

MITSUBISHI ELECTRIC Inverter

Sales and Service

No. 722EA

Firmware Upgrade for the FR-A800, A800 Plus, F800 Series General-Purpose Inverters and the FR-B, B3 Series Inverters (FR-A800 Specification) for Pressure-Resistant Explosion-Proof Motors

Thank you for your continued patronage of Mitsubishi Electric drive control products.

The firmware of the FR-A800, A800 Plus, F800 series general-purpose inverters and the FR-B, B3 series inverters (FR-A800 specification) for pressure-resistant explosion-proof motors will be upgraded to improve functionality.

1. Products Affected

FR-A800 (not including the FR-A800-P), FR-A800 Plus (FR-A800-CRN/LC), FR-F800 series, FR-B, B3 series

2. Details of Change

(1) Improving the phase-synchronized bypass switching function (available when the FR-A8AVP is used) (FR-A800, A800 Plus, F800 series)

The following parameters can be used to make adjustments to reduce the shock caused by the bypass switchover.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
512 (A013)	Phase synchronization compensation frequency limit	1 Hz	0 to 5 Hz	Set the upper limit of the compensation amount for phase synchronization between the commercial power supply and the inverter output voltage.
520 (A014)	Phase synchronization ending phase difference	5°	1° to 20°	Set the phase difference to end phase synchronization. Phase synchronization is complete when the phase difference value remains in the range of Pr.1383 ±Pr.520 for one second or more.

(2) Earth (ground) fault detection at start / restricting reset method for an earth (ground) fault

The reset method for the output side earth (ground) fault overcurrent (E.GF) can be restricted so that the fault is reset only by turning OFF the control circuit power.

This restriction prevents the inverter from being damaged due to repeated reset operations for E.GF by the other methods such as entering the RES signal.

Pr. (Pr. group)	Name	Initial value	Setting range	Description	
				Earth (ground) fault	Reset method
249 (H101)	Earth (ground) fault detection at start	0	0	Not detected at start	Not restricted
			1	Detected at start	
			2		Restricted

1) Selecting whether to perform the earth (ground) fault detection at start

- If an earth (ground) fault is detected at start while Pr.249 = "1 or 2", the output side earth (ground) fault overcurrent (E.GF) is detected and output is shut off.
- The Pr.249 setting is enabled under V/F control and Advanced magnetic flux vector control.

Date of issue		Title	
October 2022		Firmware Upgrade for the FR-A800, A800 Plus, F800 Series General-Purpose Inverters and the FR-B, B3 Series Inverters (FR-A800 Specification) for Pressure-Resistant Explosion-Proof Motors	Mitsubishi Electric Corp., Nagoya Works 5-1-14 Yada-minami, Higashi-ku, Nagoya 461-8670 Tel.: +81 (52) 721-2111 Main line

2) Restricting reset method for an earth (ground) fault

- The reset method when the output is shut off due to the output side earth (ground) fault overcurrent (E.GF) can be restricted. When E.GF occurs while Pr.249 = "2", E.GF can be reset only by turning OFF the control circuit power.
- When E.GF occurs while Pr.249 = "2", the output short-circuit detection (ALM4) signal can be output.
- For the terminal used to output the ALM4 signal, set "23" (positive logic) or "123" (negative logic) in any of Pr.190 to Pr.196 (Output terminal function selection).

(3) Output short-circuit fault (E.SCF)

Select the reset operation and fault indication for an output short-circuit.

This restriction prevents the inverter from being damaged due to repeated reset operations for E.SCF by the other methods such as entering the RES signal.

Pr. (Pr. group)	Name	Initial value	Setting range	Description	
				Operation after detection	Reset method
521 (H194)	Output short-circuit detection	0	0	E.OC1 to E.OC3	Not restricted
			1	E.SCF	Restricted

- The fault indication for an output short-circuit (E.OC1 to E.OC3, and E.SCF) can be changed by the Pr.521 setting.
- When an output short-circuit is detected while Pr.521 = "1", E.SCF is displayed and the inverter output is shut off.
- When E.SCF occurs while Pr.521 = "1", E.SCF can be reset only by turning OFF the control circuit power. (E.OC1 to E.OC3 can be reset by any reset method.)
- When E.SCF occurs, the output short-circuit detection (ALM4) signal can be output.
- For the terminal used to output the ALM4 signal, set "23" (positive logic) or "123" (negative logic) in any of Pr.190 to Pr.196 (Output terminal function selection).

(4) Extending detection time of the output current and zero current

The setting range of the Pr.151 Output current detection signal delay time and Pr.153 Zero current detection time will be extended.

Pr. (Pr. group)	Name	Details of the change
151 (M461)	Output current detection signal delay time	The setting range will be extended to 0 to 300 seconds.
153 (M463)	Zero current detection time	

(5) Selecting the command interface in the Network operation mode (FR-A800 series only)

- The proximity dog (X76) signal can be input via communication.
- The following table shows the command interface for each function in the Network operation mode, determined by the parameter settings: an external terminal or a communication interface (RS-485 terminals or communication option).

Pr.338 Communication operation command source		0: NET			1: EXT		
Pr.339 Communication speed command source		0: NET	1: EXT	2: EXT	0: NET	1: EXT	2: EXT
X76	Proximity dog	Combined			EXT		

(6) Emergency stop function (FR-F800 series (already available for FR-A800 series))

When a fault occurs in the superordinate controller, the motor can be decelerated by the signal input via an external terminal.

Pr. (Pr. group)	Name	Initial value	Setting range	Description
815 (H710)	Torque limit level 2	9999	0% to 400%	Set the torque limit level at a deceleration by turning ON the X92 signal.
			9999	The torque limit set to Pr.22 is valid.
1103 (F040)	Deceleration time at emergency stop	5 s	0 to 3600 s	Set the motor deceleration time at a deceleration by turning ON the X92 signal.

- The motor will decelerate to stop according to the settings of Pr.1103 Deceleration time at emergency stop and Pr.815 Torque limit level 2 when the Emergency stop (X92) signal is turned ON.
- To input the X92 signal, set "92" in any of Pr.178 to Pr.189 (Input terminal function selection) to assign the function.

3. Date of Change

Country of origin	Products Affected	Date of Change
MADE IN JAPAN	Other than FR-A846(-E)-0.4K to 5.5K, other than FR-F846(-E)-0.75K to 7.5K	The change will be applied to the November 2022 production or later.
	FR-A846(-E)-0.4K to 5.5K, FR-F846(-E)-0.75K to 7.5K	The change will be applied to the March 2023 production or later.
MADE IN CHINA	Other than FR-A846(-E)-0.4K to 5.5K, other than FR-F846(-E)-0.75K to 7.5K	The change will be applied to the December 2022 production or later.
	FR-A846(-E)-0.4K to 5.5K, FR-F846(-E)-0.75K to 7.5K	The change will be applied to the April 2023 production or later.

4. Product Identification

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

SERIAL example on rating plate □ 2 Y ○○○○○	SERIAL example on packaging plate □ 2 Y ○○○
Symbol Year Month Control number	Symbol Year Month Control number
SERIAL	SERIAL

The SERIAL consists of one symbol, two 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 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).

5. Firmware Version

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

Series	Firmware version
FR-A800 FR-B, B3 FR-A800 Plus	37 or later
FR-F800	337 or later

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