[Issue No.] FAM-A-0025-A

[Title] Replacement of micro programmable controllers from FX_1 to FX_{3G}

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[Relevant Models] MELSEC-F FX_1

Thank you for your continued support of Mitsubishi micro programmable controller, MELSEC-F series. This technical bulletin explains standard alternatives to the models that have already been discontinued and useful references for examining the details.

> The alternative models are listed in the following tables based on the number of I/O points, program capacity, and shapes of product and I/O terminals (terminal blocks, connectors, etc.). Note that, depending on your application and usage conditions, anyone other than listed model may be suitable.
>
> Also, suitable models may change due to the release of new models or function improvement.
>
> For details, please consult your local Mitsubishi representative.

1   Relevant models (series name)

Discontinued model	Alternative model	Remarks (Be sure to check differences using references.)
FX_1	FX_{3G}	• The program capacity of FX_{3G} series is larger than that of FX_1 series. • Device assignment, supported version of programming tool, memory backup method at a power failure, etc. are different.

2   Date of discontinuation
June 30, 2002

3   Repair support
Until June 30, 2009

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4   Discontinued models and alternative models

It is recommended to replace an FX_1 series model with an FX_{3G} series model.

In this technical bulletin, standard alternative models are listed based on the number of I/O points, program capacity, shapes of product and I/O terminals (terminal blocks, connectors, etc.). Note that, depending on the application and usage conditions, other models from the listed models may be suitable.

Refer to [Points to consider] described below and select a suitable model for your application and usage.

[Points to consider]

(a) The following tables list alternative models which can be used in a stand-alone application for FX_1 series models or available models. Depending on the usage status and system configuration (usage status of extension modules or extension blocks) or smaller number of I/O points used, you can select other models or series than the listed models.

(b) For extension blocks, extension modules, function extension boards, and built-in batteries, alternative models that can be connected to the FX_{3G} series main unit are listed.

(c) Some special points to be checked are described in the column of "Special notes". However, most alternative models have specification differences other than those mentioned in "Special notes", such as smaller dimensions than the current model. When considering, be sure to check the details of various specifications in the reference manuals as well as "Special notes".

(d) Based on the above mentioned, if there is no standard alternative model, "No alternative model" is described. In this case, check the required functions and performances and select suitable alternative models for your application and system configuration from the FX_3 series.

■**List of recommended alternative models (main unit)**

Discontinued model		Alternative model	Special notes
Product	**Model**	**Model**	
Main unit	FX$_1$-16MR	FX$_{3G}$-24MR/ES	
Main unit	FX$_1$-16MT	FX$_{3G}$-24MT/ES	
Main unit	FX$_1$-24MR	FX$_{3G}$-24MR/ES + (FX$_{2N}$-8EYR)	The model in parentheses is required if the number of output points exceeds 10.
Main unit	FX$_1$-24MT	FX$_{3G}$-24MT + (FX$_{2N}$-8EYR)	The model in parentheses is required if the number of output points exceeds 10.
Main unit	FX$_1$-32MR	FX$_{3G}$-40MR/ES	
Main unit	FX$_1$-32MT	FX$_{3G}$-40MT/ES	
Main unit	FX$_1$-48MR	FX$_{3G}$-40MR/ES + FX$_{2N}$-8EYR	
Main unit	FX$_1$-48MT	FX$_{3G}$-40MT/ES + FX$_{2N}$-8EYT	
Main unit	FX$_1$-64MR	FX$_{3G}$-60MR/ES + FX$_{2N}$-8EYR	
Main unit	FX$_1$-64MT	FX$_{3G}$-60MT/ES + FX$_{2N}$-8EYT	
Main unit	FX$_1$-80MR	FX$_{3G}$-60MR/ES + FX$_{2N}$-8EX + FX$_{2N}$-16EYR	
Main unit	FX$_1$-80MT	FX$_{3G}$-60MT/ES + FX$_{2N}$-8EX + FX$_{2N}$-16EYT	

■**Extension devices and option devices to be replaced when replacing a main unit from FX$_1$ series with FX$_{3G}$ series**

Discontinued model		Alternative model connectable to FX$_{3G}$	Special notes
Product	**Model**	**Model**	
Extension module	FX-32ER	FX$_{2N}$-32ER	
Extension module	FX-48ER	FX$_{2N}$-48ER	
Extension module	FX-48ET	FX$_{2N}$-48ET	
Extension module (24VDC power supply)	FX-48ER-D	FX$_{2N}$-48ER-D	
Extension module (24VDC power supply)	FX-48ET-D	FX$_{2N}$-48ET-D	
Extension module (100VAC input)	FX-48ER-A1	FX$_{2N}$-48ER-UA1/UL	
Extension block	FX-8ER	FX$_{2N}$-8ER	
Extension block	FX-8ET	No alternative model	
Extension block	FX-8EX	FX$_{2N}$-8EX	
Extension block	FX-8EYR	FX$_{2N}$-8EYR	
Extension block	FX-8EYS	FX$_{2N}$-16EYS	
Extension block	FX-8EYT	FX$_{2N}$-8EYT	
Extension block	FX-16EX	FX$_{2N}$-16EX	
Extension block	FX-16EYR	FX$_{2N}$-16EYR	
Extension block	FX-16EYS	FX$_{2N}$-16EYS	
Extension block	FX-16EYT	FX$_{2N}$-16EYT	

Discontinued model		Alternative model connectable to FX$_{3G}$	Special notes
Product	**Model**	**Model**	
Extension block (large current type)	FX-4EYS-H	No alternative model	
Extension block (large current type)	FX-4EYT-H	FX$_{2N}$-8EYT-H	Large capacity type, 1A/1 point (2A/4 points) 5 to 30VDC
Extension block (large current type)	FX-8EYS-H	No alternative model	
Extension block (large current type)	FX-8EYT-H	FX$_{2N}$-8EYT-H	Large capacity type, 1A/1 point (2A/4 points) 5 to 30VDC
Extension block (input-only high-density terminal block input type)	FX-16EX-V	FX$_{2N}$-16EX	
Extension block (input-only high-density connector input type)	FX-16EX-C	FX$_{2N}$-16EX-C	
Extension block (output-only, high-density)	FX-16EYR-V	FX$_{2N}$-16EYR	
Extension block (output-only, high-density)	FX-16EYT-V	FX$_{2N}$-16EYT	
Extension block (connector output)	FX-16EYT-C	FX$_{2N}$-16EYT-C	
Extension block (high-speed input type)	FX-8EX-F	No alternative model	
Extension block (separate common at all points)	FX-8EYR-S	FX$_{2N}$-8EYR-S-ES/UL	
Extension block (5VDC power, for input)	FX-8EX-L	FX$_{2N}$-16EXL-C	Connector terminals are used for the FX$_{2N}$-16EXL-C.
Extension block (100VAC, for input)	FX-8EX-A1	FX$_{2N}$-8EX-UA1/UL	
Special adapter (Analog volume)	FX-8AV	FX$_{3G}$-8AV-BD	
Special adapter (for optical communication) (interface for M-NET/MINI)	FX-16NP	No alternative model	Configure a system using CC-Link.
Special adapter (for wired communication) (interface for M-NET/MINI)	FX-16NT	No alternative model	Configure a system using CC-Link.
DC power supply module (1A/24VDC output)	FX-10PSU	FX$_{2N}$-20PSU	
DC power supply module (2A/24VDC output)	FX-20PSU	FX$_{2N}$-20PSU	

■Programming tools to be required when replacing a main unit from FX$_1$ series to FX$_{3G}$ series

Models that can be used in the FX$_1$ series		Alternative model that can be used for FX$_{3G}$	Special notes
Product	**Model**	**Model**	
Handy programming panel	FX-20P or FX-30P + FX-20P-CAB	FX-30P	FX-20P-CAB (sold separately) is required to connect FX-30P with FX$_1$. Connect FX-30P to FX$_{3G}$ using FX-20P-CAB0 included.
Programming software	FX-PCS/WIN	GX Developer Ver.8	Connectable to FX$_1$
		GX Works2	Connectable to FX$_1$
Programming software	GX Developer (Ver.7 or earlier)	GX Developer Ver.8	Connectable to FX$_1$
		GX Works2	Connectable to FX$_1$

To connect a personal computer with an FX series model, cables and/or an interface are required as follows.

• For connection between an FX$_1$ series model and a personal computer (RS-232C):
  FX-232-AWC(-H) converter for RS-232-C/RS422 +
  F$_2$-232CAB-1 cable + FX-422CAB cable or FX-422CAB-150 cable

• For connection between an FX$_{3G}$ series model and a personal computer (USB):
  GT09-C30USB-5P cable

5   References to be checked for replacement

■References for FX$_1$ series■

References		Description
Category	**Manual (No.)**	
Network	FX-16NP/NT USER'S GUIDE (JY992D56201)	Describes part names, external dimensions, mounting method, handling, and specifications of interface blocks for FX-16NP/NT MELSECNET/MINI.
Program	THE FX SERIES OF PROGRAMMABLE CONTROLLER PROGRAMMING MANUAL (FX$_0$/FX$_{0S}$/FX$_{0N}$/FX/FX$_{2C}$/FX$_{2N}$/FX$_{2NC}$) (JY992D48301)	Describes matters related to programs, such as basic instructions, step ladder diagram instructions, application instructions, and descriptions of devices, for FX$_0$/FX$_{0S}$/FX$_{0N}$/FX$_1$/FX$_2$/FX$_{2C}$ series.

■**References for FX$_{3G}$ series**■

References		Description
Category	**Manual (No.)**	
Main body	FX$_{3G}$ SERIES USER'S MANUAL - Hardware Edition (JY997D31301)	Describes matters related to hardware, such as I/O specifications, wiring, and mounting method for FX$_{3G}$ series.
	FX$_{2N}$-CNV-BC USER'S GUIDE (JY992D66601)	Describes the connecting method of system using the connector conversion adapter FX$_{2N}$-CNV-BC.
Analog I/O	FX$_{3S}$/FX$_{3G}$/FX$_{3GC}$/FX$_{3U}$/FX$_{3UC}$ SERIES USER'S MANUAL - Analog Control Edition (JY997D16701)	Describes how to handle the analog control for the FX$_{3G}$/FX$_{3U}$/FX$_{3UC}$ series.
	FX$_{3G}$-2AD-BD INSTALLATION MANUAL (JY997D33501)	Describes the part names, external dimensions, mounting method, and specifications for the analog input board FX$_{3G}$-2AD-BD.
	FX$_{3G}$-1DA-BD INSTALLATION MANUAL (JY997D33601)	Describes the part names, external dimensions, mounting method, and specifications for the analog output board FX$_{3G}$-1DA-BD.
	FX$_{3G}$-8AV-BD INSTALLATION MANUAL (JY997D33701)	Describes the part names, external dimensions, mounting method, and specifications for the FX$_{3G}$-8AV-BD analog volume extension board.
	FX$_{3U}$-3A-ADP USER'S MANUAL (JY997D35601)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-3A-ADP analog I/O adapter.
	FX$_{3U}$-4AD-ADP USER'S MANUAL (JY997D13901)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-4AD-ADP analog input adapter.
	FX$_{3U}$-4DA-ADP USER'S MANUAL (JY997D14001)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-4DA-ADP analog output adapter.
Analog input (Temperature control)	FX$_{3U}$-4AD-PT-ADP USER'S MANUAL (JY997D14701)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-4AD-PT-ADP temperature sensor input special adapter.
	FX$_{3U}$-4AD-PTW-ADP USER'S MANUAL (JY997D29101)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-4AD-PTW-ADP temperature sensor input special adapter.
	FX$_{3U}$-4AD-TC-ADP USER'S MANUAL (JY997D14801)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-4AD-TC-ADP thermocouple thermometer input special adapter.
Communications	FX SERIES USER'S MANUAL - Data Communication Edition (JY997D16901)	Describes the system configuration, functions, and program examples for N:N network, parallel link, computer link, inverter communications, no protocol communication, and programming communications.
	FX$_{3G}$-232-BD INSTALLATION MANUAL (JY997D32001)	Describes the part names, external dimensions, mounting method, and specifications for the RS-232C communication extension board FX$_{3G}$-232-BD.
	FX$_{3G}$-422-BD INSTALLATION MANUAL (JY997D32101)	Describes the part names, external dimensions, mounting method, and specifications for the RS-422 communication extension board FX$_{3G}$-422-BD.
	FX$_{3G}$-485-BD INSTALLATION MANUAL (JY997D32201)	Describes the part names, external dimensions, mounting method, and specifications for the RS-485 communication extension board FX$_{3G}$-485-BD.

References		Description
Category	**Manual (No.)**	
	FX$_{3U}$-232ADP INSTALLATION MANUAL (JY997D13701)	Describes the part names, external dimensions, mounting method, and specifications for the RS-232C communication special adapter FX$_{3U}$-232ADP.
	FX$_{3U}$-485ADP INSTALLATION MANUAL(JY997D13801)	Describes the part names, external dimensions, mounting method, and specifications for the RS-485 communication special adapter FX$_{3U}$-485ADP.
Network	FX$_{2N}$-64CL-M USER'S MANUAL [Hardware Volume] (JY997D05401)	Describes the part names, external dimensions, and specifications for the CC-Link/LT master block model FX$_{2N}$-64CL-M.
	FX$_{2N}$-16CCL-M USER'S MANUAL (JY992D93101)	Describes the part names, external dimensions, and specifications for the CC-Link master block model FX$_{2N}$-16CCL-M.
	FX$_{2N}$-32CCL USER'S MANUAL (JY992D71801)	Describes the part names, external dimensions, and specifications for the FX$_{2N}$-32CCL CC-Link interface block.
	FX$_{3U}$-64CCL USER'S MANUAL (JY997D30401)	Describes the part names, external dimensions, specifications, and handling for the FX$_{3U}$-64CCL CC-LinkV2 interface block.
Program	FX$_{3S}$/FX$_{3G}$/FX$_{3GC}$/FX$_{3U}$/FX$_{3UC}$ SERIES PROGRAMMING MANUAL - Basic & Applied Instructions Edition (JY997D16601)	Describes the matters related to sequence programs, such as basic instructions, step ladder instructions, application instructions, and descriptions of devices, for the FX$_{3G}$/FX$_{3U}$/FX$_{3UC}$ series.
	FX-30P OPERATION MANUAL (JY997D34401)	Describes the matters related to sequence programs, such as basic instructions, step ladder instructions, and application instructions, for the FX series.

REVISIONS

Version	Date of Issue	Revision
A	September 2021	First edition