-A motor (frequency)

* This value can be set by selecting the **PM** (PM) mode on the operation panel.

- Addition of Pr.71 Applied motor setting

The setting value for an EM-A motor will be added. (The setting automatically changes when PM parameter initialization is performed.)

Pr.71 setting value	Description
1140	EM-A motor

- Addition of position accuracy compensation gain tuning (offline auto tuning)

This function increases positioning accuracy by automatically measuring the position accuracy compensation amount when using EM-A motors.

Pr.	Name	Setting value	Description
96	Auto tuning setting/status	301	Performs position accuracy compensation gain tuning. (Note: The motor rotates within one mechanical revolution.)
979	Position accuracy compensation gain tuning 1 to 3	90.00% to 110.00%, 9999	Tuning data
980			(The value measured by position accuracy compensation gain tuning is automatically set.)
981			When "9999" is set in any parameter from Pr.979 to Pr.981, the function is disabled.

Position control specifications

Motor internal command resolution	4096 pulses/rev
Positioning accuracy*	$\pm 1.8^\circ$ (mechanical angle: equivalent to a resolution of 200 pulses per revolution / input voltage of 200 V / wiring length of 5 m or less)

* Perform position accuracy compensation gain tuning.

Other functions and specifications are the same as those for an MM-GKR motor.

Refer to the section concerning the MM-GKR motor in the Instruction Manual (Applied).

(3) Change of the initial value for Pr.737 Low-speed range response level setting

The initial value for the FR-E720EX-0.1K will be changed.

Pr.	Name	Initial value	Setting value	Description
737	Low-speed range response level setting	0.1K: 4 0.2K or higher: 2	1 to 10	Adjusts the response level during control in the low-speed range.

The Pr.737 setting depends on the combination of the motor capacity and the settings in Pr.71 Applied motor and Pr.788 Low-speed range torque characteristic selection as shown in the following table.

Applied motor (Pr.71 setting)	Low-speed range torque characteristic selection (Pr.788 setting)	Motor capacity	Pr.737 setting value
MM-GKR (540)	9999	All	2
	8888, 101	0.1 kW	4
		Other than 0.1 kW	2
EM-A (1140)	8888, 9999, 101	All	2
MM-CF (330)	101	All	1
MM-BF (460, 470)	101	All	2

3. Date of Change

The change will be sequentially applied to the products manufactured in June 2019 or later.

4. Product Identification

The products after the change will have the following SERIAL or later on their rating plates.

Rating plate example

□ 9 6 ○○○○○○
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).