



PROGRAMMABLE CONTROLLERS  
MELSEC-F

**FX3U-CF-ADP**

**USER'S MANUAL**

***FX3U***



# Safety Precautions

(Read these precautions before use.)

Before installation, operation, maintenance or inspection of this product, thoroughly read through and understand this manual and all of the associated manuals. Also, take care to handle the module properly and safely.

This manual classifies the safety precautions into two categories:  **WARNING** and  **CAUTION**.

|  |   |
|--|---|
|  <b>WARNING</b> | Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.                              |
|  <b>CAUTION</b> | Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage. |

Depending on the circumstances, procedures indicated by  **CAUTION** may also cause severe injury. It is important to follow all precautions for personal safety.

Store this manual in a safe place so that it can be taken out and read whenever necessary. Always forward it to the end user.

## 1. DESIGN PRECAUTIONS

|  <b>WARNING</b>   | Reference |
|--|-----------|
| <ul style="list-style-type: none"> <li>• Make sure to include the following safety circuits outside the PLC to ensure safe system operation even during external power supply problems or PLC failure. Otherwise, malfunctions may cause serious accidents.                             <ol style="list-style-type: none"> <li>1) Above all, the following components should be included: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).</li> <li>2) Note that when the PLC main unit detects an error during self diagnosis, such as a watchdog timer error, all outputs are turned off. Also, when an error that cannot be detected by the PLC main unit occurs in an input/output control block, output control may be disabled. External circuits and mechanisms should be designed to ensure safe machinery operation in such cases.</li> </ol> </li> </ul> | 15<br>28  |

|  <b>CAUTION</b>  | Reference |
|---|-----------|
| <ul style="list-style-type: none"> <li>• Observe the following items. Failure to do so may cause incorrect data-writing through noise to the PLC and result in PLC failure, machine damage or other accident.                             <ol style="list-style-type: none"> <li>1) Do not bundle the control line together with or lay it close to the main circuit or power line. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or power line. Noise may cause malfunctions.</li> <li>2) Ground the shield wire or shield of a shielded cable. Do not use common grounding with heavy electrical systems</li> </ol> </li> <li>• During access (ACCESS LED is lit or flickering) to CompactFlash™ card, do not remove the CompactFlash™ card or power off the FX3U-CF-ADP. Failure to do so may cause CompactFlash™ card failures or malfunctions.</li> <li>• If the power is turned OFF while the CompactFlash™ card is being accessed (ACCESS LED is lit or flickering), the buffered data is erased. Also files or CompactFlash™ card itself may be damaged. Do not turn the power OFF while the ACCESS LED is lit or flickering.</li> <li>• Do not apply excessive pressure to the power supply cable or power supply connector. Excessive pressure may cause damage or error.</li> </ul> | 15<br>28  |

# Safety Precautions

(Read these precautions before use.)

## 2. INSTALLATION PRECAUTIONS

|  <b>WARNING</b>  | Reference |
|---|-----------|
| <ul style="list-style-type: none"> <li>Make sure to shut down all phases of the power supply externally before installing the FX3U-CF-ADP. Failure to do so may cause electric shock or damage to the product.</li> </ul> | 22<br>100 |

|  <b>CAUTION</b>  | Reference |
|---|-----------|
| <ul style="list-style-type: none"> <li>Use the product within the generic environment specifications described in PLC main unit manual (Hardware Edition). Never use the product in areas with excessive dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub>, or NO<sub>2</sub>), flammable gas, vibration or impacts, or expose it to high temperature, condensation, or rain and wind. If the product is used in such conditions, electric shock, fire, malfunctions, deterioration or damage may occur.</li> <li>Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.</li> <li>Install the product securely using a DIN rail or mounting screws.</li> <li>Install the product on a flat surface. If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.</li> <li>When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.</li> <li>Be sure to remove the dust proof sheet from the PLC's ventilation port when installation work is completed. Failure to do so may cause fire, equipment failures or malfunctions.</li> <li>Connect the FX3U-CF-ADP securely to special adapter connector. Loose connections may cause malfunctions.</li> <li>Connect the power connector of the power supply cable securely to the CF-ADP power supply connector. Loose connections may cause malfunctions.</li> <li>When inserting a CompactFlash™ card into the FX3U-CF-ADP, push it into the CF card slot until the EJECT button pops out. Loose connections may cause malfunctions.</li> <li>Before inserting/removing a CompactFlash™ card into/from the FX3U-CF-ADP, set the CF card ACCESS switch to OFF and confirm that the BUFFER LED and ACCESS LED are both OFF. Failure to do so may corrupt data within the CompactFlash™ card.</li> <li>When removing a CompactFlash™ card from the FX3U-CF-ADP, make sure to support the CompactFlash™ card by hand, as it may pop out. Failure to do so may cause the CompactFlash™ card to fall from the FX3U-CF-ADP and break.</li> <li>Turn off the power to the PLC before attaching or detaching the following devices. Failure to do so may cause device failures or malfunctions.               <ul style="list-style-type: none"> <li>Peripheral devices, display modules, expansion boards and special adapters</li> <li>I/O extension units/blocks, FX Series terminal block and the special function units/blocks</li> <li>Battery and memory cassette</li> </ul> </li> </ul> | 22<br>100 |

## 3. WIRING PRECAUTIONS

|  <b>WARNING</b>  | Reference |
|---|-----------|
| <ul style="list-style-type: none"> <li>Make sure to cut off all phases of the power supply externally before attempting wiring work. Failure to do so may cause electric shock or damage to the product.</li> </ul> | 28<br>100 |

|  <b>CAUTION</b>   | Reference |
|--|-----------|
| <ul style="list-style-type: none"> <li>Connect the DC power supply wiring to the dedicated terminal described in this manual. If an AC power supply is connected to a DC input/output terminal or DC power supply terminal, the PLC will burn out.</li> <li>Connect the DC power supply wiring to the dedicated connector described in this manual. If an AC power supply is connected to a DC power supply connector, the PLC will burn out.</li> <li>When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.</li> </ul> | 28<br>100 |

# Safety Precautions

(Read these precautions before use.)

## 4. STARTUP AND MAINTENANCE PRECAUTIONS

|  <b>WARNING</b>   | Reference       |
|--|-----------------|
| <ul style="list-style-type: none"><li>• Make sure to connect the battery for memory backup correctly. Do not charge, disassemble, heat, short-circuit, or expose the battery to fire.<br/>Doing so may rupture or ignite it.</li><li>• Do not touch any terminal while the PLC's power is on.<br/>Doing so may cause electric shock or malfunctions.</li><li>• Before modifying or disrupting the program in operation or running the PLC, carefully read through this manual and the associated manuals and ensure the safety of the operation.<br/>An operation error may damage the machinery or cause accidents.</li></ul> | 28<br>82<br>101 |

|  <b>CAUTION</b>   | Reference       |
|--|-----------------|
| <ul style="list-style-type: none"><li>• Do not disassemble or modify the PLC.<br/>Doing so may cause fire, equipment failures, or malfunctions.<br/>For repair, contact your local Mitsubishi Electric representative.</li><li>• Turn off the power to the PLC before attaching or detaching the following devices.<br/>Failure to do so may cause device failures or malfunctions.<ul style="list-style-type: none"><li>- Peripheral devices, display modules, expansion boards and special adapters</li><li>- I/O extension units/blocks, FX Series terminal block and the special function units/blocks</li><li>- Battery and memory cassette</li></ul></li></ul> | 29<br>82<br>101 |

## 5. DISPOSAL PRECAUTIONS

|  <b>CAUTION</b>  | Reference |
|--|-----------|
| <ul style="list-style-type: none"><li>• Please contact a certified electronic waste disposal company for the environmentally safe recycling and disposal of your device.</li></ul> | 15        |

## 6. TRANSPORTATION AND STORAGE PRECAUTIONS

|  <b>CAUTION</b>   | Reference |
|--|-----------|
| <ul style="list-style-type: none"><li>• The PLC is a precision instrument. During transportation, avoid impacts larger than those specified in the general specifications of the PLC main unit manual by using dedicated packaging boxes and shock-absorbing palletes.<br/>Failure to do so may cause failures in the PLC.<br/>After transportation, verify operation of the PLC and check for damage of the mounting part, etc.</li></ul> | 15        |



# FX3U-CF-ADP

## User's Manual

|                 |             |
|-----------------|-------------|
| Manual number   | JY997D35401 |
| Manual revision | E           |
| Date            | 4/2015      |

### Foreword

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This manual describes the FX3U-CF-ADP CF card special adapter and should be read and understood before attempting to install the hardware.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

## Outline Precautions

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- This manual provides information for the use of the FX3U-CF-ADP CF card special adapter. The manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows;
    - 1) Any engineer who is responsible for the planning, design and construction of automatic equipment using the product associated with this manual should be of a competent nature, trained and qualified to the local and national standards required to fulfill that role. These engineers should be fully aware of all aspects of safety with aspects regarding to automated equipment.
    - 2) Any commissioning or maintenance engineer must be of a competent nature, trained and qualified to the local and national standards required to fulfill the job. These engineers should also be trained in the use and maintenance of the completed product. This includes being familiar with all associated manuals and documentation for the product. All maintenance should be carried out in accordance with established safety practices.
    - 3) All operators of the completed equipment should be trained to use that product in a safe and coordinated manner in compliance with established safety practices. The operators should also be familiar with documentation that is connected with the actual operation of the completed equipment.
- Note:** the term 'completed equipment' refers to a third party constructed device that contains or uses the product associated with this manual.
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
  - Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
  - This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions into the system.
  - When combining this product with other products, please confirm the standards and codes of regulation to which the user should follow. Moreover, please confirm the compatibility of this product with the system, machines, and apparatuses to be used.
  - If there is doubt at any stage during installation of the product, always consult a professional electrical engineer who is qualified and trained in the local and national standards. If there is doubt about the operation or use, please consult your local Mitsubishi Electric representative.
  - Since the examples within this manual, technical bulletin, catalog, etc. are used as reference; please use it after confirming the function and safety of the equipment and system. Mitsubishi Electric will not accept responsibility for actual use of the product based on these illustrative examples.
  - The content, specification etc. of this manual may be changed for improvement without notice.
  - The information in this manual has been carefully checked and is believed to be accurate; however, if you notice any doubtful point, error, etc., please contact your local Mitsubishi Electric representative.

## Registration

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- CompactFlash is a trademark of SanDisk Corporation in the United States and other countries.
- MODBUS<sup>®</sup> is a registered trademark of Schneider Electric SA.
- The company name and the product name to be described in this manual are the registered trademarks or trademarks of each company.

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## Standards

### Certification of UL, cUL standards

FX3U-CF-ADP units comply with the UL standards (UL, cUL).

UL, cUL File number :E95239

Regarding the standards that comply with the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

### Compliance with EC directive (CE Marking)

This document does not guarantee that a mechanical system including this product will comply with the following standards.

Compliance to EMC directive and LVD directive for the entire mechanical module should be checked by the user / manufacturer. For more information please consult with your nearest Mitsubishi product provider.

Regarding the standards that comply with the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

#### Attention

- This product is designed for use in industrial applications.

#### Note

- Authorized Representative in the European Community:  
Mitsubishi Electric Europe B.V.  
Gothaer Str. 8, 40880 Ratingen, Germany

#### Requirement for Compliance with EMC directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.

Type: Programmable Controller (Open Type Equipment)

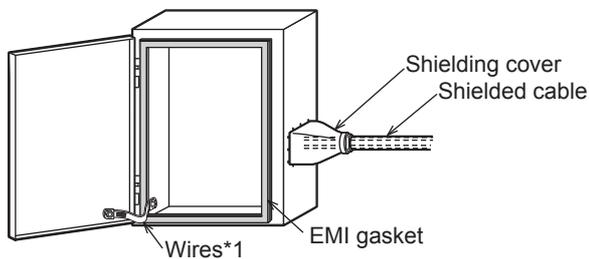
Models: MELSEC FX3U series manufactured  
from June 1st, 2009      FX3U-CF-ADP

| Standard   | Remark  |
|--|---|
| EN61131-2:2007<br>Programmable controllers<br>- Equipment requirements and tests | Compliance with all relevant aspects of the standard.<br><b>EMI</b><br>• Radiated Emission<br>• Conducted Emission<br><b>EMS</b><br>• Radiated electromagnetic field<br>• Fast Transient burst<br>• Electrostatic discharge<br>• High-energy surge<br>• Voltage drops and interruptions<br>• Conducted RF<br>• Power frequency magnetic field |

### Caution to conform with EC Directives

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- Installation in Enclosure  
Programmable logic controllers are open-type devices that must be installed and used within conductive control cabinets. Please use the programmable logic controller while installed within a conductive shielded control cabinet. Please secure the cabinet door to the control cabinet (for conduction). Installation within a control cabinet greatly affects the safety of the system and aids in shielding noise from the programmable logic controller.
- Control cabinet
  - The control cabinet must be conductive.
  - Ground the control cabinet with the thickest possible grounding cable.
  - To ensure that there is electric contact between the control cabinet and its door, connect the cabinet and its doors with thick wires.
  - In order to suppress the leakage of radio waves, the control cabinet structure must have minimal openings. Also, wrap the cable holes with a shielding cover or other shielding devices.
  - The gap between the control cabinet and its door must be as small as possible by attaching EMI gaskets between them.



\*1. These wires are used to improve the conductivity between the door and control cabinet.

## Associated Manuals

Only the installation manual is packed together with the FX3U-CF-ADP special adapter.  
 For a detailed explanation of the FX3U-CF-ADP special adapter, refer to this manual.  
 For the hardware information and instructions on the PLC main unit, refer to the respective manuals.

- Refer to these manuals
- ✓ Refer to the appropriate equipment manual
- △ For a detailed explanation, refer to an additional manual

|  |                   | Title of manual  | Document number | Description   | Model code |
|--|-------------------|--|-----------------|---|------------|
| <b>Manual for the Main Unit</b>                          |                   |  |                 |   |            |
| <b>FX3U Series PLCs Main Unit</b>                        |                   |  |                 |   |            |
| △  | Supplied Manual   | FX3U Series Hardware Manual  | JY997D50301     | Describes FX3U Series PLC specification for I/O, wiring and installation extracted from the FX3U User's Manual - Hardware Edition.<br>For details, refer to FX3U Series User's Manual - Hardware Edition.                     | -          |
| ○  | Additional Manual | FX3U Series User's Manual - Hardware Edition   | JY997D16501     | Describes FX3U Series PLC specification details for I/O, wiring, installation and maintenance.  | 09R516     |
| <b>FX3UC Series PLCs Main Unit</b>                       |                   |  |                 |   |            |
| △  | Supplied Manual   | FX3UC(D,DS,DSS) Series Hardware Manual   | JY997D50501     | Describes FX3UC(D,DS,DSS) Series PLC specification for I/O, wiring and installation extracted from the FX3UC Series User's Manual - Hardware Edition.<br>For details, refer to FX3UC Series User's Manual - Hardware Edition. | -          |
| △  | Supplied Manual   | FX3UC-32MT-LT-2 Hardware Manual  | JY997D31601     | Describes FX3UC-32MT-LT-2 specification for I/O, wiring and installation extracted from the FX3UC User's Manual - Hardware Edition.<br>For details, refer to FX3UC Series User's Manual - Hardware Edition.                   | -          |
| △  | Supplied Manual   | FX3UC-32MT-LT Hardware Manual (Only Japanese document)                                     | JY997D12701     | Describes FX3UC-32MT-LT specification for I/O, wiring and installation extracted from the FX3UC User's Manual - Hardware Edition.<br>For details, refer to FX3UC Series User's Manual - Hardware Edition.                     | -          |
| ○  | Additional Manual | FX3UC Series User's Manual - Hardware Edition  | JY997D28701     | Describes FX3UC Series PLC specification details for I/O, wiring, installation and maintenance.   | 09R519     |
| <b>Programming for FX3S/FX3G/FX3GC/FX3U/FX3UC Series</b> |                   |  |                 |   |            |
| ○  | Additional Manual | FX3S/FX3G/FX3GC/FX3U/FX3UC Series Programming Manual - Basic & Applied Instruction Edition | JY997D16601     | Describes FX3S/FX3G/FX3GC/FX3U/FX3UC Series PLC programming for basic/applied instructions and devices.   | 09R517     |
| <b>Manuals for communication control</b>                 |                   |  |                 |   |            |
| ○  | Additional Manual | FX Series User's Manual - Data Communication Edition                                       | JY997D16901     | Details of N:N Network, parallel link, computer link and non-protocol communication (RS instructions, FX2N-232IF)   | 09R715     |
| <b>Manuals for FX3U-CF-ADP CF card special adapter</b>   |                   |  |                 |   |            |
| △  | Supplied Manual   | FX3U-CF-ADP Installation Manual  | JY997D35201     | Describes installation specifications for the FX3U-CF-ADP CF card special adapter extracted from the FX3U-CF-ADP User's Manual.<br>For details, refer to FX3U-CF-ADP User's Manual.   | -          |
| ○  | Additional Manual | FX3U-CF-ADP User's Manual (This Manual)  | JY997D35401     | Describes details of the FX3U-CF-ADP CF card special adapter.   | 09R720     |

## Generic Names and Abbreviations Used in the Manual

| Generic name or abbreviation                          | Description  |
|---|--|
| <b>PLC</b>  |  |
| FX3U series   | Generic name for FX3U Series PLC   |
| FX3U PLC or main unit                                 | Generic name for FX3U Series PLC main unit   |
| FX3UC series  | Generic name for FX3UC Series PLC  |
| FX3UC PLC or main unit                                | Generic name for FX3UC Series PLC main unit  |
| <b>Expansion board</b>                                |  |
| Expansion board                                       | Generic name for expansion board<br>The number of connectable units, however, depends on the type of main unit.<br>To check the number of connectable units, refer to the User's Manual - Hardware Edition of the main unit to be used for your system.  |
| <b>Special adapter</b>                                |  |
| Special adapter                                       | Generic name for high-speed input/output special adapter, communication special adapter, analog special adapter, and CF card special adapter.<br>The number of connectable units, however, depends on the type of main unit.<br>To check the number of connectable units, refer to the User's Manual - Hardware Edition of the main unit to be used for your system. |
| CF-ADP  | Abbreviated name for FX3U-CF-ADP   |
| <b>Extension equipment</b>                            |  |
| I/O extension unit/block                              | Generic name for input/output powered extension unit and input/output extension block<br>The number of connectable units, however, depends on the type of main unit.<br>To check the number of connectable units, refer to the User's Manual - Hardware Edition of the main unit to be used for your system.   |
| Special function unit/block or Special extension unit | Generic name for special function unit and special function block<br>The number of connectable units, however, depends on the type of main unit.<br>To check the number of connectable units, refer to the User's Manual - Hardware Edition of the main unit to be used for your system.   |
| Special function unit                                 | Generic name for special function unit   |
| Special function block                                | Generic name for special function block<br>The number of connectable units, however, depends on the type of main unit.<br>To check the number of connectable units, refer to the User's Manual - Hardware Edition of the main unit to be used for your system.   |
| <b>Optional unit</b>                                  |  |
| Memory cassette                                       | Generic name for FX3U-FLROM-16, FX3U-FLROM-64, FX3U-FLROM-64L, FX3U-FLROM-1M   |
| CF card or CompactFlash™ card                         | Generic name for GT05-MEM-128MC, GT05-MEM-256MC, GT05-MEM-512MC, GT05-MEM-1GC, GT05-MEM-2GC  |
| Memory card adaptor                                   | Generic name for GT05-MEM-ADPC   |
| <b>Peripheral unit</b>                                |  |
| Peripheral unit                                       | Generic name for programming software, handy programming panel, and indicator  |
| <b>Programming tool</b>                               |  |
| Programming tool                                      | Generic name for programming software and handy programming panel  |
| Programming software                                  | Generic name for programming software  |
| GX Works2   | Generic name for SW□DNC-GXW2-J/SW□DNC-GXW2-E programming software package  |
| GX Developer  | Generic name for SW□D5C-GPPW-J/SW□D5C-GPPW-E programming software package  |
| FX-PCS/WIN(-E)  | Generic name for FX-PCS/WIN or FX-PCS/WIN-E programming software package   |
| Handy programming panel (HPP)                         | Generic name for FX-30P, FX-20P(-E) and FX-10P(-E)   |
| <b>Indicator</b>                                      |  |
| GOT1000 series  | Generic name for GT15, GT11 and GT10   |
| GOT-900 series  | Generic name for GOT-A900 series and GOT-F900 series   |
| GOT-A900 series                                       | Generic name for GOT-A900 series   |
| GOT-F900 series                                       | Generic name for GOT-F900 series   |
| ET-940 series   | Generic name for ET-940 series<br>Only manuals in Japanese are available for these products  |

| Generic name or abbreviation  | Description   |
|-------------------------------|---|
| <b>Manual</b>                 |   |
| FX3U Hardware Edition         | FX3U Series User's Manual - Hardware Edition  |
| FX3UC Hardware Edition        | FX3UC Series User's Manual - Hardware Edition   |
| Programming manual            | FX3S/FX3G/FX3GC/FX3U/FX3UC Series Programming Manual - Basic and Applied Instructions Edition |
| Communication control Edition | FX Series User's Manual - Data Communication Edition  |
| Analog control Edition        | FX3S/FX3G/FX3GC/FX3U/FX3UC Series User's Manual - Analog Control Edition                      |
| Positioning control Edition   | FX3S/FX3G/FX3GC/FX3U/FX3UC Series User's Manual - Positioning Control Edition                 |

# Reading the Manual

In this manual, the following formats are used for describing the common items.

- Shows the manual title.**  
This area shows the manual title for the current page.
- Shows the title of the chapter and the title of the section.**  
This area shows the title of the chapter and the title of the section for the current page.
- Indexes the chapter number.**  
The right side of each page indexes the chapter number for the page currently opened.

FX3U-CF-ADP User's Manual
1 Introduction  
1.1 Outline

## 1. Introduction

### 1.1 Outline

The CF card special adapter FX3U-CF-ADP (hereinafter abbreviated as "CF-ADP") stores data to and reads data from the CompactFlash™ card in accordance with applied instructions for the CF-ADP sent from the FX3U/FX3UC PLC.

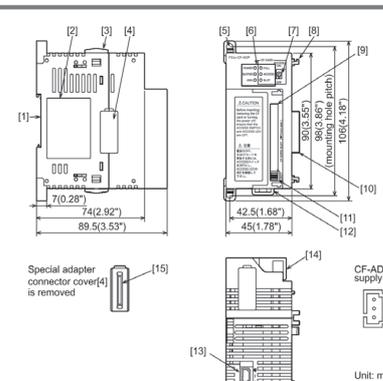
Data is stored in CSV format on the CompactFlash™ card.  
Only one CF-ADP unit can be connected to a single main unit.

→ For system configuration, refer to Chapter 3.

- Data can be saved in the CompactFlash™ card in files with the FIFO (first in, first out) function.
- Data can be saved in a specified file stored in the CompactFlash™ card.
- Data can be read from the CompactFlash™ card.

→ For details on the functions, refer to Chapter 6.

### 1.2 External Dimensions and Part Names



Special adapter connector cover [4] is removed

[1] DIN rail mounting groove  
(DIN rail: DIN46277, 35mm (1.38") width)

[2] Nameplate

[3] Special adapter slide lock

[4] Special adapter connector cover

Direct mounting hole  
2 holes of  $\phi 4.5$  (0.18")  
(mounting screw: M4 screw)

[6] Status LEDs

[7] CF card ACCESS switch

[8] Special adapter fixing hook

CF-ADP power supply connector

3 Ground (Green)

2  $\ominus$  (Black)

1  $\oplus$  (Red)

Unit: mm (inches)  
MASS (Weight): 0.3kg (0.66lbs)  
(CF card not attached)

[9] CF card slot

[10] Special adapter connector

[11] EJECT button

[12] DIN rail mounting hook

[13] CF-ADP power supply connector

[14] CF card cover

[15] Special adapter connector

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8 CF-ADP Applied Examples

9 Program Examples

10 Troubleshooting

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**Shows the reference.**  
The "→" mark indicates a reference destination and reference manual.

The above is different from the actual page, as it is provided for explanation only.

# 1. Introduction

## 1.1 Outline

The CF card special adapter FX3U-CF-ADP (hereinafter abbreviated as "CF-ADP") stores data to and reads data from the CompactFlash™ card in accordance with applied instructions for the CF-ADP sent from the FX3U/FX3UC PLC.

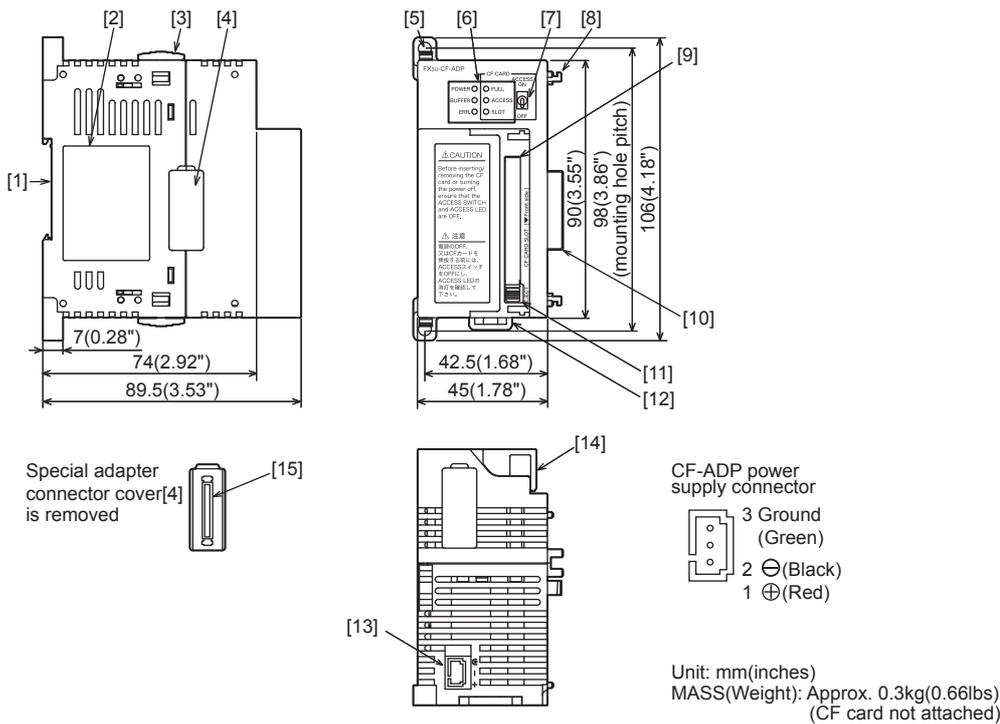
Data is stored in CSV format on the CompactFlash™ card.  
Only one CF-ADP unit can be connected to a single main unit.

→ For system configuration, refer to Chapter 3.

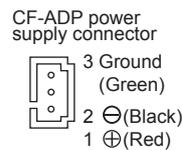
- Data can be saved in the CompactFlash™ card in files with the FIFO (first in, first out) function.
- Data can be saved in a specified file stored in the CompactFlash™ card.
- Data can be read from the CompactFlash™ card.

→ For details on the functions, refer to Chapter 6.

## 1.2 External Dimensions and Part Names



- |  |                                    |
|--|------------------------------------|
| [1] DIN rail mounting groove<br>(DIN rail: DIN46277, 35mm (1.38") width) | [9] CF card slot                   |
| [2] Nameplate  | [10] Special adapter connector     |
| [3] Special adapter slide lock   | [11] EJECT button                  |
| [4] Special adapter connector cover                                      | [12] DIN rail mounting hook        |
| Direct mounting hole   | [13] CF-ADP power supply connector |
| [5] 2 holes of $\phi 4.5$ (0.18")<br>(mounting screw: M4 screw)          | [14] CF card cover                 |
| [6] Status LEDs  | [15] Special adapter connector     |
| [7] CF card ACCESS switch  |                                    |
| [8] Special adapter fixing hook  |                                    |



Unit: mm(inches)  
MASS(Weight): Approx. 0.3kg(0.66lbs)  
(CF card not attached)

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## 1.3 Power and status LEDs

| LED display | Color | Status  | Description   |
|-------------|-------|---------|---|
| POWER       | Green | OFF     | Power is not being supplied from the external power supply (24V DC).  |
|             |       | ON      | Power is being supplied from the external power supply (24V DC).  |
| BUFFER      | Green | OFF     | Data is not stored in the internal buffer.  |
|             |       | ON      | Data is stored in the internal buffer.  |
| ERR.        | Red   | OFF     | No errors.  |
|             |       | ON      | CF write error, CompactFlash™ card error, etc. has occurred.  |
| FULL        | Red   | OFF     | The CompactFlash™ card has free space.  |
|             |       | Flicker | The free space in the CompactFlash™ card is 20% or less of the full capacity.   |
|             |       | ON      | The CompactFlash™ card has no free space.<br>The free space in the CompactFlash™ card is 1% or less of the full capacity. |
| ACCESS      | Green | OFF     | CompactFlash™ card not accessed.  |
|             |       | ON      | CompactFlash™ card being accessed.  |
| SLOT        | Green | OFF     | The CompactFlash™ card is not inserted, or the slot is in the CompactFlash™ card unmounted status.                        |
|             |       | ON      | The CompactFlash™ card is inserted, or the slot is in the CompactFlash™ card mounted status.                              |

## 2. Specification

### DESIGN PRECAUTIONS



## WARNING

- Make sure to include the following safety circuits outside the PLC to ensure safe system operation even during external power supply problems or PLC failure.  
Otherwise, malfunctions may cause serious accidents.
  - 1) Above all, the following components should be included: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).
  - 2) Note that when the PLC main unit detects an error during self diagnosis, such as a watchdog timer error, all outputs are turned off. Also, when an error that cannot be detected by the PLC main unit occurs in an input/ output control block, output control may be disabled.  
External circuits and mechanisms should be designed to ensure safe machinery operation in such cases.

### DESIGN PRECAUTIONS



## CAUTION

- Observe the following items. Failure to do so may cause incorrect data-writing through noise to the PLC and result in PLC failure, machine damage or other accident.
  - 1) Do not bundle the control line together with or lay it close to the main circuit or power line. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or power line.  
Noise may cause malfunctions.
  - 2) Ground the shield wire or shield of a shielded cable. Do not use common grounding with heavy electrical systems
- During access (ACCESS LED is lit or flickering) to CompactFlash™ card, do not remove the CompactFlash™ card or power off the CF-ADP.  
Failure to do so may cause CompactFlash™ card failures or malfunctions.
- If the power is turned OFF while the CompactFlash™ card is being accessed (ACCESS LED is lit or flickering), the buffered data is erased. Also files or CompactFlash™ card itself may be damaged. Do not turn the power OFF while the ACCESS LED is lit or flickering.
- Do not apply excessive pressure to the power supply cable or power supply connector.  
Excessive pressure may cause damage or error.

### DISPOSAL PRECAUTIONS



## CAUTION

- Please contact a certified electronic waste disposal company for the environmentally safe recycling and disposal of your device.

### TRANSPORTATION AND STORAGE PRECAUTIONS



## CAUTION

- The PLC is a precision instrument. During transportation, avoid impacts larger than those specified in the general specifications of the PLC main unit manual by using dedicated packaging boxes and shock-absorbing palletes.  
Failure to do so may cause failures in the PLC.  
After transportation, verify operation of the PLC and check for damage of the mounting part, etc.

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## 2.1 General specifications

For items not listed below, specifications are the same as the of the PLC main unit.  
For general specifications, refer to the manual of the PLC main unit.

→ Refer to the FX3U Hardware Edition  
→ Refer to the FX3UC Hardware Edition

| Item                                      | Specification   |
|---|---|
| Ambient temperature *1                    | 0 to 55°C (32 to 131°F) ..... when operating,<br>-25 to 75°C (-13 to 167°F) ..... when stored |
| Dielectric withstand voltage              | 500V AC for one minute  |
| Insulation resistance                     | 5MΩ or more by 500V DC Megger   |
| Between all terminals and ground terminal |   |

\*1. The upper limit of the ambient temperature shall not exceed "20°C" below the upper limit of the CompactFlash™ card operating temperature.

Example : When the upper limit of the CompactFlash™ card operating temperature is 75°C, the upper limit of the ambient temperature is 55°C.

## 2.2 Power supply specification

| Item                           | Specification  |   |
|--------------------------------|--|---|
| Adapter driving power supply   | Power supply voltage   | 24V DC +20% -15% Ripple (p-p) within 5%                                       |
|                                | Permitted instantaneous power failure time                             | Operation continues when the instantaneous power failure is shorter than 1ms. |
|                                | Current consumption  | 130mA<br>Connect a 24V DC power supply to the power supply connector.         |
| Interface driving power supply | 50mA / 5V DC<br>5V DC power is supplied internally from the main unit. |   |

## 2.3 Performance specification

| Item   | Specification   |
|--|---|
| Data transfer method                         | Depends on the applied instruction sent from the main unit.   |
| Clock data                                   | Operates based on the clock data in the main unit.  |
| DOS file system                              | FAT16   |
| The maximum data capacity                    | 2GB   |
| The maximum file size                        | 512MB (Per 1 file)  |
| Data format                                  | CSV format  |
| The number of the maximum files              | 63 file (When the FIFO function is not used)  |
| FIFO functional file                         | 1 pattern. The file name is automatically assigned.   |
| Data storage directory                       | <ul style="list-style-type: none"> <li>• Standard file<br/>  \FX3U_CF\DATA\ (The directory name is fixed.)</li> <li>• FIFO file<br/>  \FX3U_CF\DATA\FIFO\ (The directory name is fixed.)</li> </ul> |
| File name type                               | 8.3 file name (The extension is fixed to "CSV".) (Half-width alphanumeric characters and symbols and character strings allowed in the MS-DOS)   |
| Number of I/O occupied points                | 0 point<br>(This number is not related to the maximum number of input/output points of the PLC.)  |
| Number of connectable units to the main unit | 1 unit*1  |

\*1. The CF-ADP is handled in the same way as communication expansion boards and communication special adapters, and occupies 1 communication channel.

## 2.4 CF card ACCESS switch specification

| Setting item      | Description                               |
|-------------------|---|
| ON                | Access to the CompactFlash™ card enabled  |
| OFF <sup>*1</sup> | Access to the CompactFlash™ card disabled |

- \*1. Turn OFF the CF card ACCESS switch, and then confirm that the BUFFER LED and ACCESS LED are completely OFF before removing the CompactFlash™ card or turning OFF the power of the CF-ADP.

## 2.5 CompactFlash™ card specification

| Item                       | Specification   |
|----------------------------|---|
| Operating ambient humidity | 5 to 95%RH (no condensation)  |
| Power supply voltage       | 3.3V 150mA or less  |
| Connector shape            | Type I  |
| Format form                | FAT16<br>(The CompactFlash™ card shall be formatted in accordance with the FAT16 in advance.) |
| Data capacity              | 2GB or less   |
| Connector terminal         | Gilding   |
| No. of installable cards   | 1   |

## 2.6 Applicable CompactFlash™ card

The following CompactFlash™ card are applicable for the CF-ADP.

| Model          | Description     |
|----------------|-----------------|
| GT05-MEM-128MC | Flash ROM 128MB |
| GT05-MEM-256MC | Flash ROM 256MB |
| GT05-MEM-512MC | Flash ROM 512MB |
| GT05-MEM-1GC   | Flash ROM 1GB   |
| GT05-MEM-2GC   | Flash ROM 2GB   |

### Caution

The life of a CompactFlash™ card is expired when data is written to it a specified number of times. Generally, at the end of the operational life, the CompactFlash™ card has reduced capabilities. Please use it ensuring sufficient availability.

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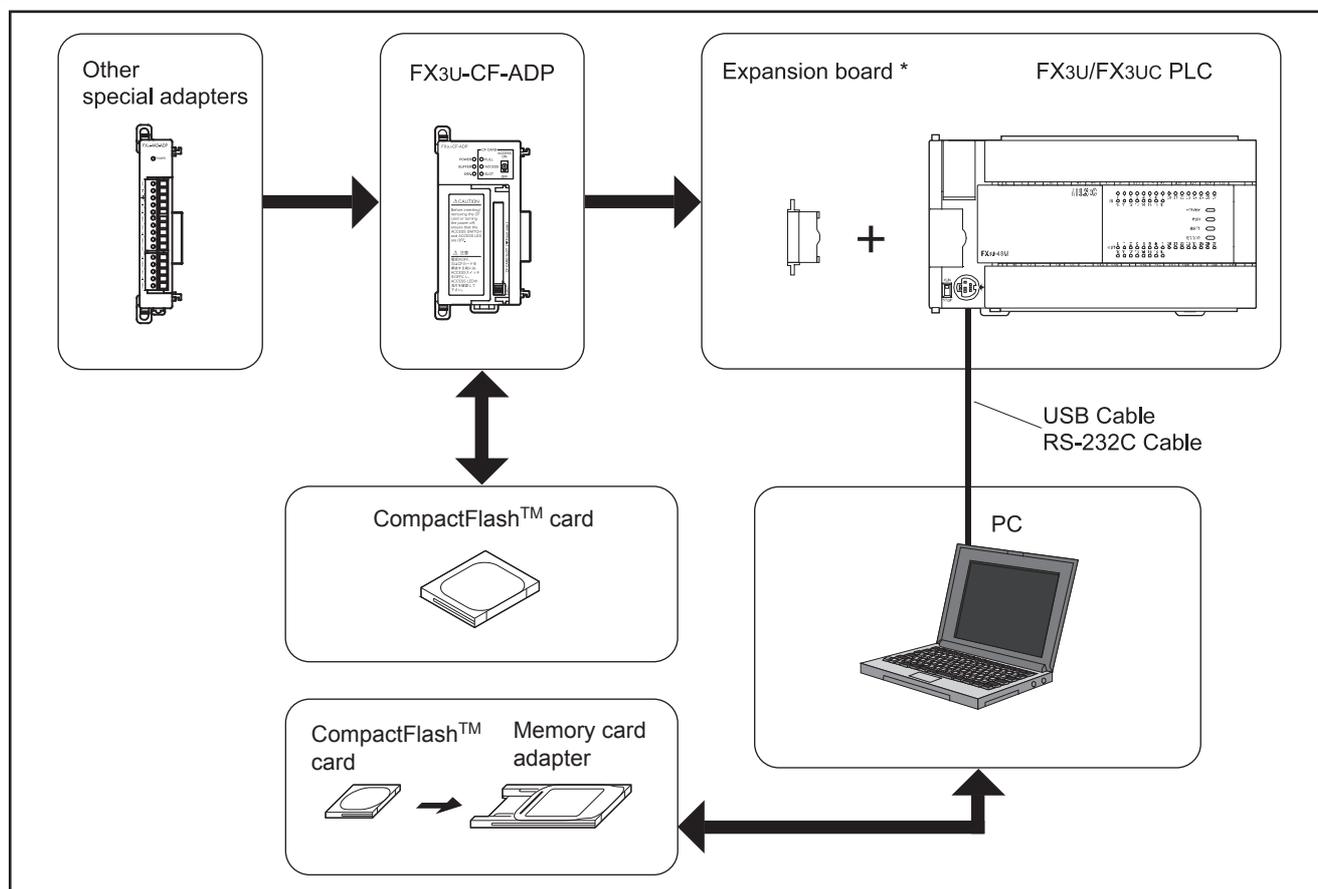
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### 3. System Configuration

#### 3.1 General configuration



\*An expansion board is required to connect the CF-ADP with the FX3U/FX3UC-32MT-LT(-2) PLCs.

#### Component list

| Part name               | Model name   | Remarks  |
|-------------------------|--|--|
| CF card special adapter | FX3U-CF-ADP  | An expansion board is required to connect the CF-ADP with the FX3U/FX3UC-32MT-LT(-2) PLCs. |
| PLC                     | FX3U/FX3UC PLC   | -  |
| CompactFlash™ card      | GT05-MEM-128MC,<br>GT05-MEM-256MC,<br>GT05-MEM-512MC,<br>GT05-MEM-1GC,<br>GT05-MEM-2GC | CompactFlash™ cards available for the CF-ADP.  |
| Memory card adapter     | GT05-MEM-ADPC  | The memory card adapter is used to convert a CF card into a memory card (Type II).         |
| PC software             | GX Works2,<br>GX Developer   | PLC programming software.  |
| PC                      | -  | -  |
| USB cable               | FX-USB-AW  | Cable with RS-422/USB converter between a FX PLC and PC.                                   |
| RS-232C cable           | F2-232CAB-1  | PC connection cable and interface.   |
|                         | FX-232AWC-H  |  |
|                         | FX-422CAB0   |  |

## 3.2 Applicable PLC

### 3.2.1 Connectable PLC

| Model name           | Applicability  |
|----------------------|--|
| FX3U Series PLC*1    | Ver. 2.61 and later<br>Only one CF-ADP unit can be connected to a main unit. |
| FX3UC Series PLC*1*2 | Ver. 2.61 and later<br>Only one CF-ADP unit can be connected to a main unit. |

The version number can be checked by reading the last three digits of device D8001/D8101.

- \*1. An expansion board is required to connect the CF-ADP with FX3U/FX3UC-32MT-LT(-2) PLCs.
- \*2. FX3UC-32MT-LT-2 Ver. 2.70 or later is applicable.

### 3.2.2 Applicable versions of the programming tool

Use the programming tool with the following version number to create programs for the CF-ADP of the FX3U/FX3UC Series PLC.

| Programming tool | Applicability       |
|------------------|---------------------|
| GX Works2        |                     |
| SW□DNC-GXW2-J    | Ver. 1.07H or later |
| SW□DNC-GXW2-E    | Ver. 1.08J or later |
| GX Developer     | Ver. 8.82L or later |
| FX-30P           | Ver. 1.20 or later  |

#### Caution

If a programming tool with the wrong version number is used, programming will not be possible.

## 3.3 Connection with PLC

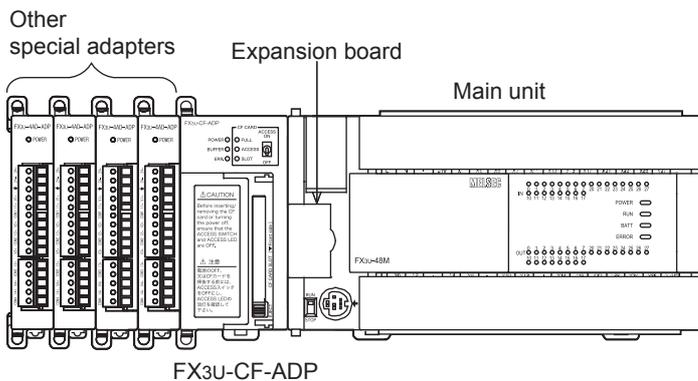
The CF-ADP connects with a FX3U/FX3UC PLC via a special adapter connector.

Only one CF-ADP unit can be connected to the FX3U/FX3UC PLC. An expansion board is required to connect the CF-ADP with the FX3U/FX3UC-32MT-LT(-2) PLCs.

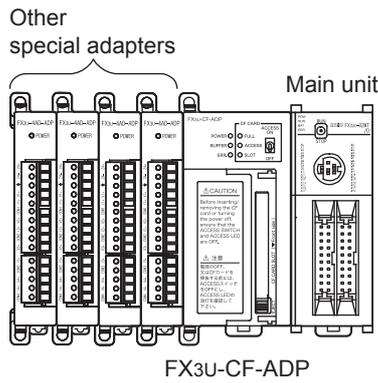
For details of assignment of channel numbers in the main unit, refer to the following.

→ Refer to Section 3.4

### 1. FX3U/FX3UC-32MT-LT(-2) PLC



## 2. FX3UC(D, DS, DSS) PLC



## 3.4 Assignment of channels

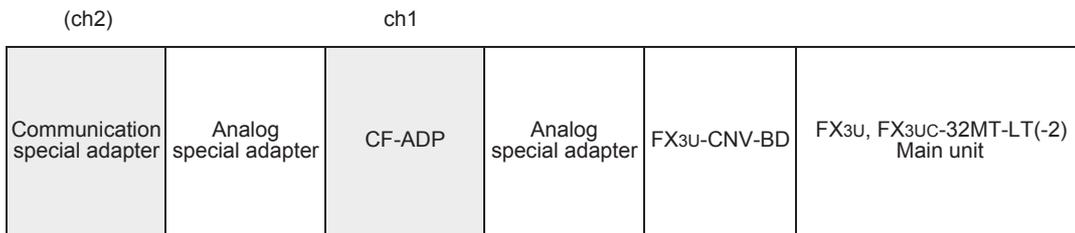
The CF-ADP is handled in the same way as communication expansion boards and communication special adapters. Its channel number ("ch1" or "ch2") is assigned automatically in the order of the position from the main unit. This channel number is used in applied instructions for the CF-ADP.\*1

The channel number is assigned as shown below.

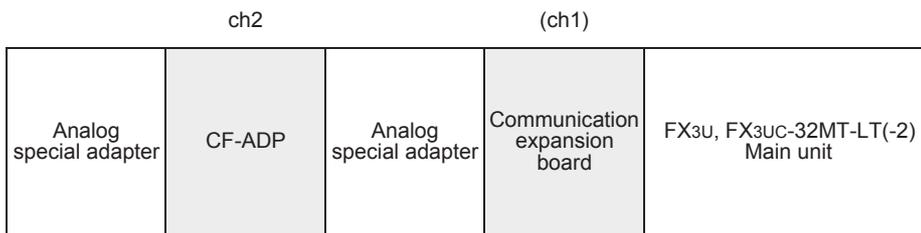
- \*1. When a CF-ADP applied instruction is executed, the communication function code K10 (CF-ADP applied instruction operation) is stored in "Operation mode display (D8419/D8439)" corresponding to the channel specified in the instruction.

### 1. FX3U/FX3UC-32MT-LT(-2) PLC

- When using channel 1 (ch1)



- When using channel 2 (ch2)

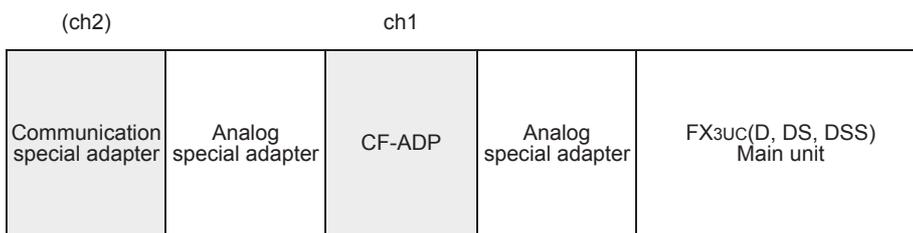


### Caution on using the CF-ADP

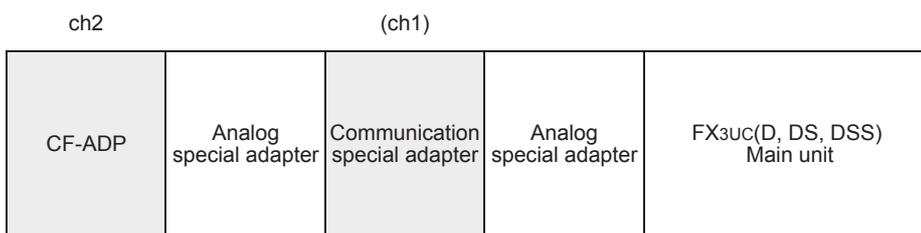
The CF-ADP is handled in the same way as communication expansion boards and communication special adapters, and occupies one communication channel.

## 2. FX3UC(D, DS, DSS) PLC

- When using channel 1 (ch1)



- When using channel 2 (ch2)



### Caution on using the CF-ADP

The CF-ADP is handled in the same way as communication special adapters, and occupies one communication channel.

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| <b>9</b>  | Program Examples                        |
| <b>10</b> | Troubleshooting                         |

## 4. Installation

### INSTALLATION PRECAUTIONS



### WARNING

- Make sure to shut down all phases of the power supply externally before installing the FX3U-CF-ADP. Failure to do so may cause electric shock or damage to the product.

### INSTALLATION PRECAUTIONS



### CAUTION

- Use the product within the generic environment specifications described in PLC main unit manual (Hardware Edition). Never use the product in areas with excessive dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub>, or NO<sub>2</sub>), flammable gas, vibration or impacts, or expose it to high temperature, condensation, or rain and wind. If the product is used in such conditions, electric shock, fire, malfunctions, deterioration or damage may occur.
- Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.
- Install the product securely using a DIN rail or mounting screws.
- Install the product on a flat surface. If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.
- Be sure to remove the dust proof sheet from the PLC's ventilation port when installation work is completed. Failure to do so may cause fire, equipment failures or malfunctions.
- Connect the FX3U-CF-ADP securely to special adapter connector. Loose connections may cause malfunctions.
- Connect the power connector of the power supply cable securely to the CF-ADP power supply connector. Loose connections may cause malfunctions.
- When inserting a CompactFlash™ card into the FX3U-CF-ADP, push it into the CF card slot until the EJECT button pops out. Loose connections may cause malfunctions.
- Before inserting/removing a CompactFlash™ card into/from the FX3U-CF-ADP, set the CF card ACCESS switch to OFF and confirm that the BUFFER LED and ACCESS LED are both OFF. Failure to do so may corrupt data within the CompactFlash™ card.
- When removing a CompactFlash™ card from the FX3U-CF-ADP, make sure to support the CompactFlash™ card by hand, as it may pop out. Failure to do so may cause the CompactFlash™ card to fall from the FX3U-CF-ADP and break.
- Turn off the power to the PLC before attaching or detaching the following devices. Failure to do so may cause device failures or malfunctions.
  - Peripheral devices, display modules, expansion boards and special adapters
  - I/O extension units/blocks, FX Series terminal block and the special function units/blocks
  - Battery and memory cassette

Only one CF-ADP unit can be connected to the left side of the main unit or special adapter.

An expansion board is required to connect the CF-ADP with the FX3U/FX3UC-32MT-LT(-2) PLCs.

For details, refer to the respective PLC manual.

→ Refer to the FX3U Hardware Edition

→ Refer to the FX3UC Hardware Edition

The CF-ADP may be installed in a control cabinet with a 35mm (1.38") wide DIN46277 DIN rail mounting or M4 screw direct mounting.

When the CF-ADP is connected to a FX3UC PLC, the direct mounting method is not possible.

## 4.1 CF-ADP Connection

An expansion board should be installed before connection of the CF-ADP. An expansion board is not required when the CF-ADP is connected to a FX3UC(D, DS, DSS) PLC.

This section explains an example where the CF-ADP is connected to a FX3U PLC. For connection to another PLC, refer to the respective PLC manual.

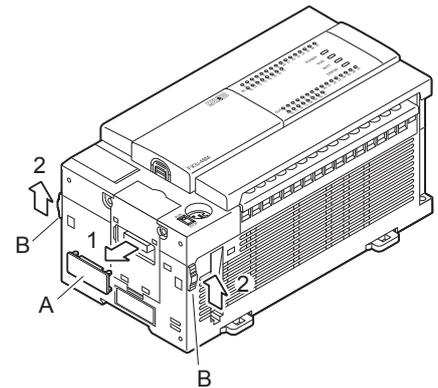
→ Refer to the FX3U Hardware Edition  
→ Refer to the FX3UC Hardware Edition

### 1 Remove the special adapter connector cover (A in the figure on the right) from the expansion board.

It is assumed that an expansion board has been installed in advance. For the expansion board installation method, refer to the respective PLC manual.

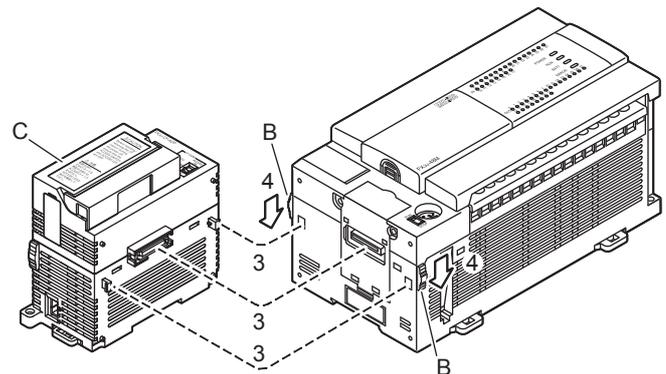
→ Refer to the FX3U Hardware Edition  
→ Refer to the FX3UC Hardware Edition

### 2 Slide the special adapter connecting hooks (B in the figure on the right) of the main unit upwards.



### 3 Connect the CF-ADP (C in the figure on the right) to the main unit as shown in the figure on the right.

### 4 Slide the special adapter connecting hooks (B in the figure on the right) of the main unit downwards to secure the CF-ADP (C in the figure on the right).



## 4.2 DIN rail mounting

The CF-ADP may be mounted on a 35mm (1.38") wide DIN46277 (DIN rail).

Connect the CF-ADP to the PLC main unit before attaching the CF-ADP to a DIN rail.

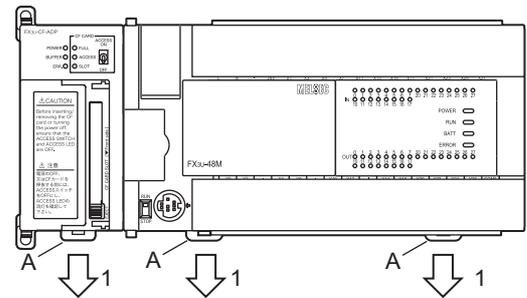
This section explains an example where the CF-ADP is connected to a FX3U PLC. For the DIN rail mounting method for other PLCs, refer to the respective PLC manual.

→ Refer to the FX3U Hardware Edition  
→ Refer to the FX3uc Hardware Edition

### 1 Push out all DIN rail mounting hooks (A in the figure on the right).

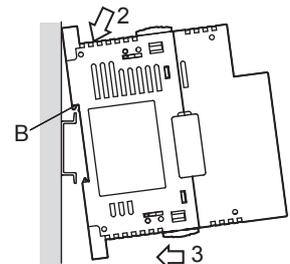
It is assumed that the CF-ADP has been connected in advance. For the CF-ADP connection method, refer to the following.

→ Refer to Section 4.1.

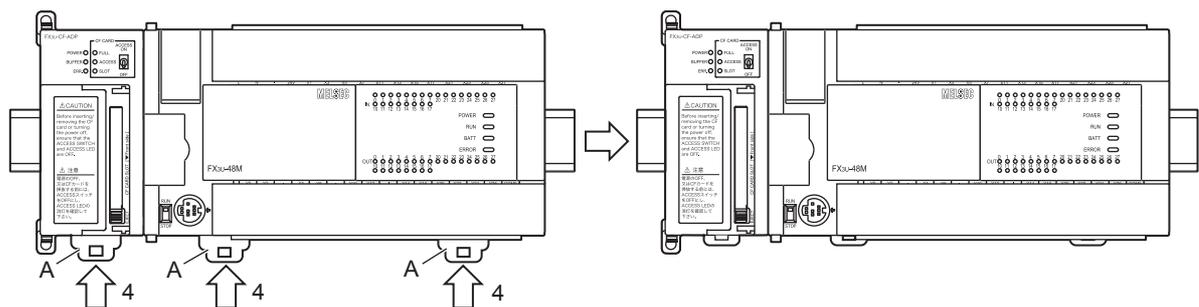


### 2 Fit the upper edge (B in the figure on the right) of the DIN rail mounting groove onto the DIN rail.

### 3 Push the product onto the DIN rail.



### 4 Lock the DIN rail mounting hooks (A in the following figure) while pressing the PLC against the DIN rail.



## 4.3 Direct mounting

When the CF-ADP is connected to a FX3U PLC, the CF-ADP may be mounted directly on a panel surface using screws. The direct mounting method is not available when the CF-ADP is connected to a FX3UC PLC. Connect the CF-ADP to the main unit before attaching it to the panel surface. For mounting, refer to the following manual.

→ Refer to the FX3U Hardware Edition

**1 Create mounting holes in the mounting surface according to the external dimensions diagram.**

**2 Fit the CF-ADP to the mounting holes and tighten with M4 screws (A in the figure on the right).**

Also fit the main unit to the mounting holes and tighten with M4 screws. For the main unit connection method, refer to the following.

→ Refer to the FX3U Hardware Edition

It is assumed that the CF-ADP has been connected in advance.

For the CF-ADP connection method, refer to the following.

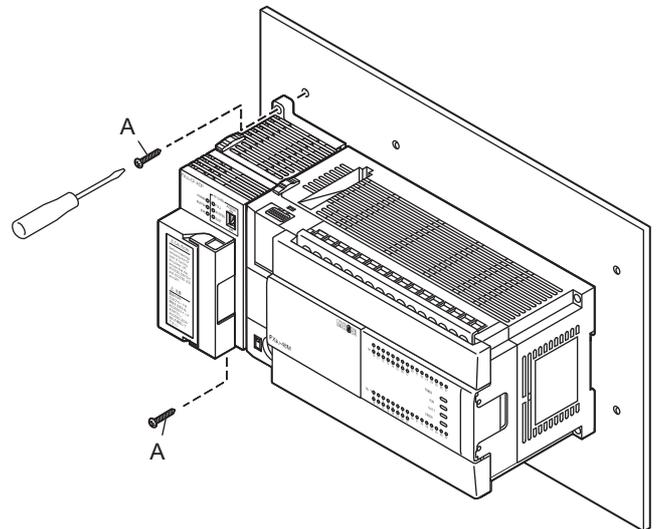
→ Refer to Section 4.1.

For the screw positions and number of screws in the CF-ADP, refer to the dimensional outline drawing as follows.

→ Refer to Section 1.2.

For the screw positions and number of screws in the main unit, refer to the following manual.

→ Refer to the FX3U Hardware Edition



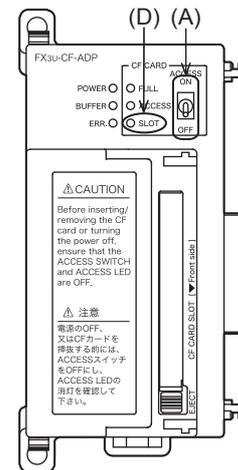
## 4.4 Inserting and Removal Procedures

### 4.4.1 Inserting the CompactFlash™ card

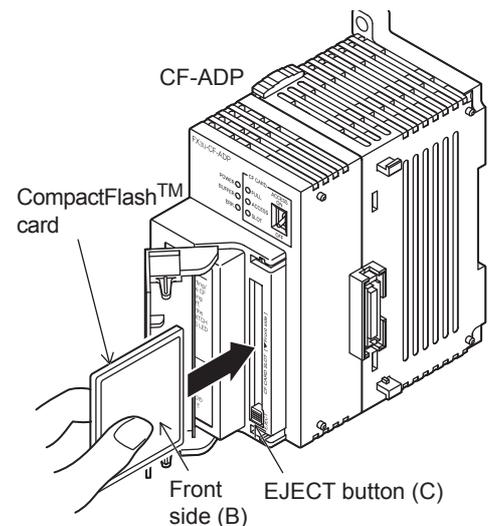
The CompactFlash™ card can be inserted when the CF-ADP is power off.

When the power supply of CF-ADP is ON and it inserts the CompactFlash™ card, make sure to perform of the following procedures.

- 1 **Set the CF card ACCESS switch to OFF (A in the figure on the right) in the CF-ADP. Confirm that the POWER LED is lit.**



- 2 **Open the CF card cover. Insert the CompactFlash™ card into the CF card slot with the front side (side B in the figure on the right) facing the right side of the CF-ADP until the EJECT button (side C in the figure on the right) pops out.**



- 3 **Confirm that the CF card ACCESS LED is lit or flickers and turns OFF, and then the SLOT LED (D in the figure on the right) turns ON.**

- 4 **Close the CF card cover. Set the CF card ACCESS switch to ON.**

## 4.4.2 Removing the CompactFlash™ card

The CompactFlash™ card can be removed when the CF-ADP is power off.

When the power supply of CF-ADP is ON and it removes the CompactFlash™ card, make sure to perform of the following procedures.

- 1 **Set the CF card ACCESS switch of the CF-ADP to OFF (A in the figure on the right), and make sure that the CF card ACCESS LED and BUFFER LED (B in the figure on the right) both turn off. (When the CF card ACCESS LED turns off, the CompactFlash™ card can be removed even when the CF-ADP is powering on.)**

### ⚠ CAUTION

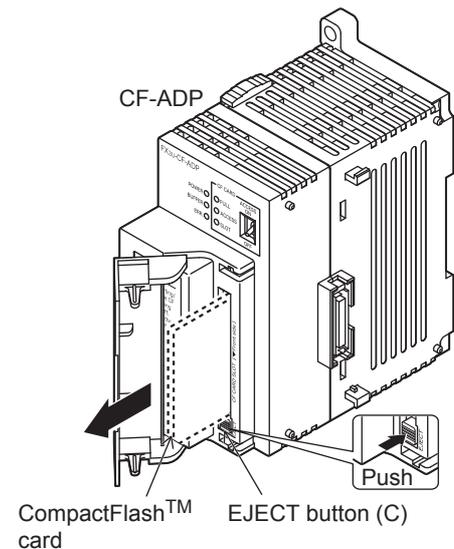
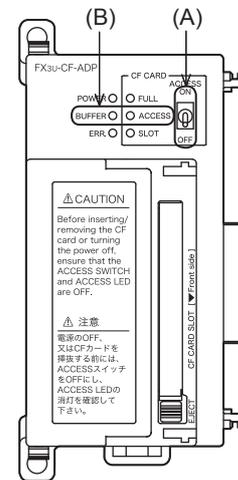
When the CF card ACCESS LED is lit or flickering, do not removing the CompactFlash™ card or power off the CF-ADP. Doing so may cause data corruption or malfunction.

- 2 **Open the CF card cover. Push the EJECT button (C in the figure on the right) of the CF-ADP to push out the CompactFlash™ card and remove it.**

### ⚠ CAUTION

When ejecting the CompactFlash™ card, support it by hand since it may pop out.

Failure to do so may cause the CompactFlash™ card to fall leading to failure or damage of the card.



## 5. Wiring

### DESIGN PRECAUTIONS



- Make sure to include the following safety circuits outside the PLC to ensure safe system operation even during external power supply problems or PLC failure.  
Otherwise, malfunctions may cause serious accidents.
  - 1) Above all, the following components should be included: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).
  - 2) Note that when the PLC main unit detects an error during self diagnosis, such as a watchdog timer error, all outputs are turned off. Also, when an error that cannot be detected by the PLC main unit occurs in an input/ output control block, output control may be disabled. External circuits and mechanisms should be designed to ensure safe machinery operation in such cases.

### DESIGN PRECAUTIONS



- Observe the following items. Failure to do so may cause incorrect data-writing through noise to the PLC and result in PLC failure, machine damage or other accident.
  - 1) Do not bundle the control line together with or lay it close to the main circuit or power line. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit or power line.  
Noise may cause malfunctions.
  - 2) Ground the shield wire or shield of a shielded cable. Do not use common grounding with heavy electrical systems
- During access (ACCESS LED is lit or flickering) to CompactFlash™ card, do not remove the CompactFlash™ card or power off the CF-ADP.  
Failure to do so may cause CompactFlash™ card failures or malfunctions.
- If the power is turned OFF while the CompactFlash™ card is being accessed (ACCESS LED is lit or flickering), the buffered data is erased. Also files or CompactFlash™ card itself may be damaged. Do not turn the power OFF while the ACCESS LED is lit or flickering.
- Do not apply excessive pressure to the power supply cable or power supply connector.  
Excessive pressure may cause damage or error.

### WIRING PRECAUTIONS



- Make sure to cut off all phases of the power supply externally before attempting wiring work.  
Failure to do so may cause electric shock or damage to the product.

### WIRING PRECAUTIONS



- Connect the DC power supply wiring to the dedicated terminal described in this manual.  
If an AC power supply is connected to a DC input/output terminal or DC power supply terminal, the PLC will burn out.
- Connect the DC power supply wiring to the dedicated connector described in this manual.  
If an AC power supply is connected to a DC power supply connector, the PLC will burn out.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits.  
Failure to do so may cause fire, equipment failures or malfunctions.

### STARTUP AND MAINTENANCE PRECAUTIONS



- Make sure to connect the battery for memory backup correctly. Do not charge, disassemble, heat, short-circuit, or expose the battery to fire.  
Doing so may rupture or ignite it.
- Do not touch any terminal while the PLC's power is on.  
Doing so may cause electric shock or malfunctions.
- Before modifying or disrupting the program in operation or running the PLC, carefully read through this manual and the associated manuals and ensure the safety of the operation.  
An operation error may damage the machinery or cause accidents.

**STARTUP AND MAINTENANCE  
PRECAUTIONS**

- Do not disassemble or modify the PLC.  
Doing so may cause fire, equipment failures, or malfunctions.  
For repair, contact your local Mitsubishi Electric representative.
- Turn off the power to the PLC before attaching or detaching the following devices.  
Failure to do so may cause device failures or malfunctions.
  - Peripheral devices, display modules, expansion boards and special adapters
  - I/O extension units/blocks, FX Series terminal block and the special function units/blocks
  - Battery and memory cassette

## 5.1 Which Power Supply Cable to Use

The cable for connecting the CF-ADP power supply connector with the power supply is described here.

### 5.1.1 Power supply cable

A dedicated power supply cable offered as an accessory of the CF-ADP is available.

| Model name    | Length    | Remarks             |
|---------------|-----------|---------------------|
| FX2NC-100MPCB | 1m (3'3") | Accessory of CF-ADP |

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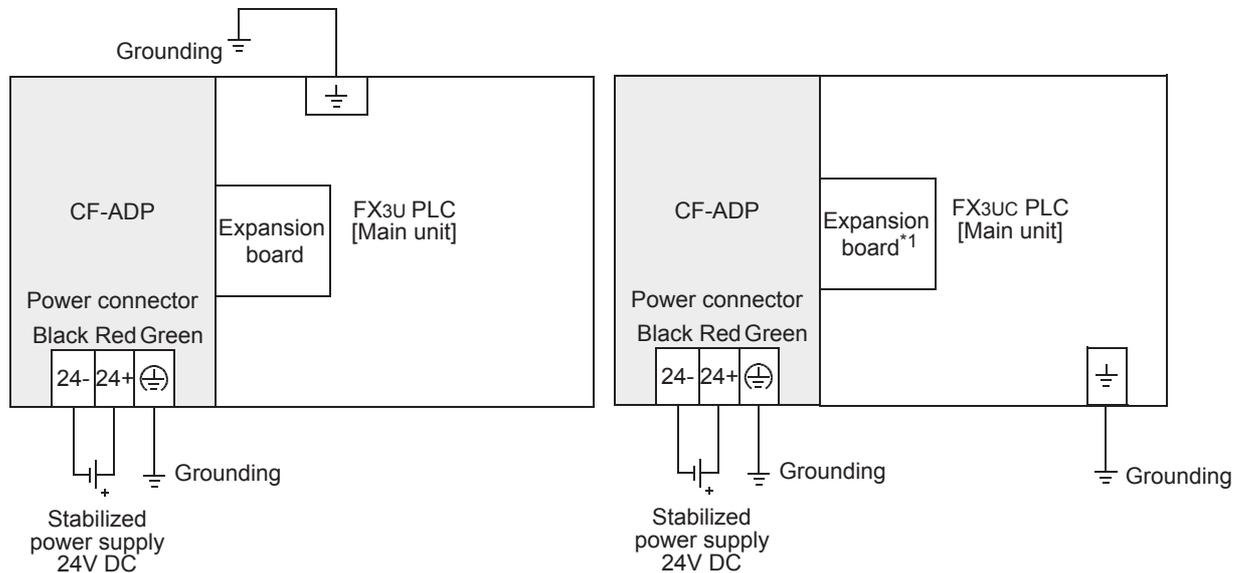
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## 5.2 Power Supply Wiring

### 5.2.1 Power supply wiring



\*1. The expansion board is required when connecting with the FX3UC-32MT-LT(-2) PLC.

#### Power-on/off timing

The power supply of the CF-ADP should be turned ON simultaneously with or earlier than that of the PLC main unit. However, when the power supply of the CF-ADP is turned on earlier than that of the main unit, the power supply of the main unit should be turned on within 5 seconds after the power supply of the CF-ADP is turned on.

Ensure the safety of the system, and then simultaneously turn OFF the power supplies of the main unit, CF-ADP, and other extension equipment (the special extension equipment is included).

For details, refer to the respective PLC manual.

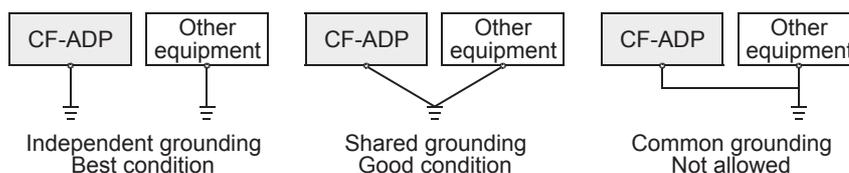
→ Refer to the FX3U Hardware Edition  
→ Refer to the FX3UC Hardware Edition

## 5.3 Grounding

Ground the cables as follows

- The grounding resistance should be 100Ω or less.
- Independent grounding should be established whenever possible. Independent grounding should be performed for best results. When independent grounding is not configured, perform "shared grounding" as shown in the following figure. For details, refer to the respective PLC manual.

→ Refer to the FX3U Hardware Edition  
→ Refer to the FX3UC Hardware Edition



- The grounding point should be close to the CF-ADP, and all grounding wires should be as short as possible.

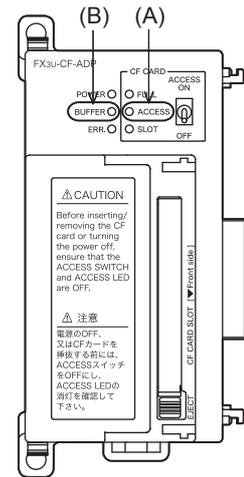
## 5.4 Power OFF procedure

Make sure to perform either of the following procedures when turning OFF the power of the CF-ADP.

- Power OFF procedure using the CF card ACCESS switch → Refer to Subsection 5.4.1
- Power OFF procedure using the applied instruction for the CF-ADP → Refer to Subsection 5.4.2

### 5.4.1 Power OFF procedure using the CF card ACCESS switch

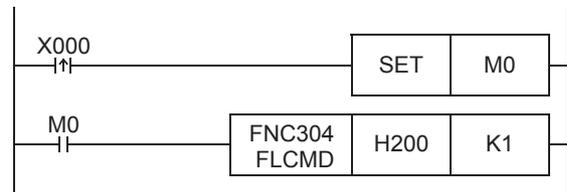
- 1 Set the main unit to the STOP mode, or set the applied instruction for the CF-ADP to the unactuated status.
- 2 Turn OFF the CF card ACCESS switch, and then confirm that the ACCESS LED (A in the figure on the right) and BUFFER LED (B in the figure on the right) are completely OFF.
- 3 Turn the power of the CF-ADP OFF.



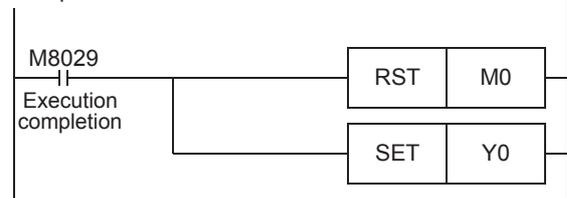
### 5.4.2 Power OFF procedure using the applied instruction for the CF-ADP

- 1 Execute the FLCMD instruction to unmount the CompactFlash™ card.
- 2 Confirm that the FLCMD instruction is completed normally.
- 3 Turn the power of the CF-ADP OFF.

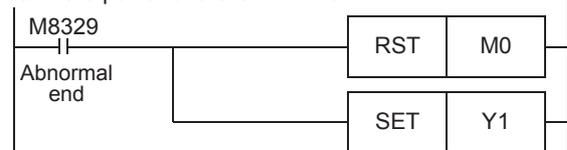
1. Execute the FLCMD instruction,



2. Confirm that the FLCMD instruction is normally completed.  
3. Turn the power of the CF-ADP OFF.



If the FLCMD instruction is abnormally completed, do not turn the power of the CF-ADP OFF.



### 5.4.3 Caution on power OFF

If the power is turned OFF while the CompactFlash™ card is being accessed (ACCESS LED is lit or flickering), the buffered data is erased. Also files or CompactFlash™ card itself may be damaged. Do not turn the power OFF while the ACCESS LED is lit or flickering.

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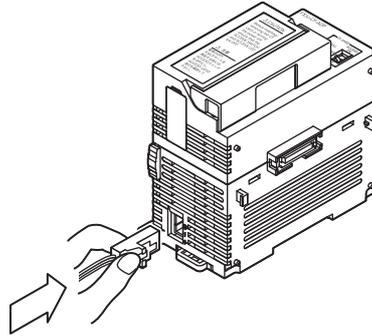
## 5.5 Connection of the power supply cable

The CF-ADP receives and supplies power through the built-in dedicated power connector.

### 5.5.1 Connection/removal of the power supply cable

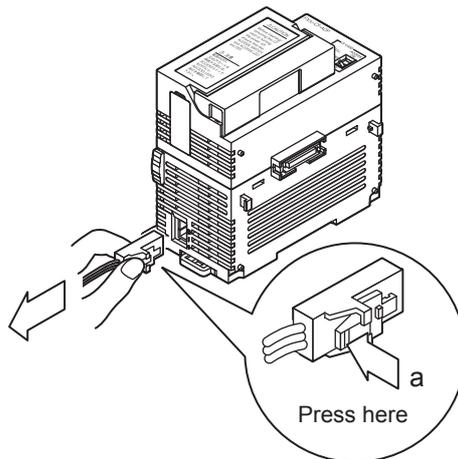
- Connection

Connect the power supply cable after confirming the connector direction.



- Removal

Squeeze the power cable connector at "a" and disconnect it in the direction of the arrow.



## 6. Functions

### 6.1 Details of functions

The user can perform the following procedures for CompactFlash™ cards using applied instructions for the CF-ADP.

- Creating FIFO function files inside the CompactFlash™ card.  
(Only one pattern is available for FIFO function files. Multiple FIFO function files are created automatically with a predetermined file name. If the created FIFO function files exceed the allowable capacity, old files are deleted. The FIFO function is executed in units of files.)
- Creating files inside the CompactFlash™ card.  
(Up to 63 files can be created.)
- Deleting specified files stored in the CompactFlash™ card.
- Writing bit data, word data, double-word data, floating point data and character string data to a specified file stored in the CompactFlash™ card.  
Data can be written to the CompactFlash™ card using the following two methods:
  - Data is directly written to the CompactFlash™ card without using the internal buffer. Up to 254 data points can be written to one line.
  - Data is collected in the internal buffer. When the internal buffer becomes full, data is written to the CompactFlash™ card. Up to 254 data points can be written to one line.
- Forcibly writing data of a specified file stored in the internal buffer to the CompactFlash™ card.
- Reading the number from the final line in a specified file stored in the CompactFlash™ card.
- Reading the data from a specified line in a specified file stored in the CompactFlash™ card.  
(Up to 254 data points can be read from one line.)
- Writing the data name.  
(Up to 254 data points names can be written.)
- Formatting the CompactFlash™ card.
- Sending a mount command to the CompactFlash™ card.
- Sending an unmount command to the CompactFlash™ card.

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## 6.2 Status information

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The user can read the following status information using applied instructions for the CF-ADP.

- Detecting that a CompactFlash™ card is mounted.
- Detecting that the CompactFlash™ card is full.
- Detecting errors that have occurred in the CF-ADP.
- Reading error codes of the CF-ADP.
- Data capacity of the CompactFlash™ card. (Unit: kB)  
1(MB)=1024(kB), 1(GB)=1024(MB)=1,048,576(kB)  
Capacity less than 1 kB is regarded as "1 kB".
- Used space of the CompactFlash™ card. (Unit: kB)  
1(MB)=1024(kB), 1(GB)=1024(MB)=1,048,576(kB)  
Capacity less than 1 kB is regarded as "1 kB".
- Free space of the CompactFlash™ card. (Unit: kB)  
1(MB)=1024(kB), 1(GB)=1024(MB)=1,048,576(kB)  
Capacity less than 1 kB is regarded as "1 kB".
- File ID list.  
(File ID: The file name is associated with the file ID, and the file ID is used in sequence programs (applied instructions).)
- CF-ADP version information.

# 7. Before Programming

This chapter describes several items that should be known before programming.

- File format available in the CF-ADP
- Files created by the user
- Characters available in files
- Data size calculation
- Data writing destination
- File ID
- FIFO file
- Directory structure
- Date/time setting
- General rules for applied instructions

## 7.1 File format available in the CF-ADP

Files in the "csv" format are available in the CF-ADP. Files are created by the CF-ADP and by the user.

### 7.1.1 Files created by the CF-ADP

Files in the "csv" format created by the CF-ADP are as follows. The CF-ADP can read and write files whose data is separated by comma (,), and line-feed by "CR + LF". One line can store up to 254 data points. For characters available in files, refer to Subsection 7.1.3.

#### CSV file

| (1)   |                                       | (2)       |           |           |     |           |    |    |  |
|-------|---------------------------------------|-----------|-----------|-----------|-----|-----------|----|----|--|
| Index | DATE TIME                             | Data name | Data name | Data name | ... | Data name | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |
| Index | Year/Month/Day<br>Hour:Minute:Seconds | data      | data      | data      | ... | data      | CR | LF |  |

(3) (4) (5) (6) (7) (8)

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**Contents of files in the "csv" format**

| No. | Contents of data                      | Description   | Remark  |
|-----|---------------------------------------|---|---|
| (1) | Index,DATE TIME,                      | When the file name is added, the Index, date and time are added automatically.  | -   |
| (2) | Data name                             | Character string consisting of up to 32 half-width/full-width characters  | Refer to Subsection 7.1.3.  |
| (3) | Index                                 | 6 digits(****1 to *32767)<br>Numeric values should be consecutive, and in ascending order.  | Decimal number<br>" (space)" and "+" (plus)" are used by the system.<br>Index values in one file should be different from each other. |
| (4) | ,                                     | Comma : 1 character   | -   |
| (5) | year/Month/Day<br>Hour:Minute:Seconds | None : Null<br>yyyy/mm/dd hh:mm:ss : 19 characters<br>yy/mm/dd hh:mm:ss : 17 characters<br>dd/mm/yyyy hh:mm:ss : 19 characters<br>dd/mm/yy hh:mm:ss : 17 characters<br>mm/dd/yyyy hh:mm:ss : 19 characters<br>mm/dd/yy hh:mm:ss : 17 characters<br>hh:mm:ss : 8 characters  | The date and time are updated when data is additionally written or overwritten if the time stamp is set.                              |
| (6) | ,                                     | Comma : 1 character   | -   |
| (7) | data                                  | Bit : 1 character<br>Decimal 16-bit : 6 characters<br>Decimal 32-bit : 11 characters<br>Hexadecimal 16-bit : 4 characters<br>Hexadecimal 32-bit : 8 characters<br>Real numbers(Floating point data)<br>Exponent type : ±#.#####E±## : 14 characters<br>Character string : Varies depending on the character size.<br>(512 half-width/full-width characters maximum) | The maximum data size is 16 kB for each Index.<br>(One character string should be within 1 kB (512 full-width characters).)           |
| (8) | CR+LF                                 | Return code at line end   | Line feed   |

**7.1.2 Files created by the user**

The contents of files created by the user should be same as files created by the CF-ADP (refer to Subsection 7.1.1).

For characters available in files, refer to Subsection 7.1.3.

For cautions on file creation, refer to the following description.

**Caution**

- Cautions on creating the 1st column
  - Enter the line number in decimal number (1 to 32767 in 6 digits or less).
  - Enter the line number consecutively in ascending order.
  - Use a line number only once.
  - Do not use "+" (plus)" in the line number.
- Cautions on creating the 2nd column (Year/Month/Day Hour:Minute:Seconds).
  - Enter the date and time in the specified configuration.  
Enter "Index, data, \*\*, CF+LF" so that the 2nd column area is secured.
- Enter data in the 3rd column and so on. Up to 254 data points can be entered.
- Make sure to separate data with comma (,).
- Use "CR+LF" as the line feed code.
- Cautions on reading data from and writing data to files created by the user
  - Associate the file name with the file ID using the FLCRT instruction.
  - Files created by the user cannot be overwritten.
- Cautions on reading data from files created by the user  
When reading data from a file using the FLRD instruction, match the data type for each saved data point.  
Specify the same data type.  
If the data types do not agree, data cannot be read normally.

### 7.1.3 Characters available in files

Following characters are available in files.

| Type                | Available characters  | Display type  | Number of digits <sup>*1</sup>  | Remark   |
|---------------------|---|---|---|--|
| Index               | '0' to '9', ' ' (space), '+',   | #####<br>+#####   | 6 digits  | "+" is used by the system. <sup>*2</sup>   |
| DATE TIME           | '0' to '9', '/', ':'  | Selectable  | 1 to 19 digits  | The display format is selectable. <sup>*6</sup>  |
| Bit                 | '0','1'   | #   | 1 digits  | -  |
| Decimal 16-bit      | '0' to '9', '.', ' ' (space)  | #####<br>-#####   | 6 digits  | Do not add "+" to a positive value.<br>Add a space.  |
| Decimal 32-bit      | '0' to '9', '.', ' ' (space)  | #####<br>-#####   | 11 digits   | Do not add "+" to a positive value.<br>Add a space.  |
| Hexadecimal 16-bit  | '0' to '9','A' to 'F', 'a' to 'f'   | ####  | 4 digits  | -  |
| Hexadecimal 32-bit  | '0' to '9','A' to 'F', 'a' to 'f'   | #####   | 8 digits  | -  |
| Floating point data | '0' to '9','E','e','+','-', ' '(space),'<br>Available numeric values <sup>*7</sup><br>0, ±1.1754944E-38 to<br>±3.4028233E+38<br>Enter "NaN" when data is non<br>numeric, un-normalized or infinite. | #####E+##<br>#####E-##<br>-#####E+##<br>-#####E-##<br>NaN | 14 digits   | Do not add "+" to a positive value.<br>Add a space.<br>Make sure to add "+" or "-" to the exponent<br>part after "E".<br>When data is non numeric, un-normalized<br>or infinite, a space is added and "NaN" is<br>set. |
| Character string    | ASCII characters and<br>2-byte characters such as shift<br>JIS characters defined by region <sup>*3</sup>   | Arbitrary <sup>*4</sup>                                   | Up to 512 half-<br>width/full-width<br>characters (1024<br>bytes) per data<br>point (The entire<br>amount of data in<br>one line should be<br>16 kB or less.) | Do not use control codes or half-width<br>symbols in character strings. <sup>*5</sup>  |

- \*1. The data digits are fixed by the data type in the CF-ADP.  
Data created using a personal computer cannot be overwritten because the data digits do not match.
- \*2. A "+" added to the Index value is used by the CF-ADP in the system, and cannot be deleted.  
If data is overwritten using a personal computer, etc., a "+" added by the CF-ADP may be deleted and the CF-ADP may malfunction.
- \*3. UNICODE characters are not available.  
Use characters available in PLCs such as shift JIS characters (which are set by region).  
Mitsubishi recommends US-ASCII characters when files are used in an environment that caters to several languages. Use US-ASCII characters if UNICODE characters are set by region.  
Use a personal computer in an environment that is used to create data or program when reading data.
- \*4. Control codes such as line feed codes (CR and LF), half-width commas (,) and double quotation marks (") are not available.
- \*5. Mitsubishi does not recommend the following symbols.  
They may be automatically converted by some application software used for data processing.  
When using the following symbols, confirm the application software specifications.  
Apostrophe ('), caret (^), backslash (\), slash (/), at mark (@) and equal sign (=)
- \*6. The expression of date and time depends on the setting of the region. Check the used method.
- \*7. When data is read in floating point format, the data point is converted from the head to the position which can be read as a numeric value if characters outside the floating point specification are contained in the data.

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### 7.1.4 Data size calculation

When calculating the data size, use the following formula in accordance with the byte count shown in the table below.

| Contents of data                      | Used characters  | Number of bytes                               | Symbol | Remark  |
|---------------------------------------|--|---|--------|---|
| Index                                 | 6 digits (expressed in a decimal number from "1" to "32767")<br>Space is put in for unused digits.<br>Plus signs (+) are used in some systems. | 6 bytes                                       | -      | Decimal 6 digits  |
| ,                                     | 1 character  | 1 byte  | -      | Comma   |
| year/Month/Day<br>Hour:Minute:Seconds | None   | 0 byte  | (a)    | The expression of date and time depends on the setting of the region.<br>Check the used method. |
|                                       | yyyy/mm/dd hh:mm:ss  | 19 bytes                                      |        |   |
|                                       | yy/mm/dd hh:mm:ss  | 17 bytes                                      |        |   |
|                                       | dd/mm/yyyy hh:mm:ss  | 19 bytes                                      |        |   |
|                                       | dd/mm/yy hh:mm:ss  | 17 bytes                                      |        |   |
|                                       | mm/dd/yyyy hh:mm:ss  | 19 bytes                                      |        |   |
|                                       | mm/dd/yy hh:mm:ss  | 17 bytes                                      |        |   |
| hh:mm:ss                              | 8 bytes  |   |        |   |
| ,                                     | 1 character  | 1 byte  | -      | Comma   |
| data                                  | Bit  | 1 byte  | (b)    | -   |
|                                       | Decimal 16-bit   | 6 bytes                                       |        |   |
|                                       | Decimal 32-bit   | 11 bytes                                      |        |   |
|                                       | Hexadecimal 16-bit   | 4 bytes                                       |        |   |
|                                       | Hexadecimal 32-bit   | 8 bytes                                       |        |   |
|                                       | Real numbers(Floating point data)<br>Exponent expression type=±#.#####E±##   | 14 bytes                                      |        |   |
|                                       | Character string<br>(512 half-width/full-width characters maximum)   | Character string size<br>(1024 bytes maximum) |        |   |
| CR+LF                                 | Return code at line end  | 2 bytes                                       | -      | Line feed   |

- Calculation formula

**Written byte count = Fixed value + Expression of date and time + Sum of data**

- Fixed value (9 bytes) = Index (6 bytes) + Comma (1 byte) + Return code at line end (2 bytes)
- Expression of date and time: (a) in the above table
- Sum of data  
Add "Comma (1 byte) + "data" ([b] in the above table)" for the number (n) of data.

$$\text{Sum of data} = \sum_1^n \{ \text{Comma (1 byte) + "data" ([b] in the above table)} \} \quad \text{data points } n \leq 254$$

- Calculation example 1 (When there are 254 floating point data points)

| Contents of data  | Byte count                                     |
|---|--|
| Index   | 6  |
| , (Comma)   | 1  |
| Year/Month/Day Hour:Minute:Seconds<br>(yyyy/mm/dd hh:mm:ss) | 19   |
| , (Comma)   | 1  |
| data (Real numbers (Floating point data))                   | 14   |
| CR+LF   | 2  |
| <b>Total</b>  | <b>6+1+19+(1+14)×254+2=3838 bytes ≈ 3.75KB</b> |

Data points ×254

- Calculation example 2 (When "data" consists of 50 character strings (each of which consists of 20 ASCII characters))

| Contents of data  | Byte count  |
|---|---|
| Index   | 6   |
| , (Comma)   | 1   |
| Year/Month/Day Hour:Minute:Seconds<br>(yy/mm/dd hh:mm:ss) | 17  |
| , (Comma)   | 1   |
| data (Character string)                                   | 20 ASCII characters = 20 bytes                    |
| CR+LF   | 2   |
| Total   | $6+1+17+(1+20)\times 50+2=1076$ bytes $\leq$ 16KB |

Data points  
×50

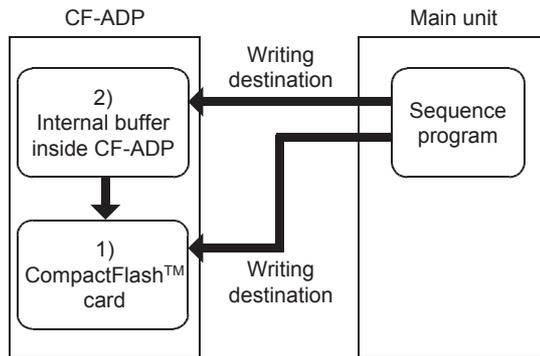
**Caution**

- When overwriting data, match the data type and byte count in the line.
- Data is not overwritten or read normally if the data type or byte count is different.

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### 7.1.5 Data writing destination

Data can be written to two destinations, the CompactFlash™ card and the internal buffer inside the CF-ADP.



#### 1. When data is written to the CompactFlash™ card

When the CompactFlash™ card is specified as the writing destination in the applied instruction for the CF-ADP, data is directly written to the CompactFlash™ card.

Because data is written to the CompactFlash™ card every time the instruction is executed, the user should pay attention to the number of times data is written to the CompactFlash™ card.

For example, if data is written to the CompactFlash™ card every minute, data is written 100,000 times in approximately 2 months.

Even if the power is turned OFF after data is written normally, the written data is not cleared.

#### 2. When data is written to the internal buffer inside the CF-ADP

When the Internal buffer inside the CF-ADP is specified as the writing destination in the applied instruction for the CF-ADP, data is written to the internal buffer inside the CF-ADP. This type of writing is not counted as a data write to the CompactFlash™ card. Data writing from the buffer inside the CF-ADP to the CompactFlash™ card is counted as a data write to the CompactFlash™ card. However, attention is required because data is cleared in the following cases.

Data is cleared at the following times, and data is written from the internal buffer inside the CF-ADP to the CompactFlash™ card at the following times.

##### Times when the internal buffer inside the CF-ADP is cleared

- When the file deletion command or file formatting command is executed
- When the CompactFlash™ card is pulled out
- When the power is turned OFF using any procedure other than the specified power OFF procedure

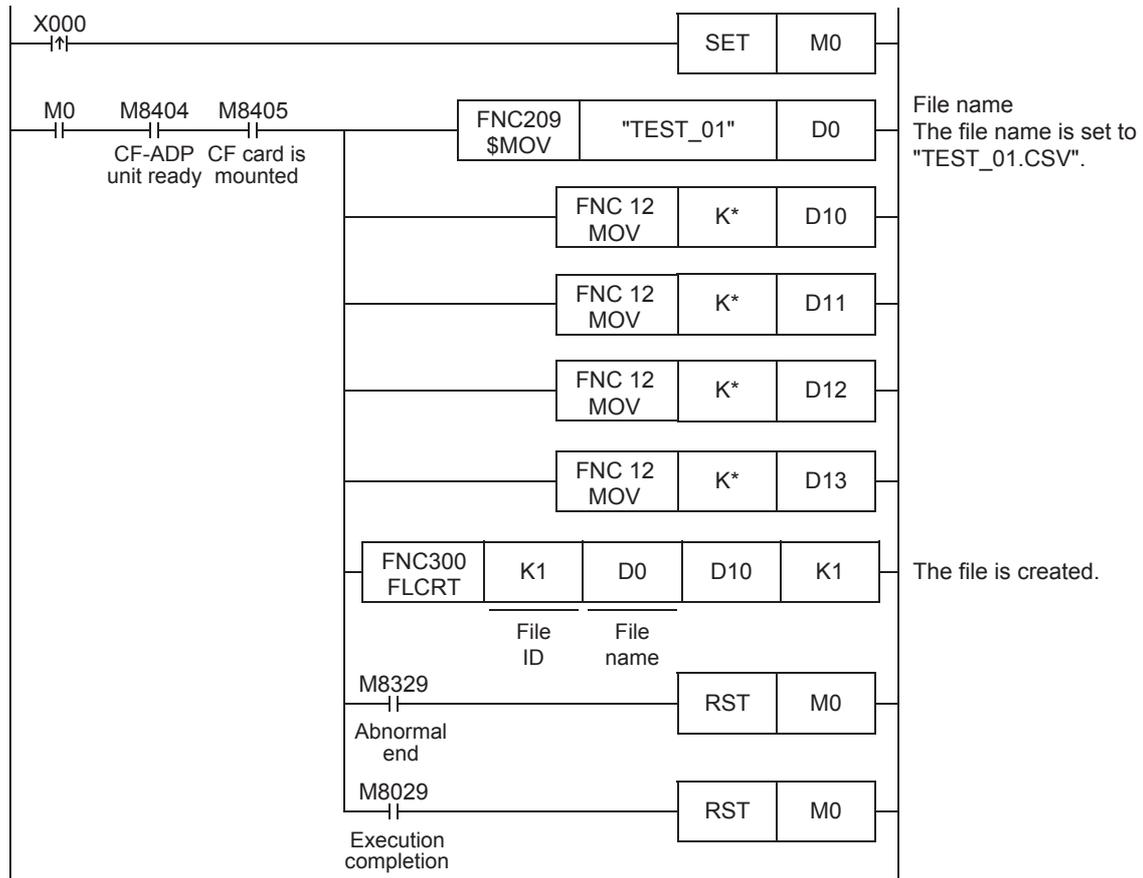
##### Times when data is written from the internal buffer inside the CF-ADP to the CompactFlash™ card

- When data to be buffered exceeds the capacity of the internal buffer inside the CF-ADP
- When the buffer force write command is executed
- When data writing is executed for a buffered file ID with the CompactFlash™ card specified as the writing destination
- When the CF card ACCESS switch is set from ON to OFF
- When an applied instruction to unmount the CompactFlash™ card is executed
- When the Index is returned to the head among buffered data (ring buffer)  
Or when data writing is executed for the specified maximum number of lines if "Stops execution" is selected as the processing to be executed when the maximum number of lines specified during file creation is reached
- When the overwrite applied instruction is executed while data is buffered

### 7.1.6 File ID

Applied instructions for the CF-ADP use the file ID for specifying files. Accordingly, the file name saved in the CompactFlash™ card is associated with the file ID, and controlled by the ID table. When a file whose file ID is "1" and file name is "TEST\_01.CSV" is created using the file creation program shown below, the file ID and file name are associated with each other as shown in "Example 1" in the ID table image. After each file is created, the user should use the file ID for specifying the file, instead of using the file name.

#### File creation program



#### ID table image

| File ID    | File name    |
|------------|--------------|
| File ID=0  | FILE****.CSV |
| File ID=1  | TEST_01.CSV  |
| File ID=2  | *****.CSV    |
| •          | •            |
| •          | •            |
| •          | •            |
| File ID=61 | *****.CSV    |
| File ID=62 | *****.CSV    |
| File ID=63 | *****.CSV    |

Example 1

\*\*\*\*\* represents a numeric value from 0000 to 0999. "FILE" in the file name is fixed.

The file ID "1" is associated with the file name "TEST\_01.CSV".

\*\*\*\*\* represents the file name created by the user.

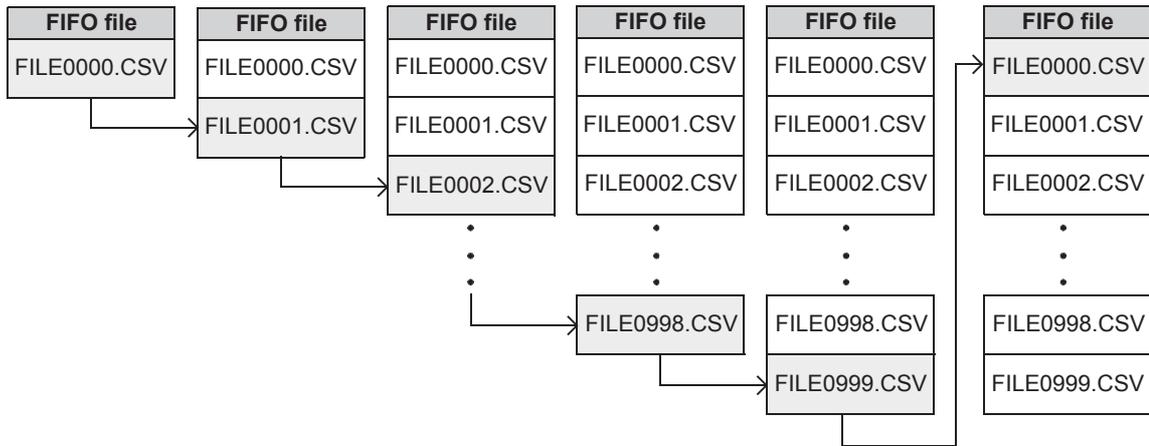
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### 7.1.7 FIFO file

When the file ID is set to "K0", the CF-ADP creates FIFO files.  
 FIFO files execute FIFO (first in, first out) in units of files for the CF-ADP.  
 With the FIFO function, the CF-ADP keeps the latest data, and deletes old data so that the total capacity of FIFO files and other files do not exceed the specified CompactFlash™ card use ratio.  
 When the FIFO file exceeds the maximum number of lines set in the file creation instruction, the following file is created:

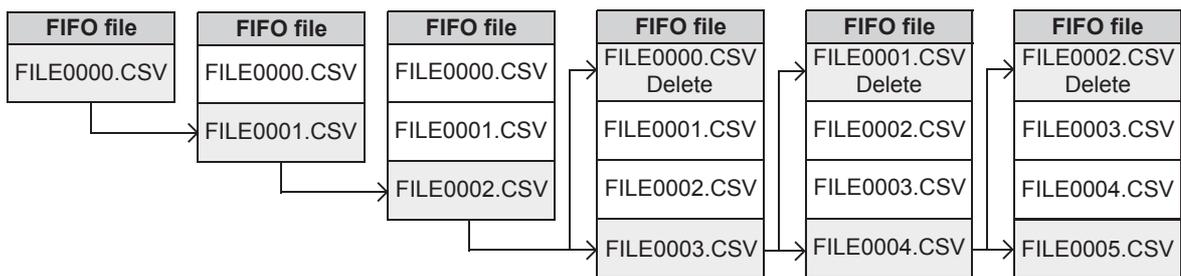
- When created files does not exceed the CompactFlash™ card capacity (specified CompactFlash™ card use ratio)  
 The CF-ADP creates files whose name consists of a consecutive number in ascending order in the way "FILE0000.CSV, FILE0001.CSV ... FILE0999.CSV". When the file name reaches "FILE0999.CSV", the CF-ADP deletes the oldest existing file "FILE0000.CSV", and creates a new file "FILE0000.CSV".

#### FIFO file creation



- When created files exceed the CompactFlash™ card capacity (specified CompactFlash™ card use ratio)  
 The CF-ADP creates files whose name consists of a consecutive number in ascending order starting from "FILE0000.CSV" within the CompactFlash™ card capacity. When created files reach the CompactFlash™ card capacity, the CF-ADP deletes the oldest existing file, and creates a new file.

#### FIFO file creation



#### Caution

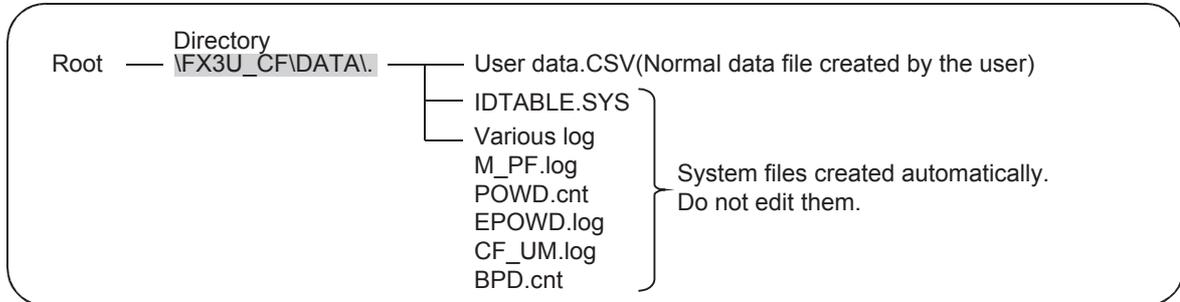
- 1) The CF-ADP can create up to 1000 files  
 However, make sure that created files do not exceed the CompactFlash™ card capacity (specified CompactFlash™ card use ratio).
- 2) The file name is fixed to "FILE0000.CSV" to "FILE0999.CSV".

## 7.2 Directory structure

The following directory is created inside the CompactFlash™ card.

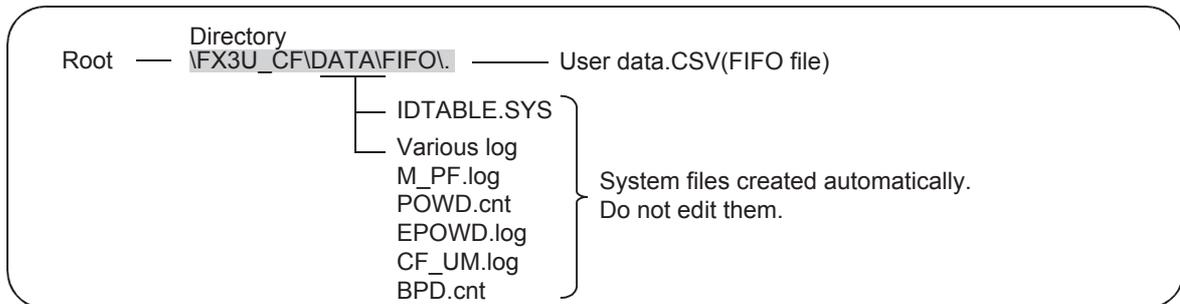
- In the case of a normal file

The directory "\FX3U\_CF\DATA\" is created inside the CompactFlash™ card.  
The following data is stored in the directory.



- In the case of a FIFO file

The directory "\FX3U\_CF\DATA\FIFO\" is created inside the CompactFlash™ card.  
The following data is stored in the directory.



## 7.3 Date/time setting

The clock function of the main unit is used for the date and time used in the CF-ADP.

Make sure to set the clock data in the main unit before using the CF-ADP.

The available clock data range is from "00:00:00 on January 1, 2008" to "23:59:59 on December 31, 2079".

If the user sets the date and time outside this range, "00:00:00 on January 1, 2008" is actually set instead.

For the clock data setting method in the main unit, refer to the following manual.

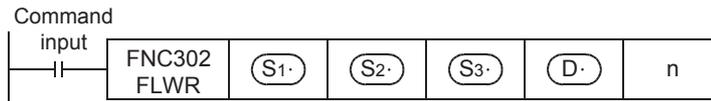
→ **Refer to the programming manual.**

## 7.4 General Rules for Applied Instructions

### 7.4.1 Expression and operation type of applied instructions

#### Instruction and operands

- Function numbers (FNC00 - FNC□□□) and symbols (mnemonic codes) are assigned to the applied instructions of the PLC. For example, a symbol of "FLWR" (Data write) is assigned to FNC302.
- Some applied instructions consist of the instruction area only, but many applied instructions consist of the instruction area and the operand.



- (S) : An operand that will not be affected by the execution of the instruction is referred to as a source. This symbol represents a source.  
If the operand device number can be modified by an index register, "•" will be added, and the S will be modified to (S•). If there are two or more sources, the modified sources will become (S1•), (S2•), and so on.
- (D•) : An operand that will be affected by the execution of the instruction is referred to as a destination. This symbol represents a destination.  
If the device numbers can be indexed by index registers, and if there are two or more destinations, the modified destinations will become (D1•), (D2•), and so on.
- m, n : The operands not corresponding to source and destination are indicated as "m" and "n".  
If the device number can be indexed by index registers, and if there are two or more operands, the modified operands will become m1•, m2•, n1•, n2•, and so on.

- Regarding program steps, the instruction area for each applied instruction is 1 step. The operand of each applied instruction, however, has 2 or 4 steps depending on the number of bits (16 or 32 bits).

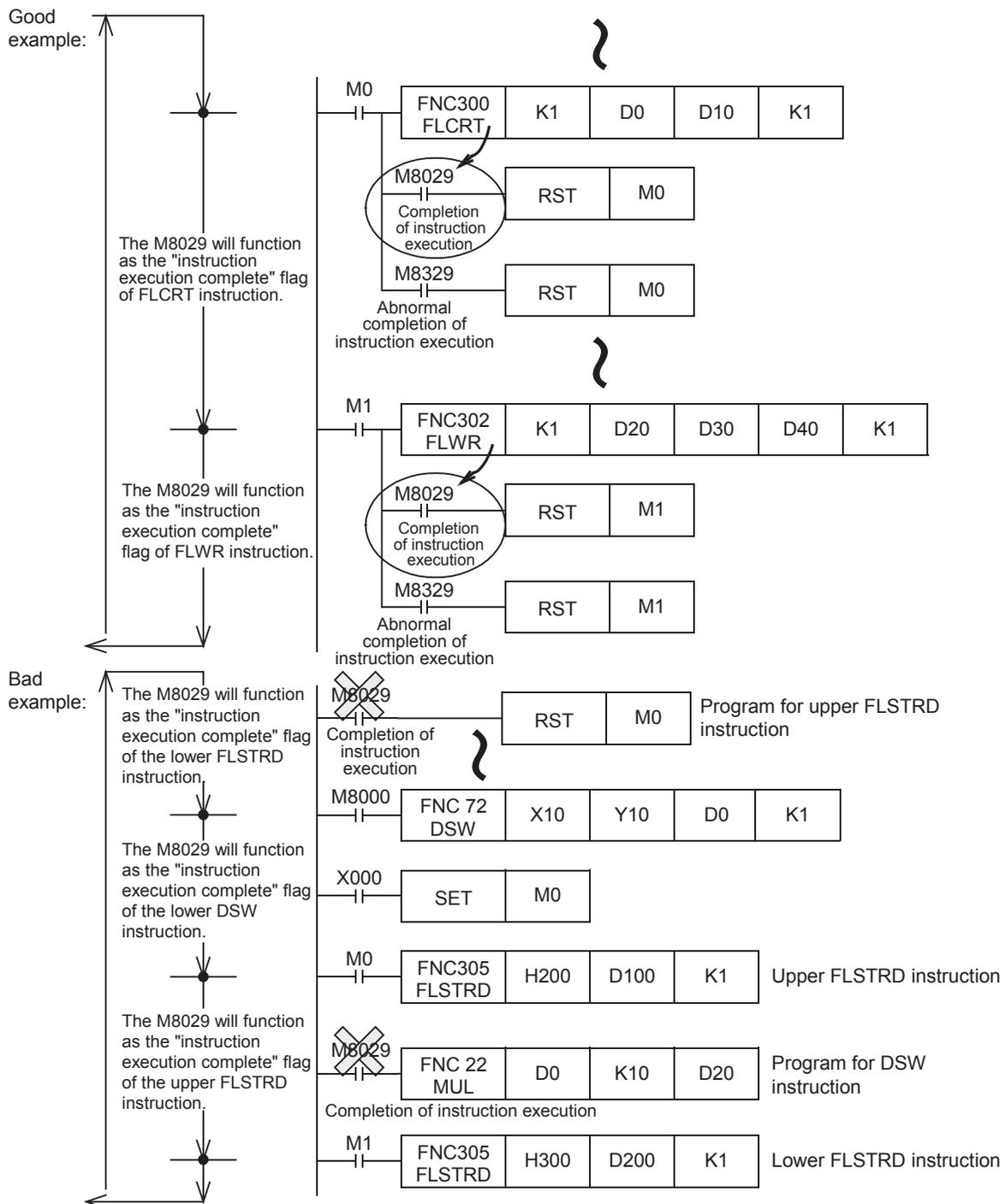
#### Devices for operands

- Bit devices X, Y, M, and S can be used for the operands, depending on the function.
- Combination of these bit devices, such as KnX, KnY, KnM, and KnS, can be used for numeric data.  
→ **Refer to the programming manual.**
- Current value registers, such as data registers D, timers T, and counters C, can be used.
- A data register D consists of 16-bit. Two consecutive data registers (2 points) are used for 32-bit data. For example, if data register D0 is specified for the operand of a 32-bit instruction, D1 and D0 will be used for 32-bit data (D1 for the 16 high-order bits, and D0 for the 16 low-order bits).  
If current value registers T and C are used as general data registers, they will behave the same way as data registers.  
Each 32-bit counter (C200 to C255), however, can use 32-bit data without combining two counters. These counters, however, cannot be specified as the operands of 16-bit instructions.

### 7.4.2 Programming using "Instruction execution complete" flag and "Instruction execution abnormal end" flag

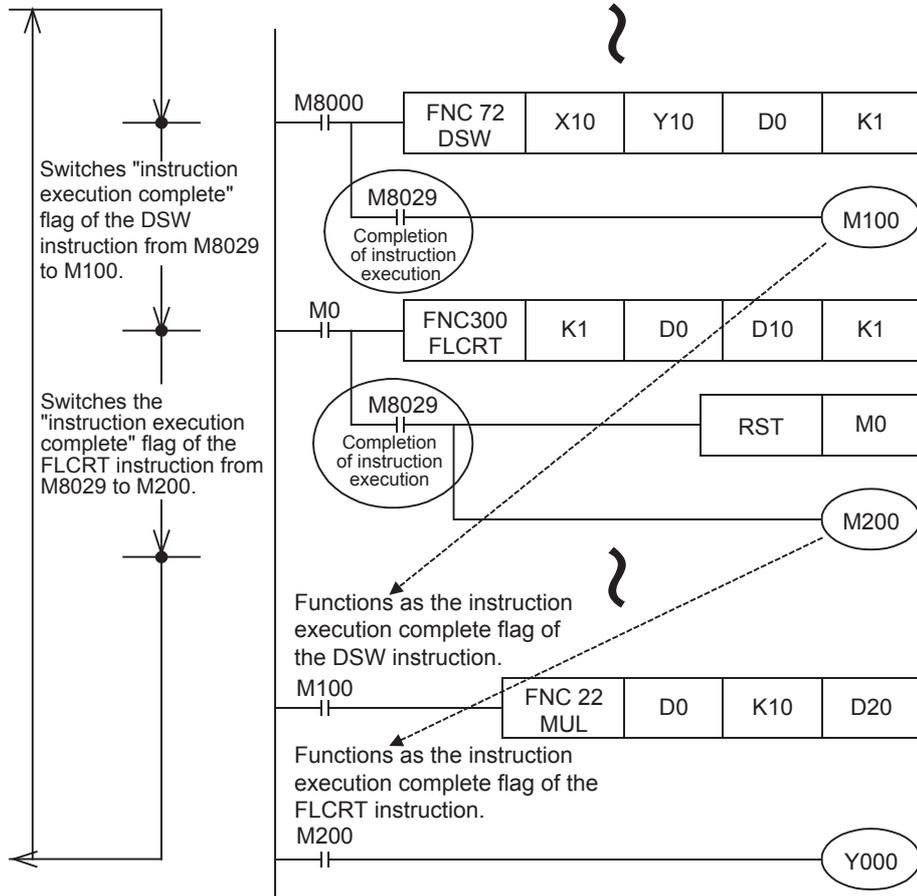
1) If two or more CF-ADP instructions are used in a program, the "Instruction execution complete" flag (M8029)\*1 or "Instruction execution abnormal end" flag (M8329) will be turned on or off after execution of each instruction. However, if the "Instruction execution complete" flag (M8029) and "Instruction execution abnormal end" flag (M8329) are used together for a program, it is difficult to determine which instruction turns them ON/OFF and the "Instruction execution complete" flag (M8029) will not be turned on for the intended instruction.

- \*1. For an applied instruction for the CF-ADP, the instruction execute complete flag (M8029) indicates that the instruction has been completed normally.  
→ To use a CF-ADP instructions at a position other than just below the instruction, refer to the example shown on the next page.



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- 2) To use at a position other than just below the CF-ADP instructions.  
 If two or more CF-ADP instructions are used in a program, the "Instruction execution complete" flag (M8029) and "Instruction execution abnormal end" flag (M8329) will be turned on or off after execution of each instruction.  
 If it is necessary to use the "Instruction execution complete" flag (M8029) or "Instruction execution abnormal end" flag (M8329) at a point other than just below the instruction, turn on or off another bit device just below the instruction, and use the contact as the command contact.



## 8. CF-ADP Applied Instructions Explanation

This chapter explains applied instructions for the CF-ADP.

### 8.1 CF-ADP Instructions types

The PLC and the CF-ADP transfer data to each other using applied instructions for the CF-ADP. Six applied instructions are provided for purpose including file creation, data writing and data reading.

- List of applied instructions for the CF-ADP

| FNC No. | instruction | Description                  | Control direction | Detailed explanation |
|---------|-------------|------------------------------|-------------------|----------------------|
| 300     | FLCRT       | File create / check          | PLC→CF-ADP        | Section 8.3          |
| 301     | FLDEL       | File delete / CF card format | PLC→CF-ADP        | Section 8.4          |
| 302     | FLWR        | Data write                   | PLC→CF-ADP        | Section 8.5          |
| 303     | FLRD        | Data read                    | PLC←CF-ADP        | Section 8.6          |
| 304     | FLCMD       | FX3U-CF-ADP command          | PLC→CF-ADP        | Section 8.7          |
| 305     | FLSTRD      | FX3U-CF-ADP status read      | PLC←CF-ADP        | Section 8.8          |

### 8.2 Common Items in CF-ADP Instructions

#### 8.2.1 Function and operation

##### 1. Processing start timing

When the command input turns from OFF to ON, the PLC starts processing for the CF-ADP.

If the command input turns OFF during processing for the CF-ADP, execution of the instruction is cancelled and the instruction is terminated abnormally.

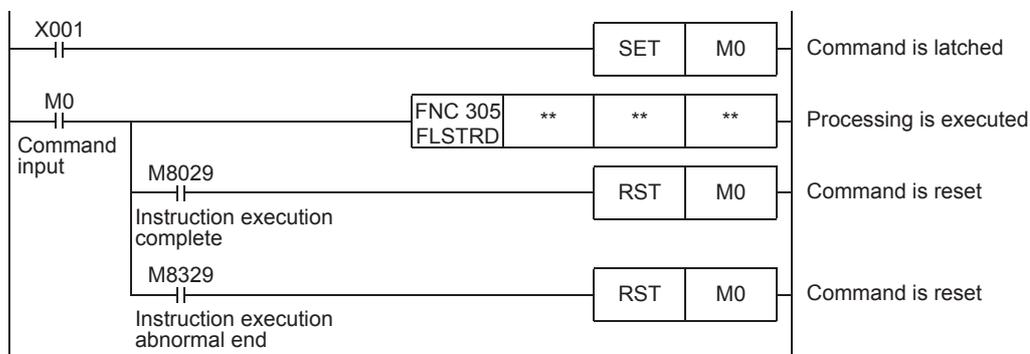
If the command input remains ON, the PLC executes processing repeatedly.

##### 2. Cautions on programming

For processing for the CF-ADP, keep ON the command input for an applied instruction for the CF-ADP ON until processing has been completed.

Make such a program that the command input is set to OFF using the instruction executing complete flag (M8029) after all processing for the CF-ADP are finished.

##### Program Example



##### 3. Instruction execution complete flag (M8029)

When processing for the CF-ADP has been completed normally, the instruction execute complete flag (M8029) turns ON, and remains ON for one scan.

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**4. Operation when an error occurs**

When an error occurs, the instruction execution abnormal complete flag (M8329) turns ON, and execution of the instruction is aborted.

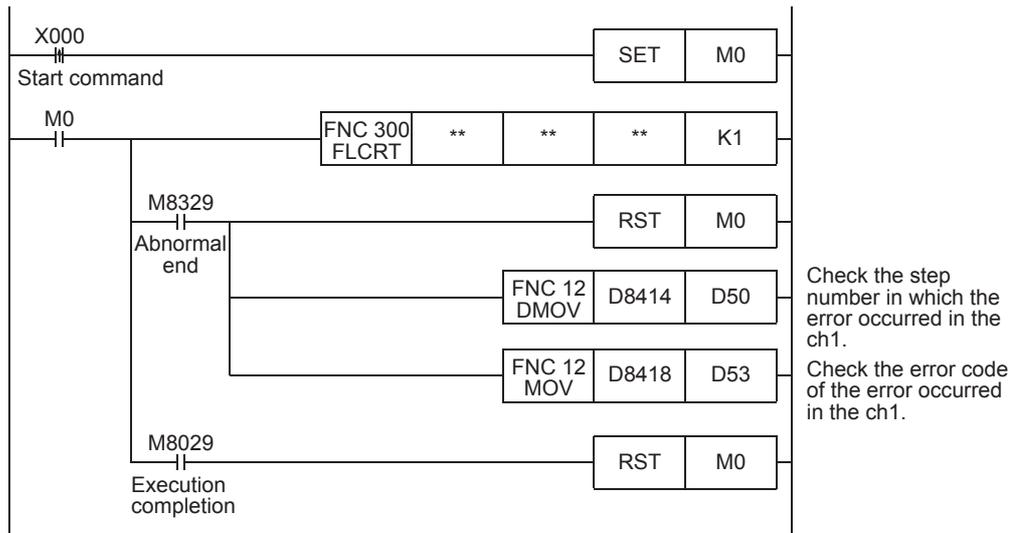
After that, the error code is stored in the error code storage register, and the error flag turns ON.

The user can check the error code and error detected step number using the following data registers.

The error code and error occurrence step number are stored in the data registers for the channel number specified in the CF-ADP applied instruction.

| Error code storage device |       | Error detected step number storage device |             |
|---------------------------|-------|---|-------------|
| ch1                       | ch2   | ch1                                       | ch2         |
| D8418                     | D8438 | D8415,D8414                               | D8435,D8434 |

**Program Example**



**8.2.2 Cautions on programming**

**1. Using a CF-ADP instruction together with another instruction**

CF-ADP applied instructions cannot be used if they specify a channel used by the RS instruction, RS2 instruction, inverter communication instructions or MODBUS Read/Write instructions.

**2. Caution on when two or more application instructions for the CF-ADP are driven simultaneously**

When two or more application instructions for the CF-ADP are driven simultaneously, after performing from the application command for the CF-ADP with the smaller step number in a program and completing instructions execution, the next application instructions for the CF-ADP is executed.

**3. Caution on writing during RUN**

CF-ADP instruction cannot be written to during RUN mode.

When the user writes an applied instruction for the CF-ADP during RUN mode, execution of the instruction is canceled.

**4. Number of times data is written to the CompactFlash™ card**

The number of times data is written to the CompactFlash™ card is limited.

When data is directly written to the CompactFlash™ card, data is written to the CompactFlash™ card every time the instruction is executed. The user should pay rigid attention to the number of times data is written to the CompactFlash™ card.

For example, if data is written to the CompactFlash™ card every one minute, data is written 100,000 times in approximately 2 months.

**5. Channel number specified in CF-ADP applied instructions**

In CF-ADP applied instructions, make sure to specify the channel number assigned to the CF-ADP.

If the wrong channel number is specified, CF-ADP applied instructions are not executed normally.

Refer to Section 3.4 for the channel numbers assigned to the CF-ADP.



### 8.3.1 Detailed explanation of setting data

Details of the setting data in the FLCRT instruction are as shown below.

| Setting items           | Description  | Data Type  |               |
|-------------------------|--|--|---------------|
| (S1•)                   | File ID<br>This ID number is associated with the file name.<br>The FLCRT instruction creates a file, and associates the file name with the file ID at the same time. The user should use the file ID for specifying a file after that.<br>Allowable setting range : K0 to K63 ("K0" indicates "FIFO file".)  | 16-bit binary  |               |
| (S2•)                   | File name<br>When (S1•) is "K0 (FIFO file)"<br>Not used (ignored)<br>Use an unused device. (D or R)<br>When (S1•) is "K1" to "K63"<br>Specify the file name in up to 8 characters until "null" or "null + null".<br>Half-width alphanumeric characters and half-width symbols permitted in the MS-DOS are available.<br>Half-width symbols : !, #, \$, %, &, ', (, ), +, -, @, ^, _, ', ~<br>The extension is fixed to "CSV" | Character string   |               |
| File creation parameter | (S3•)  | Time stamp setting<br>Set whether or not the time stamp is added to the file. Specify the format when adding the time stamp.<br>K0 : None (NULL)<br>K1 : yyyy/mm/dd hh:mm:ss<br>K2 : yy/mm/dd hh:mm:ss<br>K3 : dd/mm/yyyy hh:mm:ss<br>K4 : dd/mm/yy hh:mm:ss<br>K5 : mm/dd/yyyy hh:mm:ss<br>K6 : mm/dd/yy hh:mm:ss<br>K7 : hh:mm:ss  | 16-bit binary |
|                         | (S3•) +1   | Data type<br>Set the data type to be saved.<br>K0 : No data type specification (mixed type)<br>K1 : Bit type<br>K2 : Decimal type (16-bit)<br>K3 : Decimal type (32-bit)<br>K4 : Hexadecimal type (16-bit)<br>K5 : Hexadecimal type (32-bit)<br>K6 : Real numbers(Floating point data) Exponent expression type<br>K7 : Character string   | 16-bit binary |
|                         | (S3•) +2   | Maximum number of lines<br>Set the maximum number of lines.<br>Allowable setting range : K1 to K32767*1  | 16-bit binary |
|                         | (S3•) +3   | When (S1•) is "K0"<br>Set the CompactFlash™ card use ratio.<br>Specify the ratio (%) out of the whole CompactFlash™ card capacity to be used.<br>Allowable setting range : 10 to 90 (%)  | 16-bit binary |
|                         |  | When (S1•) is "K1" to "K63"<br>File processing to be executed when the specified maximum number of lines is reached.<br>Set the file processing method to be executed when the number of lines reaches the specified maximum value.<br>K0 : Stops execution. (The line position remains at the specified maximum line position.)<br>K1 : Returns to the head (ring buffer file). | 16-bit binary |
| n                       | Channel number used by the CF-ADP<br>K1 : ch1<br>K2 : ch2  | 16-bit binary  |               |

\*1. Adjust the maximum number of lines to specify the file size available in the used application software used.  
For the file size calculation formula, refer to Subsection 7.1.4.

**Caution**

**When the file ID is "K0"**

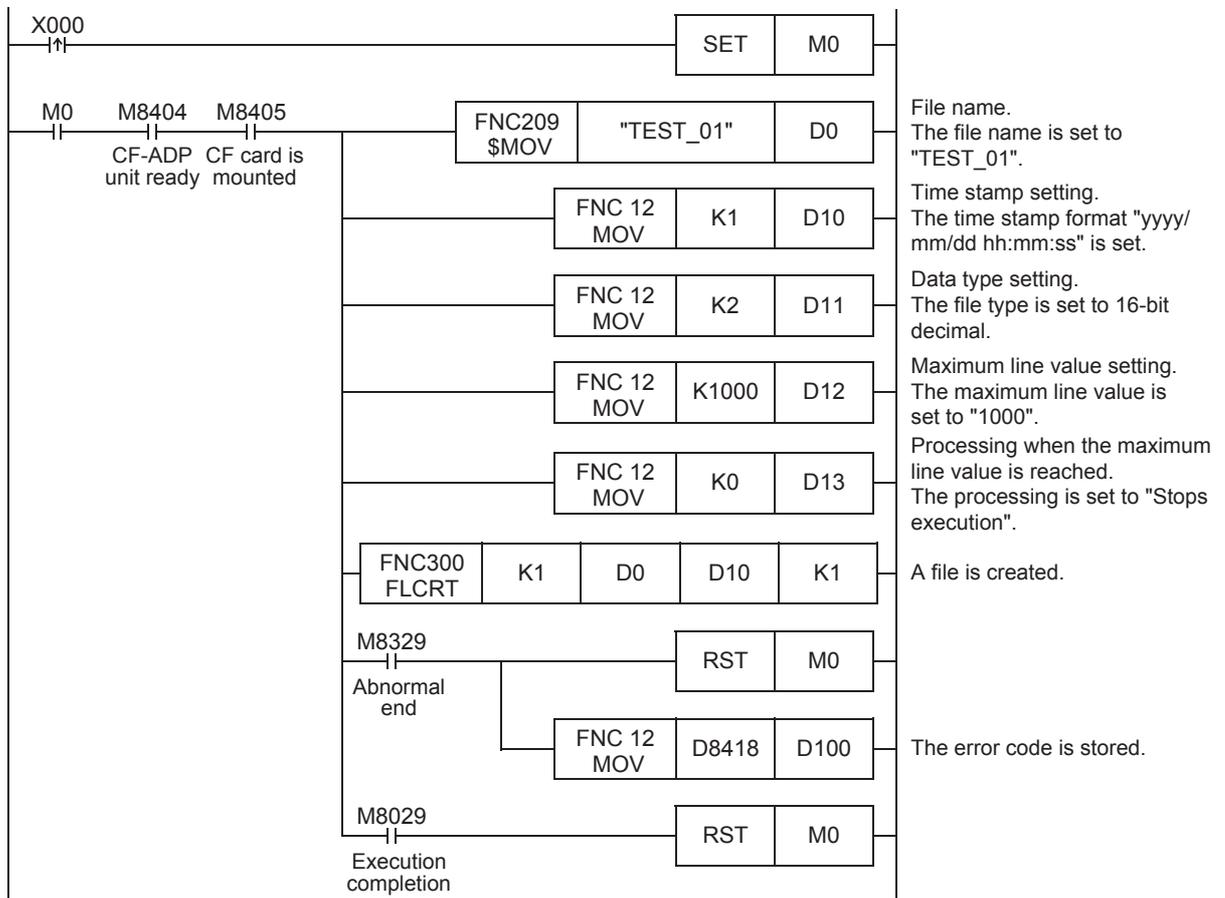
- 1) The CF-ADP can create up to 1000 files (within the CompactFlash™ card capacity).
- 2) The file name is set to "FILE0000.CSV" to "FILE0999.CSV".

**When the file ID is "K1" to "K63"**

- 1) The user can create up to 63 files (within the CompactFlash™ card capacity).
- 2) The FLCRT instruction is completed abnormally if different file names are specified for the same file ID or if the same file name is specified for different file IDs.

**Program Example**

This program creates a file whose ID is "1" and file name is "TEST\_01" when X000 turns ON. The time stamp setting, data type, maximum Index value, and processing when the maximum Index value is reached are as shown below. The channel number 1 is used.



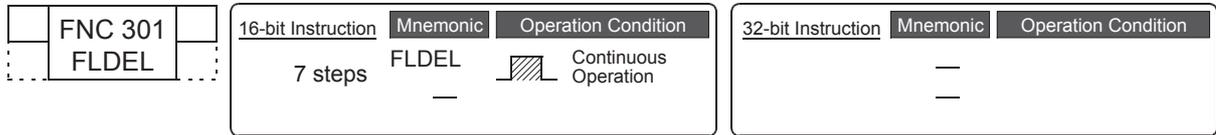
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## 8.4 FNC 301 - FLDEL / File delete•CF card format

### Outline

The FLDEL instruction deletes files stored in the CompactFlash™ card, or formats the CompactFlash™ card.

#### 1. Instruction format



#### 2. Set data

| Operand Type | Description  | Data Type     |
|--------------|--|---------------|
| (S1•)        | File ID (Refer to Subsection 8.4.1)                            | 16-bit binary |
| (S2•)        | File delete method (Refer to Subsection 8.4.1)                 | 16-bit binary |
| n            | Used channel number [contents of setting : K1 = ch1, K2 = ch2] | 16-bit binary |

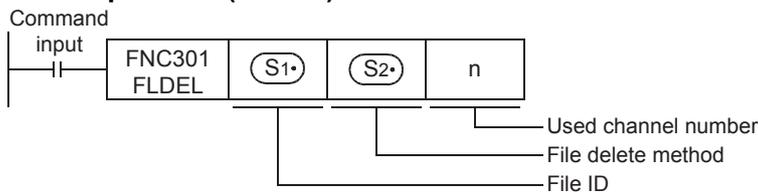
#### 3. Applicable devices

| Operand Type | Bit Devices |   |   |   |   |   |      | Word Devices        |     |     |     |             |   |   | Others       |       |   |   |           |             |                   |         |     |   |
|--------------|-------------|---|---|---|---|---|------|---------------------|-----|-----|-----|-------------|---|---|--------------|-------|---|---|-----------|-------------|-------------------|---------|-----|---|
|              | System User |   |   |   |   |   |      | Digit Specification |     |     |     | System User |   |   | Special Unit | Index |   |   | Con-stant | Real Number | Charac-ter String | Pointer |     |   |
|              | X           | Y | M | T | C | S | D□.b | KnX                 | KnY | KnM | KnS | T           | C | D | R            | U□\G□ | V | Z | Modify    | K           | H                 | E       | "□" | P |
| (S1•)        |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ | ✓         |             |                   |         |     |   |
| (S2•)        |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ | ✓         | ✓           |                   |         |     |   |
| n            |             |   |   |   |   |   |      |                     |     |     |     |             |   |   |              |       |   |   | ✓         | ✓           |                   |         |     |   |

▲: Except special data register (D).

### Explanation of function and operation

#### 1. 16-bit operation (FLDEL)



The FLDEL instruction deletes files stored in the CompactFlash™ card, or formats the CompactFlash™ card in the following method.

- Specify file deletion or file formatting using (S1•).
    - When (S1•) is "K-1 (H0FFFF)", the FLDEL instruction deletes all files whose ID is 0 to 63.
    - When (S1•) is "K0" to "K63", the FLDEL instruction deletes the file associated with the specified file ID.
    - When (S1•) is "K512 (H200)", the FLDEL instruction formats the CompactFlash™ card.
  - Specify the file deletion method or format type using (S2•).
    - When (S1•) is "K-1 (H0FFFF)" or "K0" to "K63", specify the deletion method
      - K0: The FLDEL instruction deletes the specified file.
      - K1: The FLDEL instruction deletes the association between the file name and the file ID (, but does not delete the file itself).
 However, when the file ID specified in (S1•) is "0", the FLDEL instruction deletes the file without regard to the setting of (S2•).
    - When (S1•) is "K512 (H200)", specify the format type.
      - k256(H100) : The FLDEL instruction formats the CompactFlash™ card in FAT16 format.
- For details, refer to Subsection 8.4.1.

### 8.4.1 Detailed explanation of setting data

Details of the setting data in the FLDEL instruction are as shown below.

| Setting items | Description  | Data Type     |
|---------------|--|---------------|
| (S1•)         | File ID<br>K-1(H0FFFF) : The FLDEL instruction deletes all files.<br>K0 to K63 : The FLDEL instruction deletes a file associated with the specified file ID.<br>K512(H200) : The FLDEL instruction formats the CompactFlash™ card.   | 16-bit binary |
| (S2•)         | When (S1•) is "K-1 (H0FFFF)" or "K0" to "K63"<br>Specify the deletion method.<br>K0 : The FLDEL instruction deletes the specified file.<br>K1 : The FLDEL instruction deletes the association between the file name and the file ID (but does not delete the file itself).<br>However, when the file ID specified in (S1•) is "0", the FLDEL instruction deletes the file itself without regard to the setting of (S2•) .<br><br>When (S1•) is "K512 (H200)"<br>Specify the format type.<br>K256(H100) : The FLDEL instruction formats the CompactFlash™ card in the FAT16 format. | 16-bit binary |
| n             | Channel number used by the CF-ADP<br>K1 : ch1<br>K2 : ch2  | 16-bit binary |

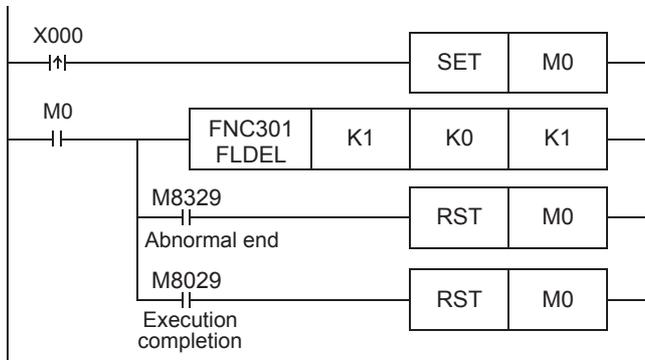
#### Cautions

When the file ID "K0 (FIFO file)" or "K-1 (all files)" is specified, it may take approximately 1 minute to delete the files depending on the number of stored files.

#### Program Example

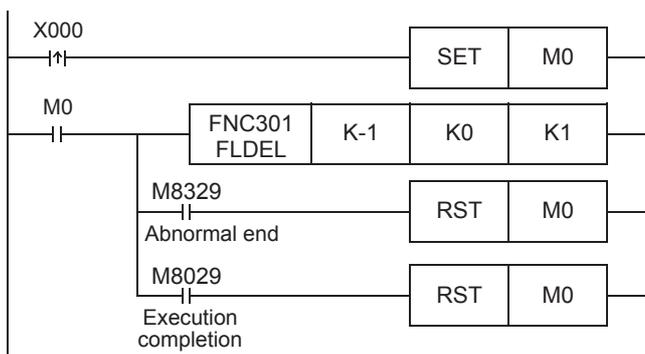
1) Program Example 1

This program deletes the file whose ID is "1" when X000 turns ON.  
Channel number 1 is used.



2) Program Example 2

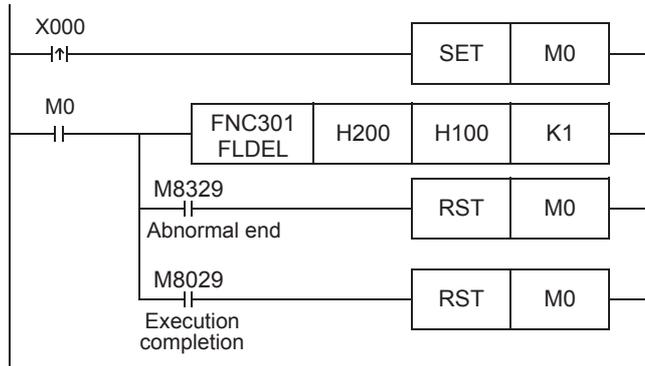
This program deletes all files when X000 turns ON.  
Channel number 1 is used.



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3) Program Example 3

This program formats the CompactFlash™ card in the FAT 16 format when X000 turns ON. Channel number 1 is used.



## 8.5 FNC 302 - FLWR / Data write

### Outline

The FLWR instruction writes data to the CompactFlash™ card or to the buffer inside the FX3U-CF-ADP.

#### 1. Instruction format

| FNC 302<br>FLWR |  | 16-bit Instruction | Mnemonic | Operation Condition  | 32-bit Instruction | Mnemonic | Operation Condition |
|-----------------|--|--------------------|----------|--|--------------------|----------|---------------------|
|                 |  | 11 steps           | FLWR     |  Continuous Operation |                    | —        | —                   |

#### 2. Set data

| Operand Type | Description  | Data Type     |
|--------------|--|---------------|
| (S1•)        | File ID (Refer to Subsection 8.5.1)  | 16-bit binary |
| (S2•)        | Head of devices which store data to be written (Refer to Subsection 8.5.1) | -             |
| (S3•)        | Data write parameter (Refer to Subsection 8.5.1)                           | 16-bit binary |
| (D•)         | Position after data writing (Refer to Subsection 8.5.1)                    | 16-bit binary |
| n            | Used channel number [contents of setting : K1 = ch1, K2 = ch2]             | 16-bit binary |

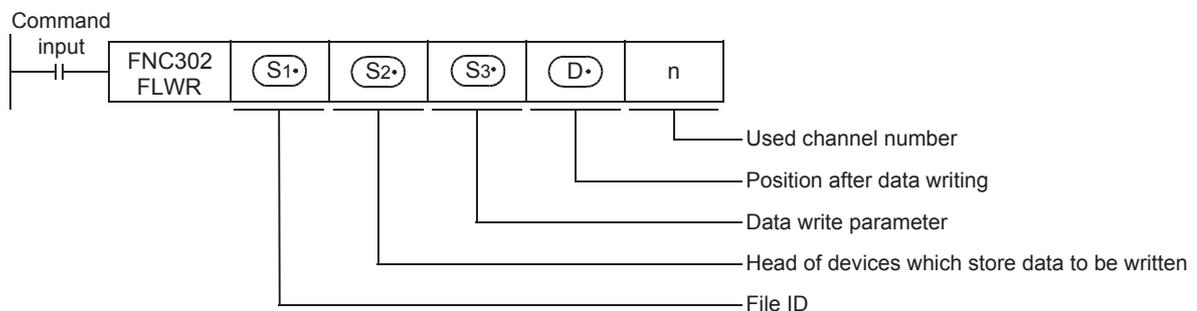
#### 3. Applicable devices

| Operand Type | Bit Devices |   |   |   |   |   |      | Word Devices        |     |     |     |             |   |   | Others       |       |   |   |           |             |                   |         |     |   |
|--------------|-------------|---|---|---|---|---|------|---------------------|-----|-----|-----|-------------|---|---|--------------|-------|---|---|-----------|-------------|-------------------|---------|-----|---|
|              | System User |   |   |   |   |   |      | Digit Specification |     |     |     | System User |   |   | Special Unit | Index |   |   | Con-stant | Real Number | Charac-ter String | Pointer |     |   |
|              | X           | Y | M | T | C | S | D□.b | KnX                 | KnY | KnM | KnS | T           | C | D | R            | U□\G□ | V | Z | Modify    | K           | H                 | E       | "□" | P |
| (S1•)        |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ | ✓         |             |                   |         |     |   |
| (S2•)        | ✓           | ✓ | ✓ |   |   | ✓ |      |                     |     |     |     | ✓           | ✓ | ✓ | ✓            |       |   | ✓ |           |             |                   |         |     |   |
| (S3•)        |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ |           |             |                   |         |     |   |
| (D•)         |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ |           |             |                   |         |     |   |
| n            |             |   |   |   |   |   |      |                     |     |     |     |             |   |   |              |       |   |   | ✓         | ✓           |                   |         |     |   |

▲: Except special data register (D).

### Explanation of function and operation

#### 1. 16-bit operation (FLWR)



The FLWR instruction writes data specified by the device (S2) to a file stored in the CompactFlash™ card specified by the file ID or to the buffer inside the CF-ADP. The FLWR instruction can overwrite data in the line position specified by the device (S3) +1, and can write additional data (K-1). When the writing destination is the buffer inside the CF-ADP, the FLWR instruction can only execute additional writing. When writing is completed, the line position and column position after writing are as follows.

- When data in 1 line is written additionally
  - Line position after writing : Written line position + K1
  - Column position after writing : K1
- When a line having existing data is overwritten
  - Line position after writing :  
Written line position if data is not written to the final column position of the specified line position  
Line position next to the written line position if data is written to the final column position of the line
  - Column position after writing:  
Column position next to the final written data point K1 if data is written to the final data point in the line  
"K1" if data is written to the final data point in the line

Both additional writing and overwriting are executed to the maximum number of lines specified during file creation. If data is written up to the final column position, the line position after writing varies depending on the file type and setting.

- When the processing is stopped by the maximum line position in a normal file  
Line position value after writing = Maximum line position + K1  
K-32768 when the maximum line position is "K32767"
- In the case of a normal file in which processing returns to the head of the file from the end of the file (ring buffer file)  
Line position after writing = K1
- In the case of FIFO file  
Line position after writing = K1

In either case, the column position after writing is "K1".

### 8.5.1 Detailed explanation of setting data

Details of the setting data in the FLWR instruction are as shown below.

| Setting items        | Description  | Data Type  |               |
|----------------------|--|--|---------------|
| (S1)                 | File ID<br>K0 to K63   | 16-bit binary  |               |
| (S2)                 | Head of devices which store data to be written.<br>Specify the head of devices which store the data to be written to the CompactFlash™ card. | -  |               |
| Data write parameter | (S3)   | Specify the data writing type<br>K0 : Mixed type<br>K1 : Bit type<br>K2 : Decimal type (16-bit)<br>K3 : Decimal type (32-bit)<br>K4 : Hexadecimal type (16-bit)<br>K5 : Hexadecimal type (32-bit)<br>K6 : Real numbers(Floating point data) Exponent expression type (32-bit)<br>K7 : Character string (512 half-width/full-width characters maximum)<br>K8 : Data name :Character string consisting of up to 32 half-width/full-width characters. Index, DATE TIME are added automatically. | 16-bit binary |
|                      | (S3) +1  | Specify the line position of the writing destination, or specify additional writing.<br>Line position of the writing destination : K1 to specified maximum number of lines<br>Additional writing : K-1   | 16-bit binary |
|                      | (S3) +2  | Specify the data column position in the writing destination.<br>Column position : K1 to K254<br>Additional writing : K-1   | 16-bit binary |
|                      | (S3) +3  | Number of written data points<br>K1 to K254  | 16-bit binary |
|                      | (S3) +4  | Writing destination<br>K0 : CompactFlash™ card<br>K1 : Buffer inside the CF-ADP  | 16-bit binary |
| (D)                  | Line position after writing<br>K1 to specified maximum number of lines   | 16-bit binary  |               |
| (D) +1               | Column position after writing<br>K1 to K254  | 16-bit binary  |               |
| n                    | Channel number used by the CF-ADP<br>K1 : ch1<br>K2 : ch2  | 16-bit binary  |               |

#### Cautions

- 1) The FLWR instruction is completed abnormally if a CompactFlash™ card is not mounted.
- 2) The user should pay close attention to the number of times data is written when the writing destination is set to the CompactFlash™ card because data is written every time the FLWR instruction is executed.  
For example, if data is written to the CompactFlash™ card every one minute, data is written 100,000 times in approximately 2 months.
- 3) Even if the writing destination is set to the buffer inside the CF-ADP, data is written to the CompactFlash™ card in the case of overwriting.
- 4) The FLWR instruction writes data to the CompactFlash™ card after the internal buffer inside the CF-ADP becomes full when the writing destination is set to the buffer. Data stored in the internal buffer inside the CF-ADP is erased when a (instantaneous or long) power interruption occurs.
- 5) When the data type is a data name (K8), the user can specify only the head line before writing other data. Index and DATE TIME are added automatically.
- 6) The FLWR instruction may require several scans to acquire data. Take proper measures such as saving acquired data in another device if data consistency is required.
- 7) It is necessary to set the device number in multiples of 16 when a bit device is specified in (S2) and the data type is set to anything other than bit type. When a word device is specified in (S2) and the data type is set to bit, the FLWR instruction acquires data to be written from the least significant bit of the specified device.
- 8) When (S3) is "K7" or "K8", 00H, which indicates the end of the string, must be added to the end of the character string.

## 8.5.2 Writing data of same type

"m" data points of the same type in one line are written as follows.  
Additional writing or overwriting is available.

|               | Instruction name | File ID<br>(S1) | Source data<br>(S2) | Data write parameter<br>(S3)          | Line position after writing<br>(D) | Used channel number<br>n |
|---------------|------------------|-----------------|---------------------|---------------------------------------|------------------------------------|--------------------------|
| Command input | FLWR             | K*              | (S2)                | (S3) K****<br>Data type specification | (D) Line position                  | n                        |
|               |                  |                 | ·                   | (S3) +1 K**** or K-1<br>Line position | (D) +1 Column position             |                          |
|               |                  |                 | ·                   | (S3) +2 K****<br>Column position      |                                    |                          |
|               |                  |                 | (S2) +m-1           | (S3) +3 K(m) Points                   |                                    |                          |
|               |                  |                 |                     | (S3) +4 K* Writing destination        |                                    |                          |

### 1. When writing additional data to a file

- Set the data writing parameters (line position and column position) as follows.
  - Line position of writing destination : K-1 (Additional writing)
  - Column position : K1 (Head)
- When executed once, the FLWR instruction adds data by 1 line. It is not possible to additionally write data which increases columns in to a previously written line position.
- The time stamp is added at the time of writing if the addition of the time stamp when writing has been set.
- After writing, the line position stores the following value
  - Line position after writing : Line position next to the written line position
  - Column position after writing : K1

#### Program Example

- Explanation of operation

When X000 turns ON, the decimal (16-bit) data stored in D10 to D14 is written additionally to the 3rd line (Index 3) in the following file. The writing destination is the CompactFlash™ card. D0 stores the line position after writing, and D1 stores the column position after writing.

Channel 1 is used in this program. For details on sequence programs, refer to next page.

- Content of file

File ID=K10, The data name is already written.

Before the FLWR instruction is executed

| Index | DATE TIME           | Data1 | Data2 | Data3 | Data4 | Data5 | (CR)(LF) |
|-------|---------------------|-------|-------|-------|-------|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 111   | 222   | 333   | -444  | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02 | 1111  | 2222  | 3333  | -44   | 5     | (CR)(LF) |



After the FLWR instruction is executed

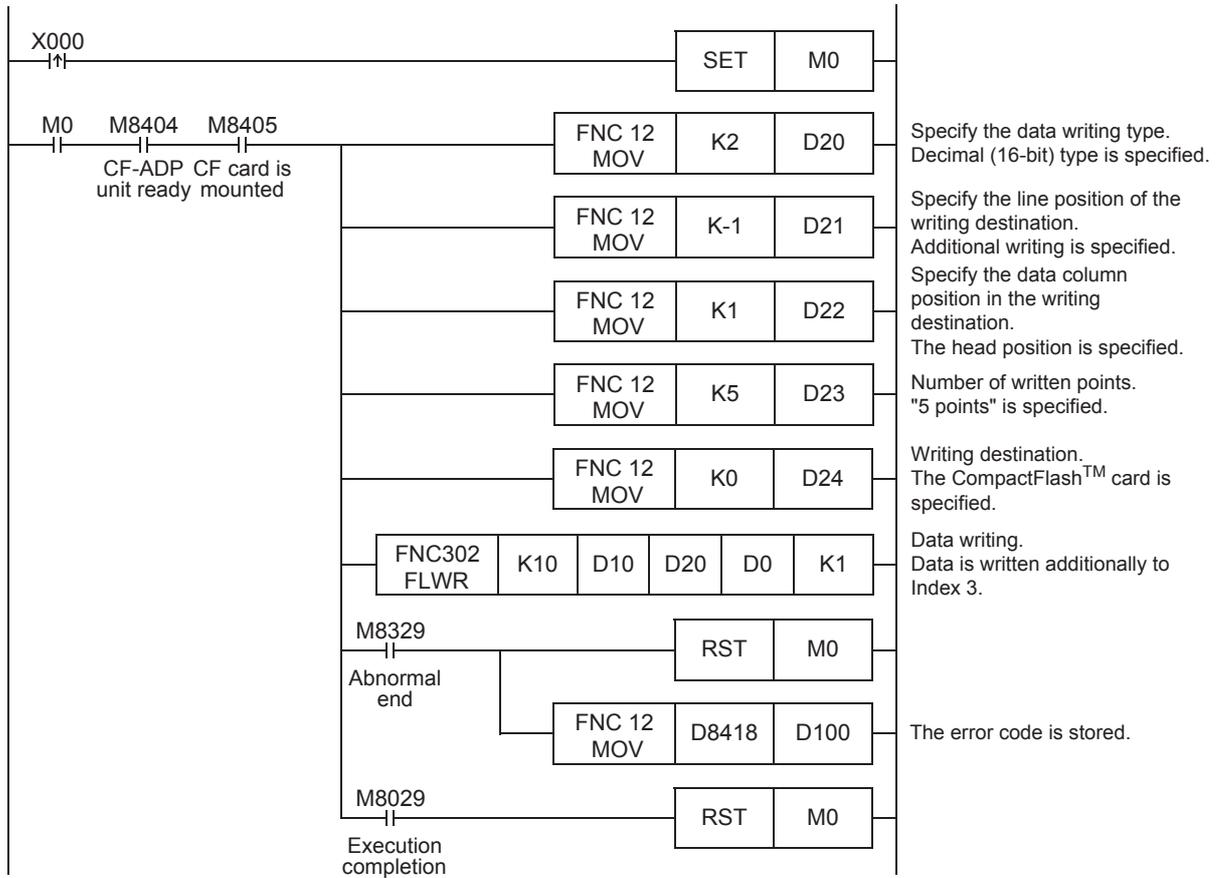
| Index | DATE TIME  | Data1  | Data2  | Data3  | Data4   | Data5  | (CR)(LF) |
|-------|--|--|--|--|---|--|----------|
| 1     | 2009/ 9/ 9 23:59:00  | 111  | 222  | 333  | -444  | 555  | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02  | 1111   | 2222   | 3333   | -44   | 5  | (CR)(LF) |
| 3     | 2009/ 9/10 23:59:00<br>The time at which the instruction is executed is added. | 11<br>The value of D10 is written additionally | 22<br>The value of D11 is written additionally | 33<br>The value of D12 is written additionally | -4444<br>The value of D13 is written additionally | 55<br>The value of D14 is written additionally | (CR)(LF) |

Line position after data is written by the FLWR instruction

Line position after writing : D0=K4

Column position after writing : D1=K1

- Sequence program  
It is assumed that D10 to D14 store values.  
This program does not describe such values.



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## 2. When overwriting data in a previously written line

- Set the data writing parameters (line position and column position of the writing destination) in accordance with the written points.
- Only data the same type as the original data can be used for overwriting. When the data type is a character string, only a character string not longer than the original character string can be used for overwriting.
- It is not possible to write data additionally after the final data point of a previously written line.
- The time stamp is updated at the time of overwriting.
- The line position after writing is the specified line position. The column position after writing is the column position next to the final written data. However, if data is written up to the end of a line, the line position after writing is the line position next to the written line position, and the column position after writing is "K1".

### Program Example

- Explanation of operation

When X000 turns ON, the decimal (16-bit) data stored in D10 and D11 overwrites the Index 2 in the following file. The writing destination is the CompactFlash™ card. D0 stores the line position after writing, and D1 stores the column position after writing.

Channel 1 is used in this program. For details on sequence programs, refer to next page.

- Content of file

File ID=K10, The data name is already written.

Before the FLWR instruction is executed

| Index | DATE TIME           | Data1 | Data2 | Data3 | Data4 | Data5 | (CR)(LF) |
|-------|---------------------|-------|-------|-------|-------|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 111   | 222   | 333   | -444  | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02 | 1111  | 2222  | 3333  | -44   | 5     | (CR)(LF) |
| 3     | 2009/ 9/ 9 23:59:04 | 111   | 22    | 33    | -4444 | 55    | (CR)(LF) |



After the FLWR instruction is executed

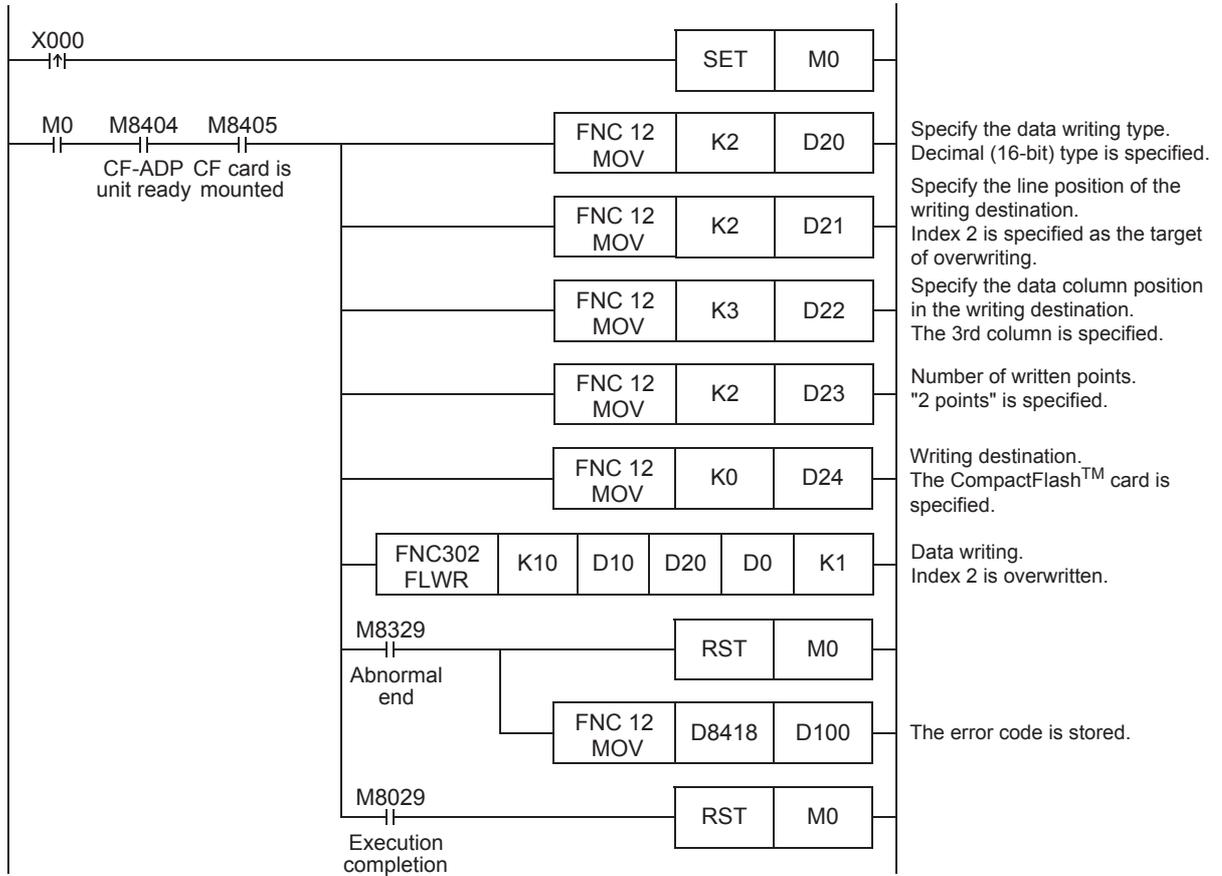
| Index | DATE TIME  | Data1 | Data2 | Data3  | Data4  | Data5 | (CR)(LF) |
|-------|--|-------|-------|--|--|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00  | 111   | 222   | 333  | -444   | 555   | (CR)(LF) |
| 2     | 2009/ 9/10 23:59:30<br>The time stamp is updated at the time of overwriting. | 1111  | 2222  | 1234<br>The existing data is overwritten by the value stored in D10. | 2345<br>The existing data is overwritten by the value stored in D11. | 5     | (CR)(LF) |
| 3     | 2009/ 9/ 9 23:59:04  | 111   | 22    | 33   | -4444  | 55    | (CR)(LF) |

Line position after data is written by the FLWR instruction

Line position after writing : D0=K2

Column position after writing : D1=K5

- Sequence program  
It is assumed that D10 and D11 store values.  
This program does not describe such values.



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### 8.5.3 Writing data of different types

Data of different types existing in 1 line are written as follows.  
Additional writing or overwriting is available.

|  |  |  |   |   |   |   |          |
|--|--|--|---|---|---|---|----------|
| II<br>Command<br>input   | Instruction name   | File ID<br>(S1 <sup>•</sup> )                      | Source data<br>(S2 <sup>•</sup> )                     | Data write parameter<br>(S3 <sup>•</sup> )            | Line position<br>after writing<br>(D <sup>•</sup> ) | Used channel<br>number<br>n                     |          |
|  | FLWR<br>(Only "mixed<br>type" data)                              | K <sup>*</sup>                                     | Device a  | (S3 <sup>•</sup> ) :K0 Specify "mixed<br>type" data   | Device  | n   |          |
|  |  |  |   | (S3 <sup>•</sup> )+1 :K***** or K-1                   |   |   | Device+1 |
|  |  |  |   | (S3 <sup>•</sup> )+2 :K***** or K-1                   |   |   |          |
|  |  |  |   | (S3 <sup>•</sup> )+3 :K(r)=s+t+...+u                  |   |   |          |
|  |  |  |   | (S3 <sup>•</sup> )+4 :K <sup>*</sup>                  |   |   |          |
|  | Instruction name   | File ID<br>(S1 <sup>•</sup> )                      | Source data<br>(S2 <sup>•</sup> )                     | Data write parameter<br>(S3 <sup>•</sup> )            | Line position<br>after writing<br>(D <sup>•</sup> ) | Used channel<br>number<br>n                     |          |
|  | FLWR<br>(The data stored<br>in the 1st data<br>type is written.) | K <sup>*</sup><br>Specify a<br>matching<br>file ID | Device a<br>.<br>.<br>.<br>Device a<br>+(s-1)         | (S3 <sup>•</sup> ) :K <sup>*</sup>                    | Specify a matching<br>device                        | n<br>Specify a<br>matching<br>channel<br>number |          |
|  |  |  |   | (S3 <sup>•</sup> )+1 Specify a matching<br>value type |   |   |          |
|  |  |  |   | (S3 <sup>•</sup> )+2 Specify a matching<br>value type |   |   |          |
|  |  |  |   | (S3 <sup>•</sup> )+3 :K(s)                            |   |   |          |
|  |  |  |   | (S3 <sup>•</sup> )+4 Specify a matching<br>value type |   |   |          |
| Instruction name   | File ID<br>(S1 <sup>•</sup> )                                    | Source data<br>(S2 <sup>•</sup> )                  | Data write parameter<br>(S3 <sup>•</sup> )            | Line position<br>after writing<br>(D <sup>•</sup> )   | Used channel<br>number<br>n                         |   |          |
| FLWR<br>(The data stored<br>in the 2nd data<br>type is written.)   | K <sup>*</sup><br>Specify a<br>matching<br>file ID               | Device b<br>.<br>.<br>.<br>Device b<br>+(t-1)      | (S3 <sup>•</sup> ) :K <sup>*</sup>                    | Specify a matching<br>device                          | n<br>Specify a<br>matching<br>channel<br>number     |   |          |
|  |  |  | (S3 <sup>•</sup> )+1 Specify a matching<br>value type |   |   |   |          |
|  |  |  | (S3 <sup>•</sup> )+2 Specify a matching<br>value type |   |   |   |          |
|  |  |  | (S3 <sup>•</sup> )+3 :K(t)                            |   |   |   |          |
|  |  |  | (S3 <sup>•</sup> )+4 Specify a matching<br>value type |   |   |   |          |
| Instruction name   | File ID<br>(S1 <sup>•</sup> )                                    | Source data<br>(S2 <sup>•</sup> )                  | Data write parameter<br>(S3 <sup>•</sup> )            | Line position<br>after writing<br>(D <sup>•</sup> )   | Used channel<br>number<br>n                         |   |          |
| FLWR<br>(The data stored<br>in the final data<br>type is written.) | K <sup>*</sup><br>Specify a<br>matching<br>file ID               | Device c<br>.<br>.<br>.<br>Device c<br>+(u-1)      | (S3 <sup>•</sup> ) :K <sup>*</sup>                    | Specify a matching<br>device                          | n<br>Specify a<br>matching<br>channel<br>number     |   |          |
|  |  |  | (S3 <sup>•</sup> )+1 Specify a matching<br>value type |   |   |   |          |
|  |  |  | (S3 <sup>•</sup> )+2 Specify a matching<br>value type |   |   |   |          |
|  |  |  | (S3 <sup>•</sup> )+3 :K(u)                            |   |   |   |          |
|  |  |  | (S3 <sup>•</sup> )+4 Specify a matching<br>value type |   |   |   |          |

**Cautions**

- 1) Do not use another applied instruction for the CF-ADP in between a series of FLWR instructions.  
Set a common driving condition among a series of FLWR instructions.
- 2) Set matching values to the file ID and writing destination line position.
- 3) Make sure that the total number of devices in one line is 254 or less. (s+t+...+u ≤ 254)
- 4) Use values after completion of a series of FLWR instructions for the line position after writing and column position after writing.

## 1. When writing additional data to a file

- Set the data writing parameters as follows in all of a series of FLWR instructions.
  - Line position of writing destination : K-1 (Additional writing)
  - Column position : K-1
- A series of FLWR instructions is executed, and data in one line is added.  
It is not possible to write the same line data additionally to a previously written line.
- The time stamp is added at the time of writing if addition of the time stamp is set.
- The line position after writing is as follows.
  - Line position after writing : Line position next to the written line
  - Column position after writing : K1
- In a series of FLWR instructions, the user can specify a matching device in (S3\*) in all FLWR instructions, or specify different devices. When specifying a matching device, it is necessary to change the type (S3\*) and number of points (S3\*) +3 among FLWR instructions in accordance with each transferred data point using the MOV instruction, etc. (At this time, do not use a pulse type instruction.)

### Program Example

- Explanation of operation

When X000 turns ON, the data stored in D101 and D100 (32-bit hexadecimal type), data stored in Y010 (bit type), data stored in Y011 (bit type), data stored in R100 (16-bit decimal type), and data stored in R101 (16-bit decimal type) are written respectively to Index 3 additionally in the following file. The writing destination is the CompactFlash™ card. D20 stores the line position after writing, and D21 stores the column position after writing.

Channel 2 is used in this program. For details on sequence programs, refer to next page.

- Content of file

File ID=K5, The data name is already written.

Before the FLWR instruction is executed

| Index | DATE TIME           | Data1    | Data2 | Data3 | Data4 | Data5 | (CR)(LF) |
|-------|---------------------|----------|-------|-------|-------|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 12AB2222 | 1     | 0     | -444  | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02 | 12AB3333 | 0     | 1     | -44   | 5     | (CR)(LF) |



After the FLWR instruction is executed

| Index | DATE TIME  | Data1  | Data2                                      | Data3                                      | Data4  | Data5   | (CR)(LF) |
|-------|--|--|--|--|--|---|----------|
| 1     | 2009/ 9/ 9 23:59:00  | 12AB2222   | 1  | 0  | -444   | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02  | 12AB3333   | 0  | 1  | -44  | 5   | (CR)(LF) |
| 3     | 2009/ 9/10 23:59:00<br>The time at which the instruction is executed is added. | 23CDFFFF<br>The value of D101, D100 is written additionally. | 1<br>Y010 (ON = 1) is written additionally | 1<br>Y011 (ON = 1) is written additionally | -4444<br>The value of R100 is written additionally | 55<br>The value of R101 is written additionally | (CR)(LF) |

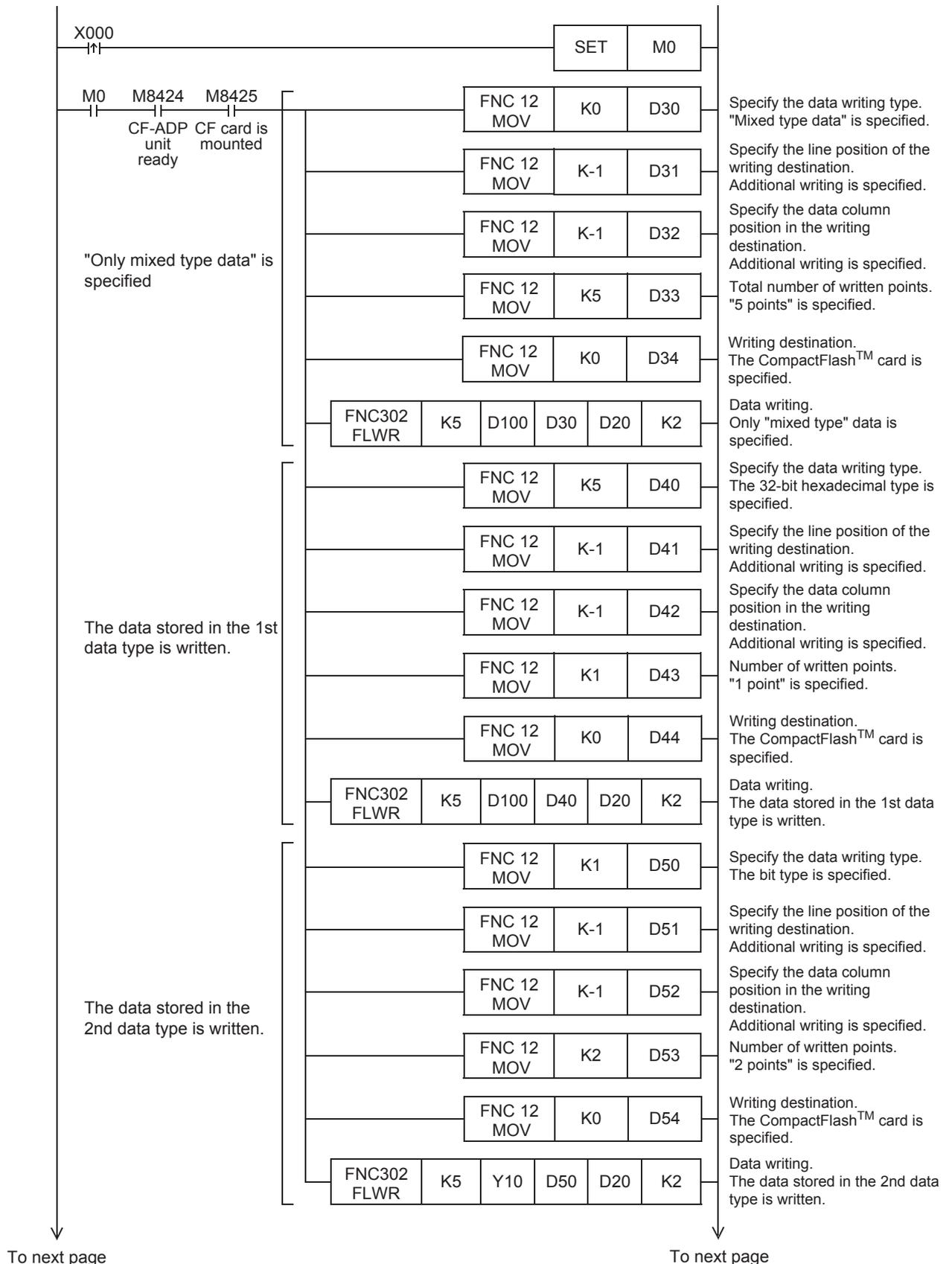
Line position after data is written by the FLWR instruction

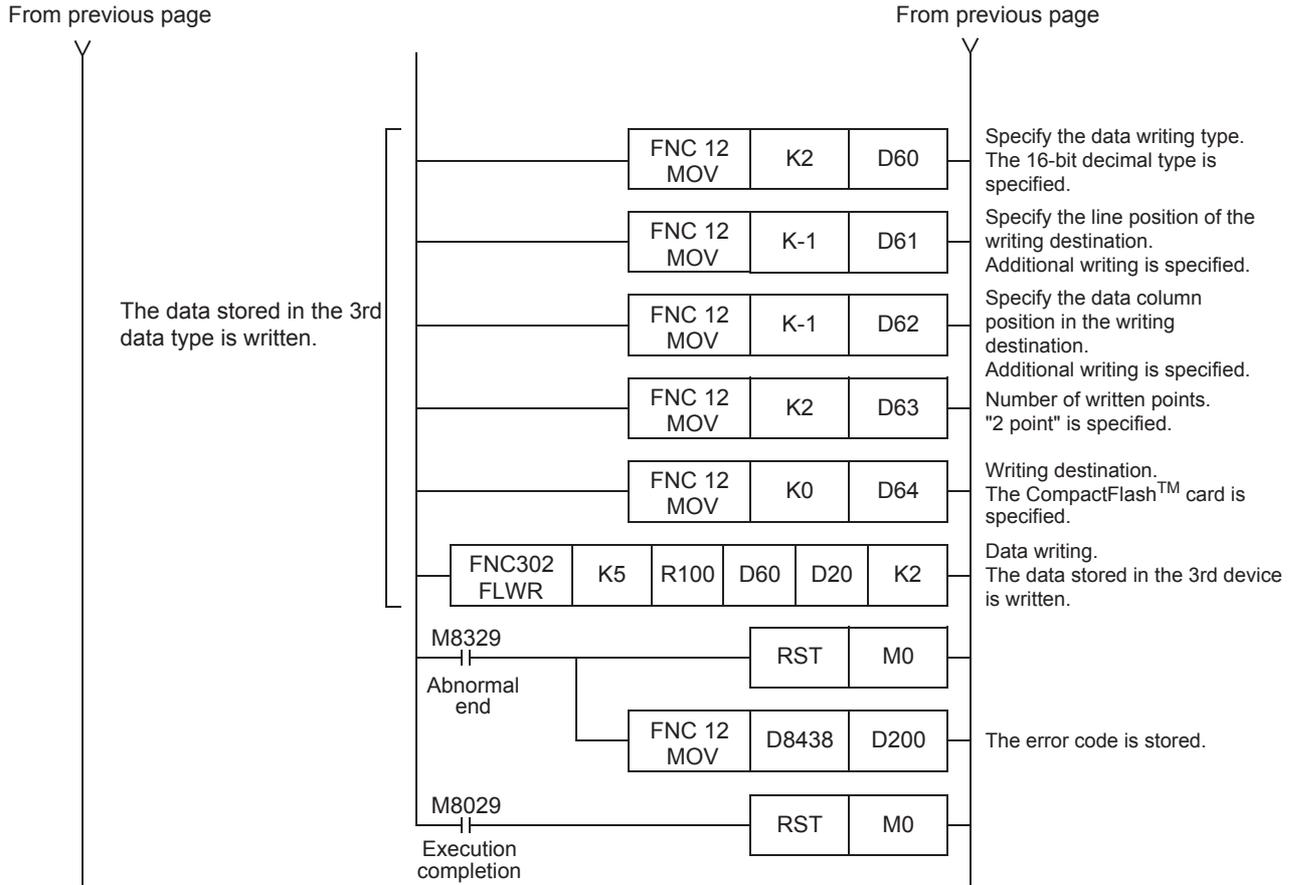
Line position after writing : D20=K4

Column position after writing : D21=K1

• Sequence program

It is assumed that D101 and D100 store 32-bit hexadecimal data, Y010 stores bit data, Y011 stores bit data, R100 stores 16-bit decimal data, and R101 stores 16-bit decimal data respectively. This program does not describe such values.





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## 2. When overwriting data in a previously written area

- Set the data writing parameters (line position and column position) in accordance with the written points.
- Use matching settings in a series of FLWR instructions. However, even if matching settings are used, data is written to a column position continuing from the final data of the previous instruction.
- Only data of the same type as the original data can be used for overwriting. When the data type is a character string, only a character string not longer than the original character string can be used for overwriting.
- It is not possible to add data additionally after the final data of an already written (line).
- The time stamp is updated at the time of overwriting.
- The line position after writing is the specified line position. The column position after writing is the column position next to the final written data point. However, if data is written up to the end of a line, the line position after writing is the line position next to the written line position, and the column position after writing is "K1".

### Program Example

- Explanation of operation

When X000 turns ON, the data stored in M15 (bit type), data stored in M16 (bit type), and data stored in R200 (16-bit decimal type) overwrites respectively the Index 1 in the following file. The writing destination is the CompactFlash™ card. D20 stores the line position after writing, and D21 stores the column position after writing.

Channel 2 is used in this program. For details on sequence programs, refer to next page.

- Content of file

File ID=K5, The data name is already written.

Before the FLWR instruction is executed

| Index | DATE TIME           | Data1    | Data2 | Data3 | Data4 | Data5 | (CR)(LF) |
|-------|---------------------|----------|-------|-------|-------|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 12AB2222 | 1     | 0     | -444  | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02 | 12AB3333 | 0     | 1     | -44   | 5     | (CR)(LF) |
| 3     | 2009/ 9/ 9 23:59:04 | 23CDFFFF | 1     | 1     | -4444 | 55    | (CR)(LF) |



After the FLWR instruction is executed

| Index | DATE TIME  | Data1    | Data2  | Data3  | Data4  | Data5 | (CR)(LF) |
|-------|--|----------|--|--|--|-------|----------|
| 1     | 2009/ 9/10 10:10:10<br>The time stamp is updated at the time of overwriting. | 12AB2222 | 1<br>The existing data is overwritten by the M15 (ON=1). | 1<br>The existing data is overwritten by the M16 (ON=1). | 4<br>The existing data is overwritten by the value stored in R200. | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02  | 12AB3333 | 0  | 1  | -44  | 5     | (CR)(LF) |
| 3     | 2009/ 9/ 9 23:59:04  | 23CDFFFF | 1  | 1  | -4444  | 55    | (CR)(LF) |

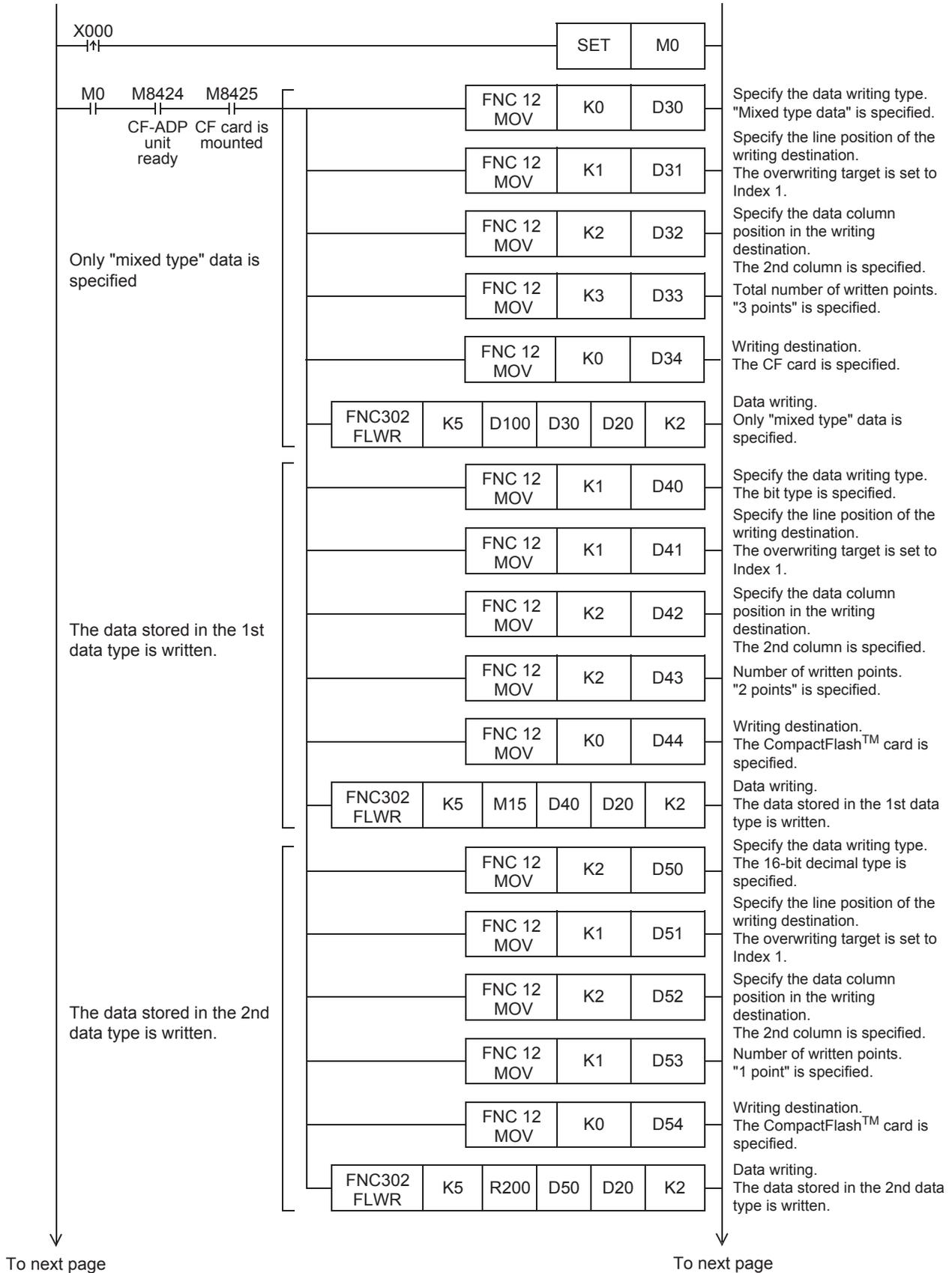
Line position after data is written by the FLWR instruction

Line position after writing D20=K1

Column position after writing : D21=K5

• Sequence program

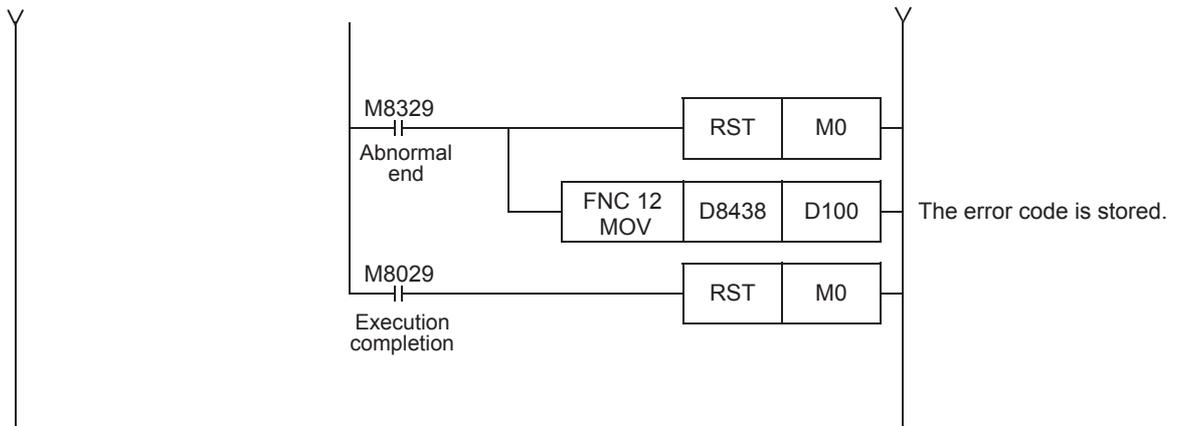
It is assumed that M15 stores bit data, M16 stores bit data, and R200 stores 16-bit decimal data.  
This program does not describe such values.



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### 8.6.1 Detailed explanation of setting data

Details of the setting data in the FLRD instruction are as shown below.

| Setting items       | Description   | Data Type     |
|---------------------|---|---------------|
| (S1)                | File ID<br>K0 to K63  | 16-bit binary |
| Data read parameter | (S2)<br>Specify the data reading type<br>K0 : Mixed type<br>K1 : Bit type<br>K2 : Decimal type (16-bit)<br>K3 : Decimal type (32-bit)<br>K4 : Hexadecimal type (16-bit)<br>K5 : Hexadecimal type (32-bit)<br>K6 : Real numbers(Floating point data) Exponent expression type (32-bit)<br>K7 : Character string (512 half-width/full-width characters maximum) | 16-bit binary |
|                     | (S2) +1<br>Specify the line position from which data is read.<br>Line position : K1 to specified maximum number of lines  | 16-bit binary |
|                     | (S2) +2<br>Specify the column position from which data is read.<br>Column position : K1 to K254   | 16-bit binary |
|                     | (S2) +3<br>Read points<br>K1 to K254  | 16-bit binary |
| (D1)                | Device which stores the read data<br>Specify the head of devices which store the data read from the CompactFlash™ card.   | -             |
| (D2)                | Number of data points existing in the specified line<br>K1 to K254<br>K0 : No data  | 16-bit binary |
| n                   | Channel number used by the CF-ADP<br>K1 : ch1<br>K2 : ch2   | 16-bit binary |

#### Cautions

- 1) The FLRD instruction is completed abnormally if a CompactFlash™ card is not mounted.
- 2) The FLRD instruction may require several scans to acquire data. Use the acquired data only after confirming completion of the FLRD instruction if data consistency is required.
- 3) It is necessary to set the device number in a multiple of 16 when a bit device is specified in (D1) and the read data type is anything other than bit. When a word device is specified in (D1) and the read data type is bit, the FLRD instruction stores data read from the least significant bit of the specified word device.
- 4) When the data type is anything other than character string and the number of devices which store the read data is insufficient, the FLRD instruction does not read data from the CF-ADP. An error occurs.
- 5) When the data type is a character string, the character string length is unknown. The PLC stores as much read data as possible. When reading is not completed even after the final device is reached, an error occurs.

### 8.6.2 Reading data of the same type from a file

"m" data points of the same data type in one line are read as follows.

| Command input | Instruction name | File ID<br>(S1) | Data read parameter<br>(S2)   | Read data<br>(D1)                 | Total number of data<br>(D2) | Used channel number<br>n |
|---------------|------------------|-----------------|---|-----------------------------------|------------------------------|--------------------------|
|               | FLRD             | K*              | (S2) :K* Data type specification<br>(S2)+1 :K**** Line position<br>(S2)+2 :K**** Column position<br>(S2)+3 :K(m) Points | Device<br>.<br>.<br>Device +(m-1) | Device                       | n                        |

#### Program Example

- Explanation of operation

When X000 turns ON, two decimal (16-bit) data points are read from the 4th column in Index 3 in the following file, and stored in R1000 and R1001. Channel 1 is used in this program.

- Content of file

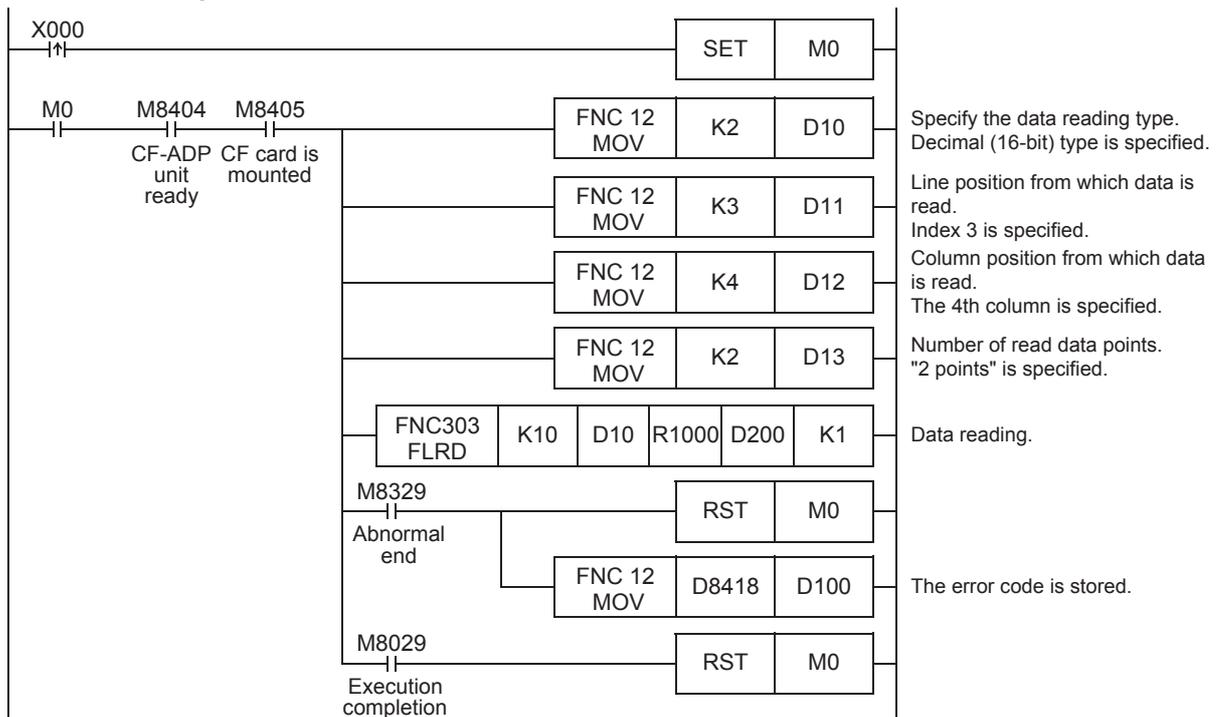
File ID=K10, The data name is already written.

| Index | DATE TIME           | Data1 | Data2 | Data3 | Data4 | Data5 | (CR)(LF) |
|-------|---------------------|-------|-------|-------|-------|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 111   | 222   | 333   | -444  | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02 | 1111  | 2222  | 3333  | -4444 | 5555  | (CR)(LF) |
| 3     | 2009/ 9/ 9 23:59:04 | 111   | 222   | 333   | -444  | 555   | (CR)(LF) |

↓ After the FLRD instruction is executed

|                      | Device which stores the read data | Value |
|----------------------|-----------------------------------|-------|
| Read data            | R1000                             | K-444 |
|                      | R1001                             | K555  |
| Total number of data | D200                              | K5    |

- Sequence program



### 8.6.3 Reading data of different types from a file

Data of different types in one line are read as follows.

|   |                                  |                                  |   |                              |  |                          |
|---|----------------------------------|----------------------------------|---|------------------------------|--|--------------------------|
| Command input   | Instruction name                 | File ID<br>(S1)                  | Data read parameter<br>(S2)                   | Read data<br>(D1)            | Total number of data<br>(D2)           | Used channel number<br>n |
|   | FLRD<br>(Only "mixed type" data) | K*                               | (S2) :K0 Specify "mixed type" data            | Device a                     | Device                                 | n                        |
|   |                                  |                                  | (S2)+1 :K****                                 |                              |  |                          |
|   |                                  |                                  | (S2)+2 :K****                                 |                              |  |                          |
| (S2)+3 :K(r)=s+t+...+u<br>Total points                    |                                  |                                  |   |                              |  |                          |
| Instruction name  | File ID<br>(S1)                  | Data read parameter<br>(S2)      | Read data<br>(D1)                             | Total number of data<br>(D2) | Used channel number<br>n               |                          |
| FLRD<br>(The data stored in the 1st data type is read.)   | K*                               | (S2) :K* Data type specification | Device a<br>·<br>·<br>·<br>Device a<br>+(s-1) | Specify a matching device    | n<br>Specify a matching channel number |                          |
|   |                                  | (S2)+1 Specify a matching value  |   |                              |  |                          |
|   |                                  | (S2)+2 Specify a matching value  |   |                              |  |                          |
|   |                                  | (S2)+3 :K(s) Points              |   |                              |  |                          |
| Instruction name  | File ID<br>(S1)                  | Data read parameter<br>(S2)      | Read data<br>(D1)                             | Total number of data<br>(D2) | Used channel number<br>n               |                          |
| FLRD<br>(The data stored in the 2nd data type is read.)   | K*                               | (S2) :K* Data type specification | Device b<br>·<br>·<br>·<br>Device b<br>+(t-1) | Specify a matching device    | n<br>Specify a matching channel number |                          |
|   |                                  | (S2)+1 Specify a matching value  |   |                              |  |                          |
|   |                                  | (S2)+2 Specify a matching value  |   |                              |  |                          |
|   |                                  | (S2)+3 :K(t) Points              |   |                              |  |                          |
| Instruction name  | File ID<br>(S1)                  | Data read parameter<br>(S2)      | Read data<br>(D1)                             | Total number of data<br>(D2) | Used channel number<br>n               |                          |
| FLRD<br>(The data stored in the final data type is read.) | K*                               | (S2) :K* Data type specification | Device c<br>·<br>·<br>·<br>Device c<br>+(u-1) | Specify a matching device    | n<br>Specify a matching channel number |                          |
|   |                                  | (S2)+1 Specify a matching value  |   |                              |  |                          |
|   |                                  | (S2)+2 Specify a matching value  |   |                              |  |                          |
|   |                                  | (S2)+3 :K(u) Points              |   |                              |  |                          |

#### Cautions

- 1) Do not use another applied instruction for the CF-ADP in between a series of FLRD instructions. Set a common driving condition among a series of FLRD instructions.
- 2) Set the same file ID, the same line position from which data is read, the same column position from which data is read, and the same channel number among a series of FLRD instructions. Specify a matching device for storing the total number of data points.
- 3) Make sure that the total number of devices from which data is read is 254 or less.
- 4) Use a value after the completion of a series of FLRD instructions for the total number of read data points. (s+t+...+u ≤ 254)
- 5) In a series of FLRD instructions, the user can specify a matching device in (S2) in all FLRD instructions, or specify different devices. When specifying a matching device, it is necessary to change the type (S2) and number of points (S2)+3 among FLDR instructions in accordance with each transferred data point using the MOV instruction, etc. (At this time, do not use a pulse type instruction.)

**Program Example**

- Explanation of operation

When X000 turns ON, 4 data points of different types are read from the 1st column in Index 2 in the following file. Each device shown below stores the read data, and D10 stores the total number of data points. Channel 2 is used in this program.

- Content of file

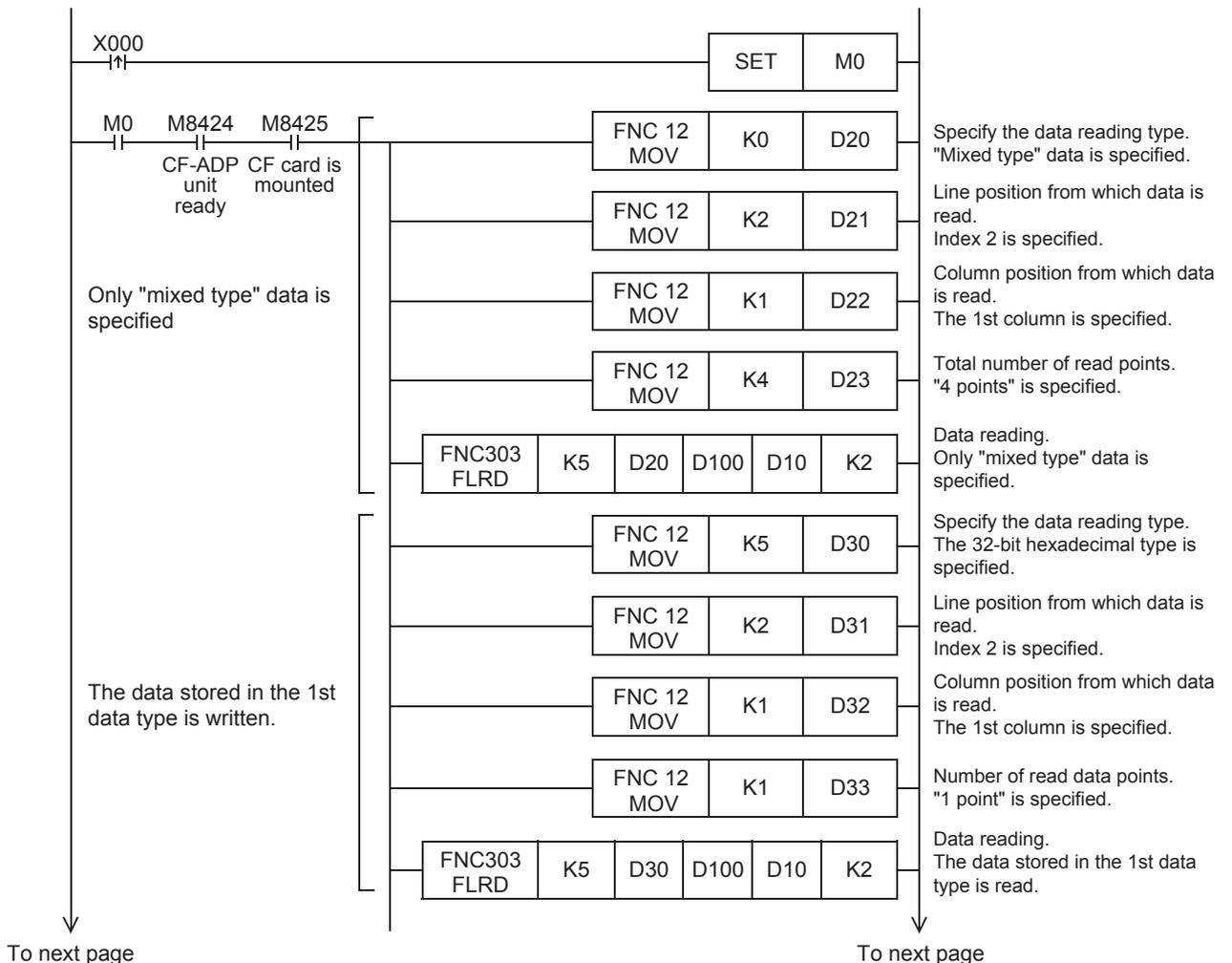
File ID=K5, The data name is already written.

| Index | DATE TIME           | Data1    | Data2 | Data3 | Data4 | Data5 | (CR)(LF) |
|-------|---------------------|----------|-------|-------|-------|-------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 12AB2222 | 1     | 0     | -444  | 555   | (CR)(LF) |
| 2     | 2009/ 9/ 9 23:59:02 | 12AB3333 | 0     | 1     | -44   | 5     | (CR)(LF) |
| 3     | 2009/ 9/ 9 23:59:04 | 23CDFFFF | 0     | 0     | -444  | 555   | (CR)(LF) |

After the FLRD instruction is executed

|                      | Device which stores the read data | Value     |
|----------------------|-----------------------------------|-----------|
| Read data            | D101,D100                         | H12AB3333 |
|                      | M200                              | K0=OFF    |
|                      | M201                              | K1=ON     |
|                      | D200                              | K-44      |
| Total number of data | D10                               | K5        |

- Sequence program



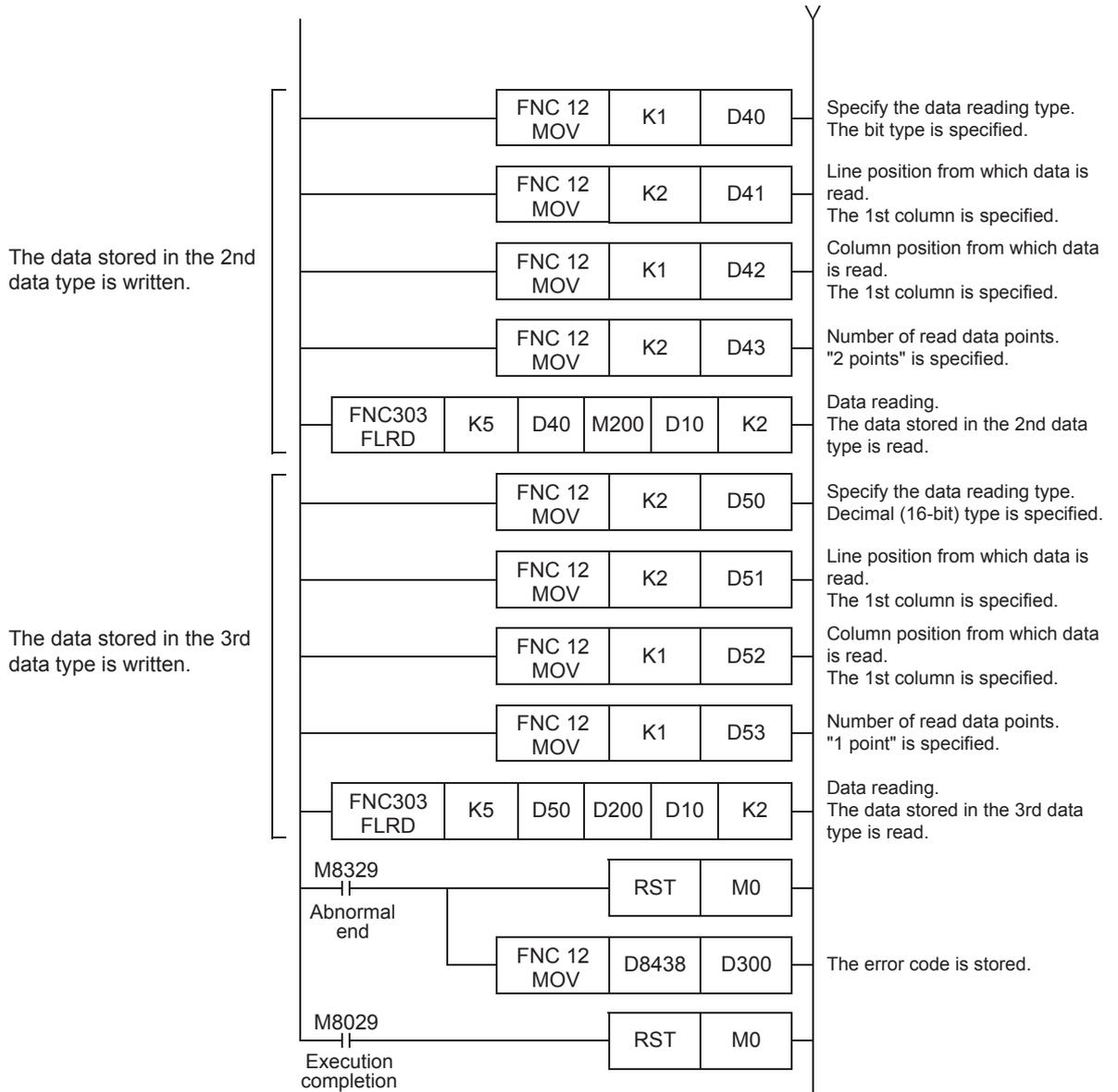
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## 8.7 FNC 304 - FLCMD / FX3U-CF-ADP command

### Outline

The FLCMD instruction gives instruction for operation to the FX3U-CF-ADP.

#### 1. Instruction format

| <table border="1" style="width: 100%; text-align: center;"> <tr><td style="width: 50%;">FNC 304</td><td style="width: 50%;"></td></tr> <tr><td>FLCMD</td><td></td></tr> </table> | FNC 304  |                      | FLCMD |  | <table border="1" style="width: 100%; text-align: center;"> <tr> <th style="width: 20%;">16-bit Instruction</th> <th style="width: 20%;">Mnemonic</th> <th style="width: 20%;">Operation Condition</th> <th style="width: 40%;"></th> </tr> <tr> <td>5 steps</td> <td>FLCMD</td> <td> Continuous Operation</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">—</td> <td></td> <td></td> </tr> </table> | 16-bit Instruction | Mnemonic | Operation Condition |  | 5 steps | FLCMD | Continuous Operation |  |  | — |  |  | <table border="1" style="width: 100%; text-align: center;"> <tr> <th style="width: 20%;">32-bit Instruction</th> <th style="width: 20%;">Mnemonic</th> <th style="width: 60%;">Operation Condition</th> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">—</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">—</td> <td></td> </tr> </table> | 32-bit Instruction | Mnemonic | Operation Condition |  |  |  |  | — |  |  | — |  |
|--|----------|----------------------|-------|--|--|--------------------|----------|---------------------|--|---------|-------|----------------------|--|--|---|--|--|---|--------------------|----------|---------------------|--|--|--|--|---|--|--|---|--|
| FNC 304  |          |                      |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
| FLCMD  |          |                      |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
| 16-bit Instruction   | Mnemonic | Operation Condition  |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
| 5 steps  | FLCMD    | Continuous Operation |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
|  | —        |                      |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
| 32-bit Instruction   | Mnemonic | Operation Condition  |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
|  |          |                      |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
|  | —        |                      |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |
|  | —        |                      |       |  |  |                    |          |                     |  |         |       |                      |  |  |   |  |  |   |                    |          |                     |  |  |  |  |   |  |  |   |  |

#### 2. Set data

| Operand Type | Description  | Data Type     |
|--------------|--|---------------|
| (S•)         | Instruction for operation (Refer to Subsection 8.7.1)          | 16-bit binary |
| n            | Used channel number [contents of setting : K1 = ch1, K2 = ch2] | 16-bit binary |

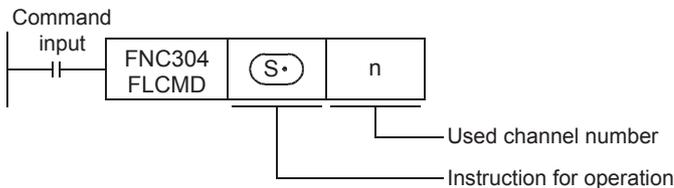
#### 3. Applicable devices

| Operand Type | Bit Devices |   |   |   |   |   |      |  | Word Devices        |     |     |     |             |   |   |   | Others       |       |          |             |                  |         |   |     |
|--------------|-------------|---|---|---|---|---|------|--|---------------------|-----|-----|-----|-------------|---|---|---|--------------|-------|----------|-------------|------------------|---------|---|-----|
|              | System User |   |   |   |   |   |      |  | Digit Specification |     |     |     | System User |   |   |   | Special Unit | Index | Constant | Real Number | Character String | Pointer |   |     |
|              | X           | Y | M | T | C | S | D□.b |  | KnX                 | KnY | KnM | KnS | T           | C | D | R | U□\G□        | V     | Z        | Modify      | K                | H       | E | "□" |
| (S•)         |             |   |   |   |   |   |      |  |                     |     |     |     |             | ▲ | ✓ |   |              |       | ✓        | ✓           | ✓                |         |   |     |
| n            |             |   |   |   |   |   |      |  |                     |     |     |     |             |   |   |   |              |       |          | ✓           | ✓                |         |   |     |

▲: Except special data register (D).

### Explanation of function and operation

#### 1. 16-bit operation (FLCMD)



The FLCMD instruction gives instruction for operation to the CF-ADP. The contents of instruction are as follows.

- When (S•) is "K-1", the FLCMD instruction forcibly writes all buffered data (stored in the buffer inside the CF-ADP) to the CompactFlash™ card.
- When (S•) is "K0" to "K63", the FLCMD instruction forcibly writes the buffered data of the specified file ID (stored in the buffer inside the CF-ADP) to the CompactFlash™ card.
- When (S•) is "K256 (H100)", the FLCMD instruction sets the CompactFlash™ card to the mounted status if it is in the unmounted status.
- When (S•) is "K512 (H200)", the FLCMD instruction sets the CompactFlash™ card to the unmounted status if it is in the mounted status.
- When (S•) is "K1280 (H500)", the FLCMD instruction clears error codes stored in the CF-ADP.

For details, refer to Subsection 8.7.1.

|    |   |
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| 9  | Program Examples                        |
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### 8.7.1 Detailed explanation of setting data

Details of the setting data in the FLCMD instruction are as shown below.

| Setting items | Description  | Data Type     |
|---------------|--|---------------|
| (S)           | Contents of instruction for operation<br>K-1 : Forcibly writes all buffered data to the CompactFlash™ card.<br>K0 to K63 : Forcibly writes the buffered data of the specified file ID to the CompactFlash™ card.<br>K256(H100) : Sets the CompactFlash™ card to the mounted status*1.<br>K512(H200) : Sets the CompactFlash™ card to the unmounted status*2.<br>K1280(H500) : Clears error codes stored in the CF-ADP. | 16-bit binary |
| n             | Channel number used by the CF-ADP<br>K1 : ch1<br>K2 : ch2  | 16-bit binary |

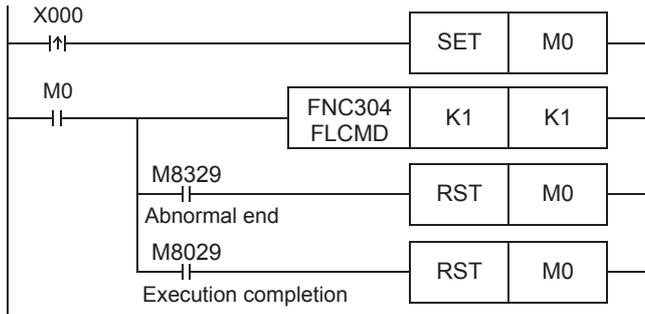
\*1. The CompactFlash™ card is available in the "mounted" status.

\*2. The CompactFlash™ card is unavailable in the "unmounted" status.

#### Program Example

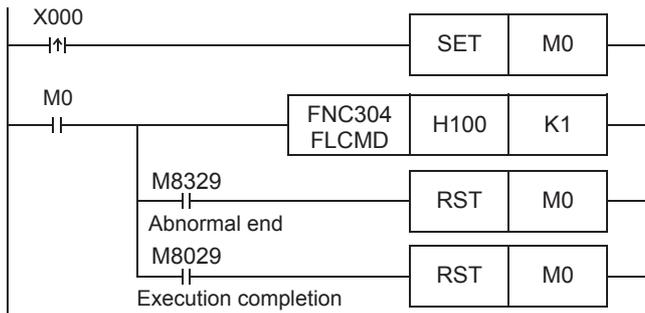
##### 1) Program Example 1

When X000 turns ON, the data (saved in the file whose ID is "1") stored in the buffer inside the CF-ADP is forcibly written to the CompactFlash™ card.  
 Channel number 1 is used.



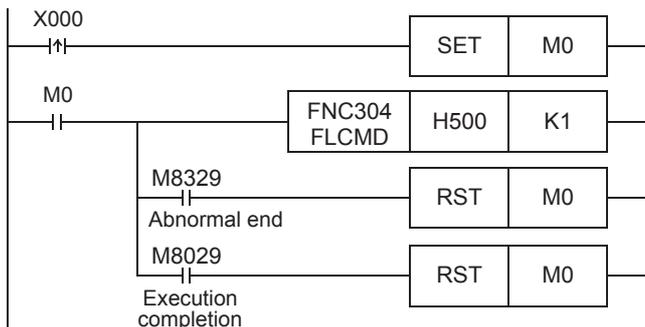
##### 2) Program Example 2

When X000 turns ON, the CompactFlash™ card is set to the mounted status.  
 Channel number 1 is used.



##### 3) Program Example 3

When X000 turns ON, error codes stored in the CF-ADP are cleared.  
 Channel number 1 is used.



## 8.8 FNC 305 - FLSTRD / FX3U-CF-ADP status read

### Outline

The FLSTRD instruction reads the status (including the error information and file information) of the FX3U-CF-ADP.

#### 1. Instruction format

| <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 15%;">FNC 305</td> <td style="width: 15%;">FLSTRD</td> </tr> </table> | FNC 305  | FLSTRD               | <table border="1" style="width: 100%; text-align: center;"> <tr> <th style="width: 25%;">16-bit Instruction</th> <th style="width: 25%;">Mnemonic</th> <th style="width: 25%;">Operation Condition</th> <th style="width: 25%;"></th> </tr> <tr> <td>7 steps</td> <td>FLSTRD</td> <td> Continuous Operation</td> <td>—</td> </tr> </table> | 16-bit Instruction | Mnemonic | Operation Condition |  | 7 steps | FLSTRD | Continuous Operation | — | <table border="1" style="width: 100%; text-align: center;"> <tr> <th style="width: 25%;">32-bit Instruction</th> <th style="width: 25%;">Mnemonic</th> <th style="width: 25%;">Operation Condition</th> <th style="width: 25%;"></th> </tr> <tr> <td></td> <td>—</td> <td>—</td> <td>—</td> </tr> </table> | 32-bit Instruction | Mnemonic | Operation Condition |  |  | — | — | — |
|--|----------|----------------------|--|--------------------|----------|---------------------|--|---------|--------|----------------------|---|--|--------------------|----------|---------------------|--|--|---|---|---|
| FNC 305  | FLSTRD   |                      |  |                    |          |                     |  |         |        |                      |   |  |                    |          |                     |  |  |   |   |   |
| 16-bit Instruction   | Mnemonic | Operation Condition  |  |                    |          |                     |  |         |        |                      |   |  |                    |          |                     |  |  |   |   |   |
| 7 steps  | FLSTRD   | Continuous Operation | —  |                    |          |                     |  |         |        |                      |   |  |                    |          |                     |  |  |   |   |   |
| 32-bit Instruction   | Mnemonic | Operation Condition  |  |                    |          |                     |  |         |        |                      |   |  |                    |          |                     |  |  |   |   |   |
|  | —        | —                    | —  |                    |          |                     |  |         |        |                      |   |  |                    |          |                     |  |  |   |   |   |

#### 2. Set data

| Operand Type | Description   | Data Type     |
|--------------|---|---------------|
| (S•)         | Contents of status to be read (Refer to Subsection 8.8.1)                   | 16-bit binary |
| (D•)         | Head device to which the read status is written (Refer to Subsection 8.8.1) | 16-bit binary |
| n            | Used channel number [contents of setting : K1 = ch1, K2 = ch2]              | 16-bit binary |

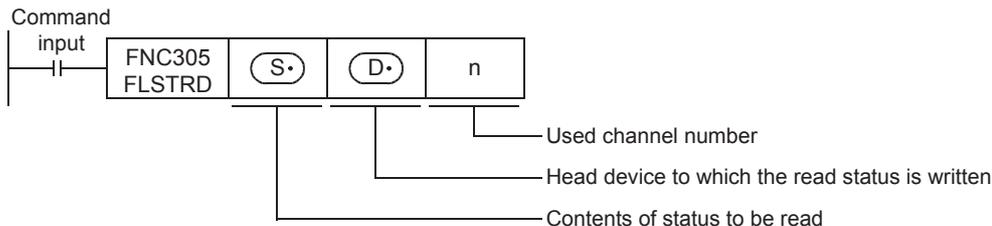
#### 3. Applicable devices

| Operand Type | Bit Devices |   |   |   |   |   |      | Word Devices        |     |     |     |             |   |   | Others       |       |   |   |          |             |                  |         |     |   |
|--------------|-------------|---|---|---|---|---|------|---------------------|-----|-----|-----|-------------|---|---|--------------|-------|---|---|----------|-------------|------------------|---------|-----|---|
|              | System User |   |   |   |   |   |      | Digit Specification |     |     |     | System User |   |   | Special Unit | Index |   |   | Constant | Real Number | Character String | Pointer |     |   |
|              | X           | Y | M | T | C | S | D□.b | KnX                 | KnY | KnM | KnS | T           | C | D | R            | U□\G□ | V | Z | Modify   | K           | H                | E       | "□" | P |
| (S•)         |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ | ✓        |             |                  |         |     |   |
| (D•)         |             |   |   |   |   |   |      |                     |     |     |     |             |   | ▲ | ✓            |       |   | ✓ |          |             |                  |         |     |   |
| n            |             |   |   |   |   |   |      |                     |     |     |     |             |   |   |              |       |   |   | ✓        | ✓           |                  |         |     |   |

▲: Except special data register (D).

### Explanation of function and operation

#### 1. 16-bit operation (FLSTRD)



The FLSTRD instruction reads the status information of the CF-ADP. The following contents can be read. The number of data stored in (D•) varies depending on the contents of the read status.

- When (S•) is "K0" to "K63" the FLSTRD instruction reads the final line position and final column position of each file.
- When (S•) is "K256 (H100)" the FLSTRD instruction reads file IDs stored in the CompactFlash™ card.
- When (S•) is "K512 (H200)" the FLSTRD instruction reads the data capacity.
- When (S•) is "K768 (H300)" the FLSTRD instruction reads the version information of the CF-ADP.
- When (S•) is "K1024 (H400)" the FLSTRD instruction reads the error information (error flag) for errors having occurred in the CF-ADP.
- When (S•) is "K1280 (H500)" the FLSTRD instruction reads error codes. Up to 5 of the latest error codes can be stored.

For details, refer to Subsection 8.8.1.

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### 8.8.1 Detailed explanation of setting data

Details of the setting data in the FLSTRD instruction are as shown below.

| Setting items | Description   | Data Type     |
|---------------|---|---------------|
| (S•)          | Contents of status to be read<br>K0 to K63 : Final line position of each file<br>K256(H100) : File IDs stored in the CompactFlash™ card<br>K512(H200) : Capacity of the CompactFlash™ card<br>K768(H300) : Version of the CF-ADP<br>K1024(H400) : Error information (error flag)<br>K1280(H500) : Error codes | 16-bit binary |
| (D•)          | Head device to which the read status is written<br>The number of data points stored in (D•) varies depending on the contents of the read status.  | 16-bit binary |
| n             | Channel number used by the CF-ADP<br>K1 : ch1<br>K2 : ch2   | 16-bit binary |

- When (S•) is "K0" to "K63"  
 The FLSTRD instruction reads the final line position and final column position of each file.

| Setting items | Description  |
|---------------|--|
| (D•)          | Final line position<br>K1 to the specified maximum line position |
| (D•) +1       | Final column position  |

- When (S•) is "K256 (H100)"  
 The FLSTRD instruction reads file IDs stored in the CompactFlash™ card. For a file ID corresponding to the read data, refer to the file ID correspondence table shown below.  
 When a file exists, a bit corresponding to the file ID turns ON.

| Setting items | Description                       |
|---------------|-----------------------------------|
| (D•)          | Stores the existence of file IDs. |
| (D•) +1       |                                   |
| (D•) +2       |                                   |
| (D•) +3       |                                   |

File ID correspondence table

| Setting items | b15 | b14 | b13 | b12 | b11 | b10 | b9 | b8 | b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 |
|---------------|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|
| (D•)          | 15  | 14  | 13  | 12  | 11  | 10  | 9  | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1  | 0  |
| (D•) +1       | 31  | 30  | 29  | 28  | 27  | 26  | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 |
| (D•) +2       | 47  | 46  | 45  | 44  | 43  | 42  | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 |
| (D•) +3       | 63  | 62  | 61  | 60  | 59  | 58  | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 48 |

- When (S•) is "K512 (H200)"  
 The FLSTRD instruction reads the data capacity, used space and free space of the CompactFlash™ card to the following devices respectively.

| Setting items    | Description  |
|------------------|--|
| (D•) +1, (D•)    | Data capacity of the CompactFlash™ card (kB) Units, If the data capacity is less than 1 kB, "1" is stored. |
| (D•) +3, (D•) +2 | Used space of the CompactFlash™ card (kB) Units, If the data size is less than 1 kB, "1" is stored.        |
| (D•) +5, (D•) +4 | Free space of the CompactFlash™ card (kB) Units, If the data size is less than 1 kB, "1" is stored.        |

- When (S•) is "K768 (H300)"  
 The FLSTRD instruction reads the version information of the CF-ADP.

| Setting items | Description  |
|---------------|--|
| (D•)          | Stores the version of CF-ADP.<br>(Example) K100 = Ver.1.00 |

- When (S•) is "K1024 (H400)"  
 The FLSTRD instruction reads the error information (error flag).

| Setting items | Description  |
|---------------|--|
| (D•)          | Error detection signal<br>b0 : The CompactFlash™ card is not mounted.<br>b1 : The CompactFlash™ card is full.<br>b2 : An error has occurred in the CF-ADP.<br>b3 : CF-ADP H/W error<br>b4 : CompactFlash™ card error<br>b5 to b15 : Not used |

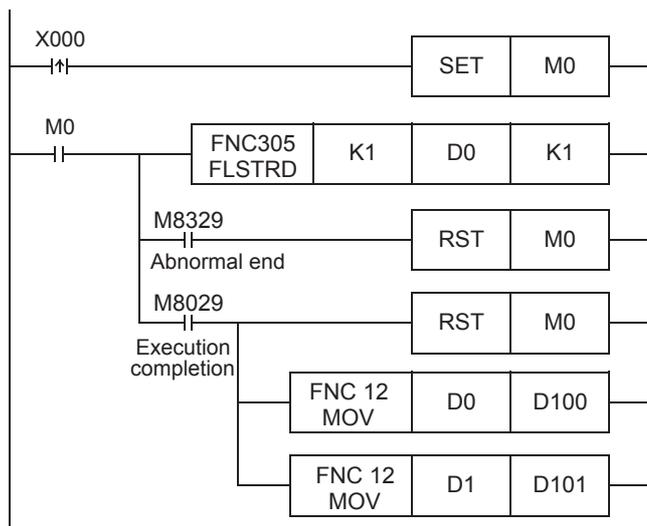
- When (S•) is "K1280 (H500)"  
 The FLSTRD instruction reads the error code having occurred in the CF-ADP. Up to 5 of the latest error codes can be stored.

| Setting items | Description  |
|---------------|--------------|
| (D•)          | Error code 1 |
| (D•) +2       | Error code 2 |
| (D•) +4       | Error code 3 |
| (D•) +6       | Error code 4 |
| (D•) +8       | Error code 5 |

**Program Example**

1) Program Example 1

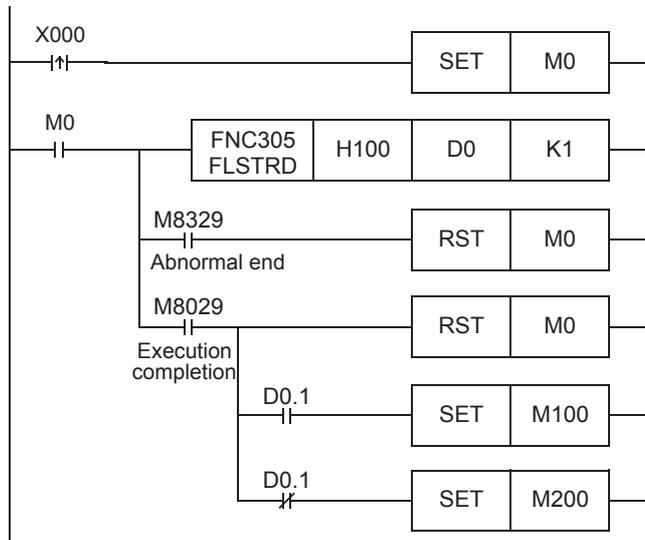
When X000 turns ON, the FLSTRD instruction reads the status information. D100 stores the final line position of a file whose ID is "1", and D101 stores the final digit position. Channel number 1 is used.



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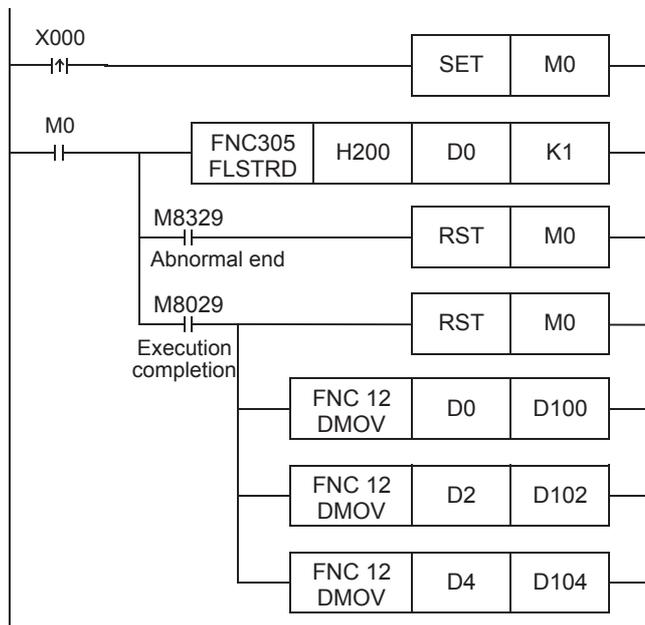
2) Program Example 2

When X000 turns ON, the FLSTRD instruction checks whether or not a file whose ID is "1" exists. M100 turns ON when a file whose ID is "1" exists. Channel number 1 is used.



3) Program Example 3

When X000 turns ON, the FLSTRD instruction reads the capacity of the CompactFlash™ card. D101 and D100 store the data capacity of the CompactFlash™ card, D103 and D102 store the used space of the CompactFlash™ card, and D105 and D104 store the free space of the CompactFlash™ card. Channel number 1 is used.



## 8.9 Contents of Related Devices

The tables below show special auxiliary relays and special data registers used in CF-ADP instructions (FNC300 (FLCRT) to FNC305 (FLSTRD)).

For details on the related devices, refer to Appendix A-2.

The channel number of the device corresponds to the channel number specified in the CF-ADP applied instruction.

### 1. Special auxiliary relays

R: Read only    W: Write only    R/W: Read or Write

| Device |       | Name                               | Description   | R/W |
|--------|-------|------------------------------------|---|-----|
| ch1    | ch2   |                                    |   |     |
| M8029  |       | Instruction execution complete     | Turns ON when the execution of CF-ADP instructions is completed, and remains ON for 1 scan.                   | R   |
| M8329  |       | Instruction execution abnormal end | Turns ON when the execution of CF-ADP instructions has ended abnormally, and remains ON for 1 scan.           | R   |
| M8067  |       | Operation error                    | Turns ON when an operation error occurs.  | R   |
| M8402  | M8422 | CF-ADP instruction executing       | Remains ON while an instruction for the CF-ADP is being executed.   | R   |
| M8404  | M8424 | CF-ADP unit ready                  | Remains ON when the CF-ADP is ready for receiving commands.   | R   |
| M8405  | M8425 | CF card mount status               | ON : CompactFlash™ card mounted status<br>OFF : CompactFlash™ card unmounted status                           | R   |
| M8410  | M8430 | CF-ADP status renewal stop         | Stops communication executed by the system to update the status of special data registers (D8406 and D8426)*2 | R/W |
| M8418  | M8438 | CF-ADP instruction error*1         | Turns ON when an error occurs in an instruction for the CF-ADP.   | R/W |

\*1. Cleared when the PLC mode is changed from STOP to RUN.

\*2. When an instruction for the CF-ADP is driven while the system is updating the status of special data registers, execution of the instruction for the CF-ADP may be delayed by several scans. If this delay is regarded as a problem, use this flag to stop the updating of the status.

### 2. Special data registers

R: Read only    W: Write only    R/W: Read or Write

| Device         |                | Name   | Description  | R/W |
|----------------|----------------|--|--|-----|
| ch1            | ch2            |  |  |     |
| D8067          |                | Error code for operation error                           | Stores the error code when an operation error occurs.                          | R   |
| D8402<br>D8403 | D8422<br>D8423 | Step number of executing CF-ADP instruction*1            | Stores the step number of an instruction for the CF-ADP.                       | R   |
| D8406          | D8426          | CF-ADP status  | Stores the status information of the CF-ADP.                                   | R   |
| D8408          | D8428          | CF-ADP version   | Stores the version of the CF-ADP.  | R   |
| D8414<br>D8415 | D8434<br>D8435 | Error step number of M8418, Error step number of M8438*1 | Stores the step number of an instruction for the CF-ADP where an error occurs. | R   |
| D8418          | D8438          | Error code for CF-ADP instructions*1                     | Stores the error code when an error occurs in an instruction for the CF-ADP.   | R   |
| D8419          | D8439          | Operation mode display                                   | Stores the communication function status being executed.                       | R   |

\*1. Cleared when the PLC mode is changed from STOP to RUN.

1

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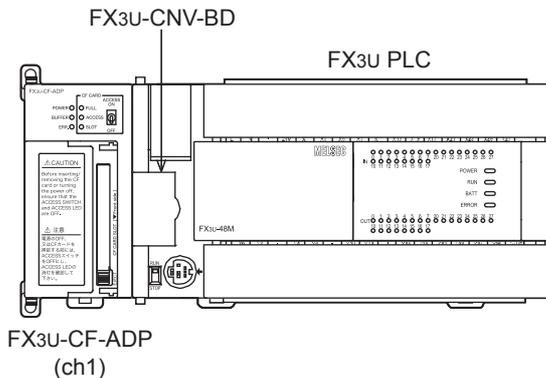
## 9. Program Examples

|  |  |
|--|--|
| <b>STARTUP AND MAINTENANCE PRECAUTIONS</b>   |  <b>WARNING</b> |
| <ul style="list-style-type: none"> <li>• Make sure to connect the battery for memory backup correctly. Do not charge, disassemble, heat, short-circuit, or expose the battery to fire.<br/>Doing so may rupture or ignite it.</li> <li>• Do not touch any terminal while the PLC's power is on.<br/>Doing so may cause electric shock or malfunctions.</li> <li>• Before modifying or disrupting the program in operation or running the PLC, carefully read through this manual and the associated manuals and ensure the safety of the operation.<br/>An operation error may damage the machinery or cause accidents.</li> </ul> |  |

|   |  |
|---|--|
| <b>STARTUP AND MAINTENANCE PRECAUTIONS</b>  |  <b>CAUTION</b> |
| <ul style="list-style-type: none"> <li>• Do not disassemble or modify the PLC.<br/>Doing so may cause fire, equipment failures, or malfunctions.<br/>For repair, contact your local Mitsubishi Electric representative.</li> <li>• Turn off the power to the PLC before attaching or detaching the following devices.<br/>Failure to do so may cause device failures or malfunctions.             <ul style="list-style-type: none"> <li>- Peripheral devices, display modules, expansion boards and special adapters</li> <li>- I/O extension units/blocks, FX Series terminal block and the special function units/blocks</li> <li>- Battery and memory cassette</li> </ul> </li> </ul> |  |

### 9.1 System Configuration

The system configuration shown below explains the program examples.  
The CF-ADP differs in assignment of the channel number by a system configuration.  
Change the channel number if necessary in accordance with the actual system configuration.  
For details of assignment of the channel number, refer to the Section 3.4.



- Program example 1  
A 32-bit decimal type file is created, written, read and deleted.  
For details, refer to Section 9.2.
- Program example 2  
A file saving different types of data is created, written, read and deleted.  
For details, refer to Section 9.3.
- Program example 3  
Error codes and error information (error flag) of the CF-ADP are read.  
For details, refer to Section 9.4.

## 9.2 Program Example 1

### 9.2.1 Operation details

- When X000 turns ON, the following file is created.  
If a file whose file ID is "1" already exists in the CompactFlash™ card, file creation and data name writing are aborted.
  - File ID = 1
  - File name = DWORD\_01
  - Data type = Decimal type (32 bit)
- When X001 turns ON, 10 data points of 32-bit decimal type stored in D400 to D419 are written additionally to the internal buffer of the CF-ADP. When the number of times of additional writing to the internal buffer reaches 10, later data will be written additionally to the file "DWORD\_01" stored in the CompactFlash™ card.
- When X002 turns ON, 10 data points of 32-bit decimal type are read from the final line in the 32-bit decimal type file "DWORD\_01".  
Data reading should be executed after data writing.
- When X003 turns ON, the 32-bit decimal type file "DWORD\_01" is deleted.

### 9.2.2 Example of a 32-bit decimal type file in "csv" format after writing

When a "csv" file is created and then data is written to the file 20 times, its contents are as shown below. Numeric values are stored in shaded areas.

| Index | DATE TIME           | Device1 | Device2 | Device3 | Device4 | Device5 | Device6 | Device7 | Device8 | Device9 | Device10 |
|-------|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 1     | 2009/ 9/ 9 23:59:00 | 0       | 0       | 0       | 0       | 0       | 0       | 100000  | 300000  | 500000  | 700000   |
| 2     | 2009/ 9/ 9 23:59:02 | 1       | 10      | 100     | 1000    | 10000   | 100000  | 90000   | 290000  | 490000  | 690000   |
| 3     | 2009/ 9/ 9 23:59:04 | 2       | 20      | 200     | 2000    | 20000   | 200000  | 80000   | 280000  | 480000  | 680000   |
| 4     | 2009/ 9/ 9 23:59:06 | 3       | 30      | 300     | 3000    | 30000   | 300000  | 70000   | 270000  | 470000  | 670000   |
| 5     | 2009/ 9/ 9 23:59:08 | 4       | 40      | 400     | 4000    | 40000   | 400000  | 60000   | 260000  | 460000  | 660000   |
| 6     | 2009/ 9/ 9 23:59:10 | 5       | 50      | 500     | 5000    | 50000   | 500000  | 50000   | 250000  | 450000  | 650000   |
| 7     | 2009/ 9/ 9 23:59:20 | 6       | 60      | 600     | 6000    | 60000   | 600000  | 40000   | 240000  | 440000  | 640000   |
| 8     | 2009/ 9/ 9 23:59:22 | 7       | 70      | 700     | 7000    | 70000   | 700000  | 30000   | 230000  | 430000  | 630000   |
| 9     | 2009/ 9/ 9 23:59:24 | 8       | 80      | 800     | 8000    | 80000   | 800000  | 20000   | 220000  | 420000  | 620000   |
| 10    | 2009/ 9/ 9 23:59:26 | 9       | 90      | 900     | 9000    | 90000   | 900000  | 10000   | 210000  | 410000  | 610000   |
| 11    | 2009/ 9/ 9 23:59:28 | 10      | 100     | 1000    | 10000   | 100000  | 0       | 200000  | 400000  | 600000  | 800000   |
| 12    | 2009/ 9/ 9 23:59:30 | 9       | 90      | 900     | 9000    | 90000   | 900000  | 190000  | 390000  | 590000  | 790000   |
| 13    | 2009/ 9/ 9 23:59:32 | 8       | 80      | 800     | 8000    | 80000   | 800000  | 180000  | 380000  | 580000  | 780000   |
| 14    | 2009/ 9/ 9 23:59:34 | 7       | 70      | 700     | 7000    | 70000   | 700000  | 170000  | 370000  | 570000  | 770000   |
| 15    | 2009/ 9/ 9 23:59:36 | 6       | 60      | 600     | 6000    | 60000   | 600000  | 160000  | 360000  | 560000  | 760000   |
| 16    | 2009/ 9/ 9 23:59:38 | 5       | 50      | 500     | 5000    | 50000   | 500000  | 150000  | 350000  | 550000  | 750000   |
| 17    | 2009/ 9/ 9 23:59:40 | 4       | 40      | 400     | 4000    | 40000   | 400000  | 140000  | 340000  | 540000  | 740000   |
| 18    | 2009/ 9/ 9 23:59:42 | 3       | 30      | 300     | 3000    | 30000   | 300000  | 130000  | 330000  | 530000  | 730000   |
| 19    | 2009/ 9/ 9 23:59:44 | 2       | 20      | 200     | 2000    | 20000   | 200000  | 120000  | 320000  | 520000  | 720000   |
| 20    | 2009/ 9/ 9 23:59:46 | 1       | 10      | 100     | 1000    | 10000   | 100000  | 110000  | 310000  | 510000  | 710000   |

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### 9.2.3 Device Assignments

| Device No.   | Contents of operation   |
|--------------|---|
| X000         | Creates a 32-bit decimal type file, and writes data names.  |
| X001         | Writes data to the 32-bit decimal type file.  |
| X002         | Reads data from the 32-bit decimal type file.   |
| X003         | Deletes the 32-bit decimal type file.   |
| M0           | Remains ON while the 32-bit decimal type file is being created.   |
| M1           | Remains ON while data is being written to the 32-bit decimal type file.   |
| M2           | Remains ON while data is being read from the 32-bit decimal type file.  |
| M3           | Remains ON while the 32-bit decimal type file is being deleted.   |
| M20          | Turns ON when the 32-bit decimal type file is created successfully or already exists.                             |
| M21          | Turns ON when data is written successfully to the 32-bit decimal type file.                                       |
| M22          | Turns ON when data is read successfully from the 32-bit decimal type file.  |
| M23          | Turns ON when the 32-bit decimal type file is deleted successfully.   |
| M28          | Turns ON when forcible writing of buffered data to the CompactFlash™ card is completed successfully.              |
| M60          | Remains ON while a new 32-bit decimal type file is being created.   |
| M61          | Remains ON while data names are being written to the 32-bit decimal type file.                                    |
| D0 to D4     | File name   |
| D10          | Time stamp setting  |
| D11          | Data type   |
| D12          | Maximum line position setting   |
| D13          | Processing when the maximum line position is reached  |
| D20          | Specify the data writing type.  |
| D21          | Specify the line position of the writing destination.   |
| D22          | Specify the data column position in the writing destination.  |
| D23          | Number of written data points.  |
| D24          | Writing destination. (Internal buffer inside the CF-ADP/CompactFlash™ card)                                       |
| D28          | Executes forcible writing of buffered data to the CompactFlash™ card after data is written to the buffer 10 times |
| D30          | Specify the line position of the writing destination.   |
| D31          | Specify the data column position in the writing destination.  |
| D40          | Specify the data reading type.  |
| D41          | Specify the line position from which data is read.  |
| D42          | Column position from which data is read.  |
| D43          | Number of read data points.   |
| D50          | Number of data points existing in the specified Index   |
| D100         | Error code when existence of a file whose file ID is "1" is confirmed   |
| D102         | Error code when the 32-bit decimal type file is created   |
| D104         | Error code when data names are written to the 32-bit decimal type file  |
| D106         | Error code when data is written to the 32-bit decimal type file   |
| D108         | Error code when buffered data is forcibly written to the CompactFlash™ card                                       |
| D110         | Error code when data is read from the 32-bit decimal type file  |
| D112         | Error code when the 32-bit decimal type file is deleted   |
| D170         | File ID information read when the 32-bit decimal type file is created   |
| D200 to D239 | Data name data written to the 32-bit decimal type file  |
| D400 to D419 | 32-bit decimal data written to the 32-bit decimal type file   |
| D430 to D449 | 32-bit decimal data read from the 32-bit decimal type file  |

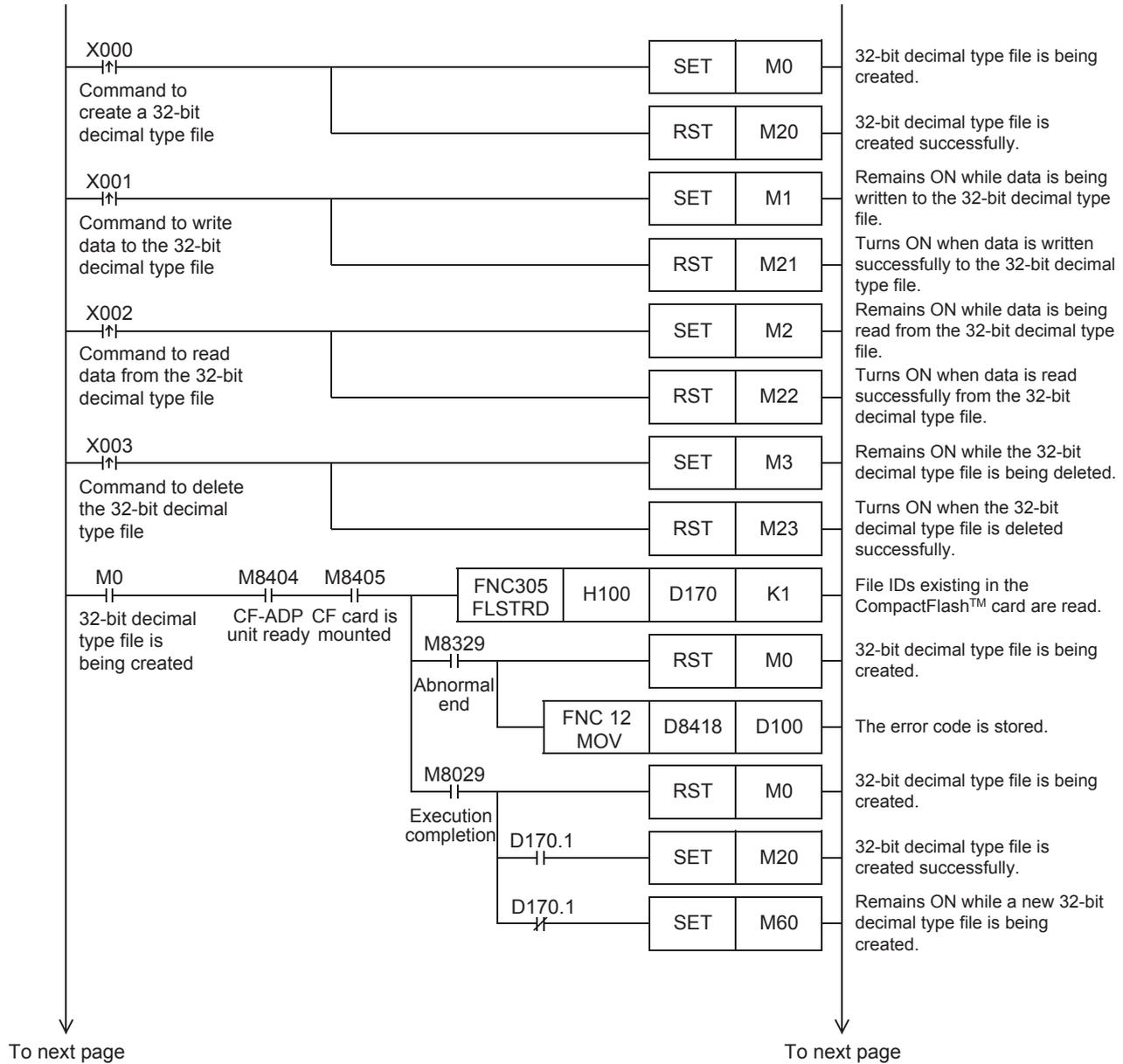
### 9.2.4 Sequence Program

This program example describes the sequence program for channel 1 (ch1). Rewrite the channel No. with the actual system configuration to be used.

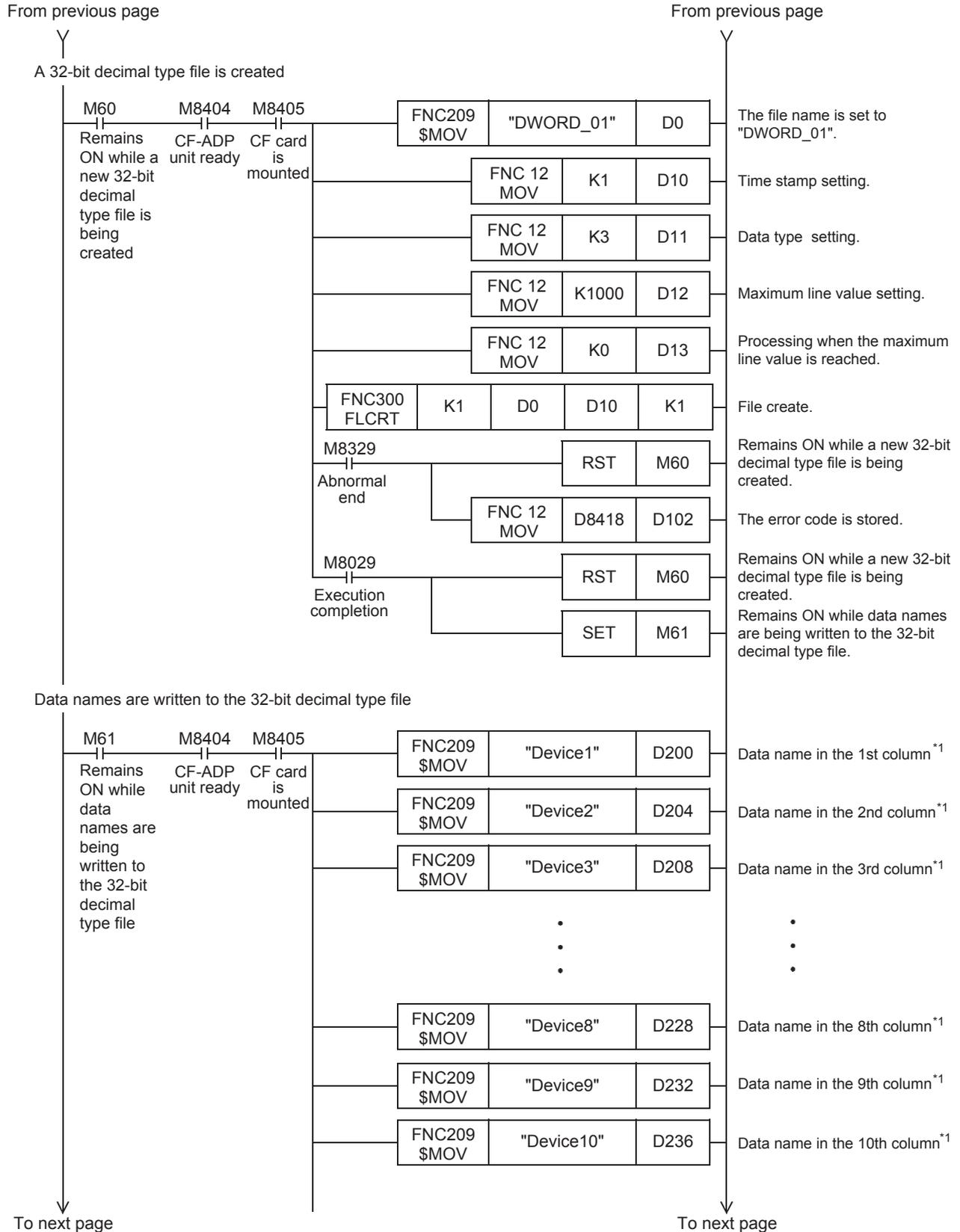
→ For explanation of operations, refer to Subsection 9.2.1.

→ For an example of a 32-bit decimal type file in "csv" format after writing, refer to Subsection 9.2.2.

→ For device assignments, refer to Subsection 9.2.3.



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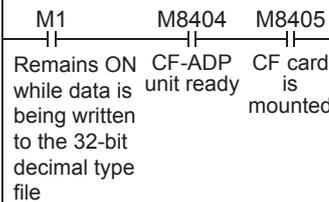


\*1. "00H", which indicates the end of the string, must be added to the end of the character string. The program example is written in such a way that "00H" is placed at the end of each character string by the \$MOV instruction. When a character string is modified, it is necessary ensure that "00H" is placed at the end of the character string.

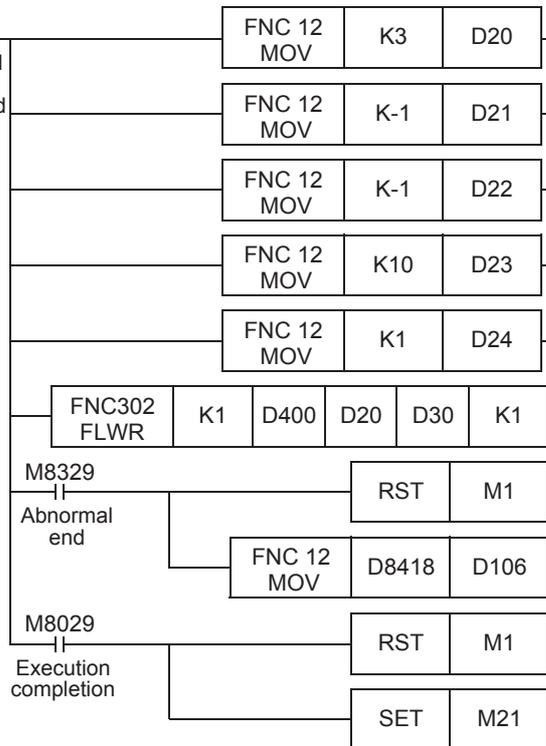
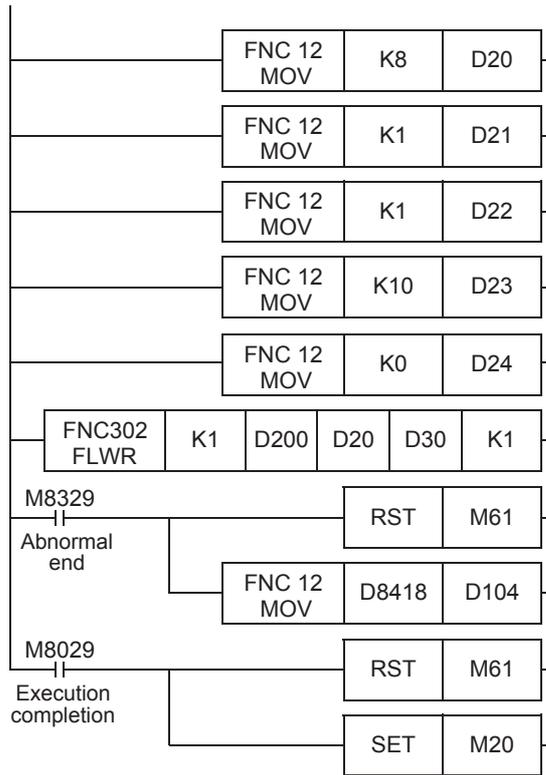
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32-bit decimal data is written



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Specify the data writing type.

Specify the line position of the writing destination.

Specify the data column position in the writing destination.

Number of written data points.

Writing destination.

Data writing.

Remains ON while data names are being written to the 32-bit decimal type file.

The error code is stored.

Remains ON while data names are being written to the 32-bit decimal type file.

Turns ON when the 32-bit decimal type file is created successfully or already exists.

Specify the data writing type.

Specify the line position of the writing destination.

Specify the data column position in the writing destination.

Number of written data points.

Writing destination.

Data writing.

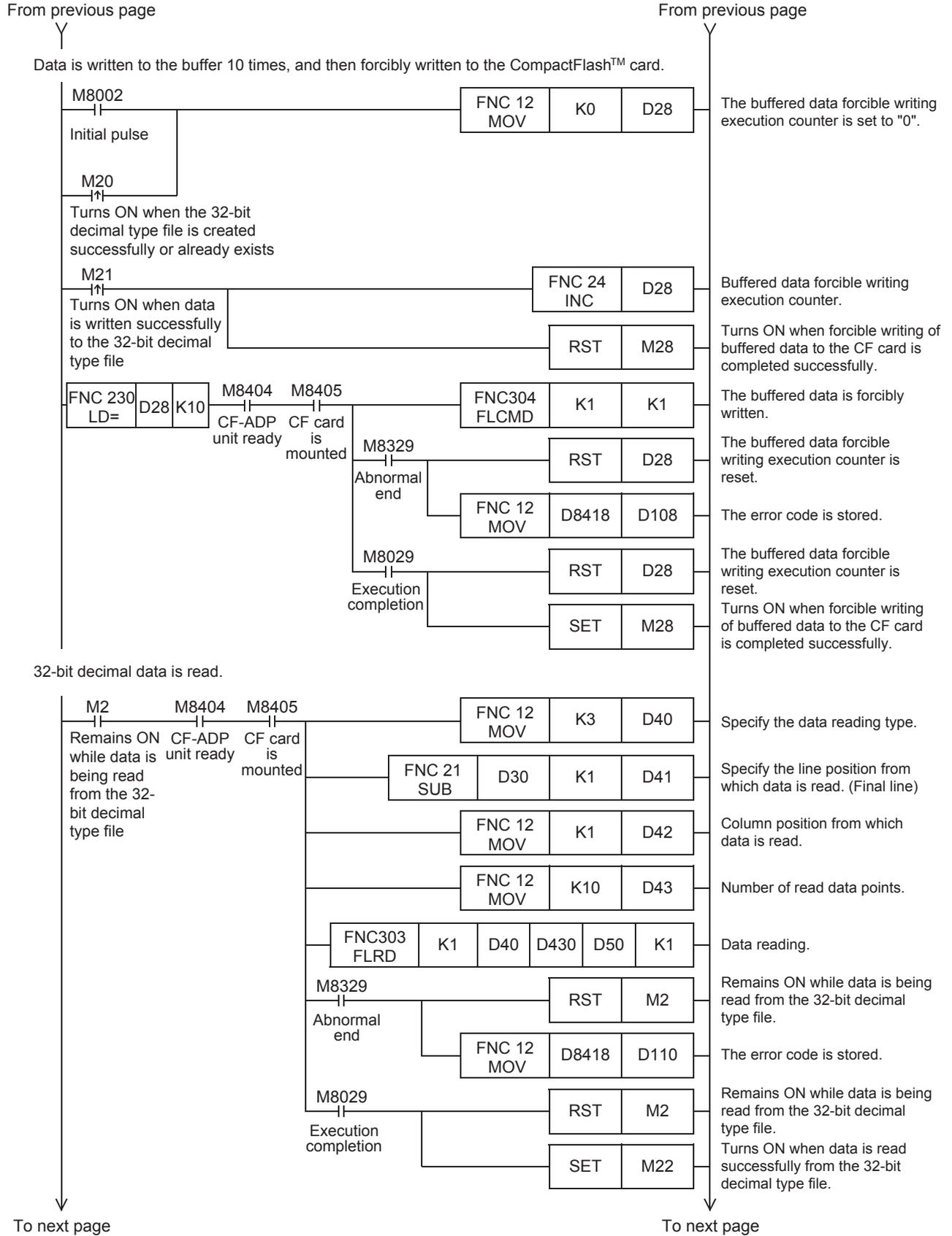
Remains ON while data is being written to the 32-bit decimal type file.

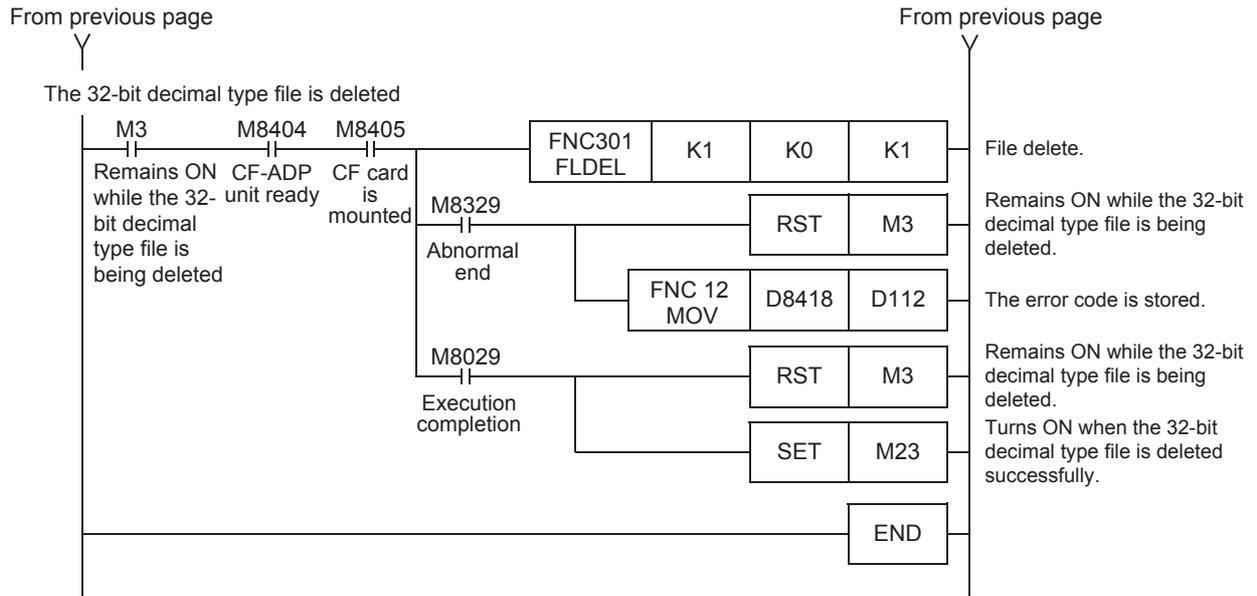
The error code is stored.

Remains ON while data is being written to the 32-bit decimal type file.

Turns ON when data is written successfully to the 32-bit decimal type file.

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## 9.3 Program Example 2

### 9.3.1 Operation details

- When X004 turns ON, the following file is created inside the CompactFlash™ card.  
If a file whose file ID is "0" already exists in the CompactFlash™ card, file creation and data name writing are aborted.  
"\*\*\*\*\*" in "FILE\*\*\*\*\*" below represents a numeric value from "0000" to "0999".
  - File ID = 0
  - File name = FILE\*\*\*\*\*
  - Data type = Mixed
- When X005 turns ON, 7 data points of different types (bit type, 16-bit decimal type, 32-bit decimal type, 16-bit hexadecimal type, 32-bit hexadecimal type, real number and character string) are written directly and additionally to the file "FILE\*\*\*\*\*" stored in the CompactFlash™ card.
- When X006 turns ON, 7 data points of different types are read from the final line in the file "FILE0000".  
Data reading should be executed after data writing.
- When X007 turns ON, the file "FILE\*\*\*\*\*" is deleted.

### 9.3.2 Example of a mixed type file in "csv" format after writing

When a "csv" file is created and then data is written to the file 20 times, its contents are as shown below. Numeric values are stored in shaded areas.

| Index | DATE TIME           | Bit | DEC 16bit | DEC 32bit | HEX 16bit | HEX 32bit | Real number | Character string |
|-------|---------------------|-----|-----------|-----------|-----------|-----------|-------------|------------------|
| 1     | 2009/ 9/ 9 23:59:00 | 0   | 0         | 100000    | FFFA      | BBBBFFFA  | 1.00E+00    | A                |
| 2     | 2009/ 9/ 9 23:59:02 | 1   | 1         | 200000    | FFFB      | BBBBFFFB  | 1.10E+00    | AB               |
| 3     | 2009/ 9/ 9 23:59:04 | 1   | 2         | 300000    | FFFC      | BBBBFFFC  | 1.20E+00    | ABC              |
| 4     | 2009/ 9/ 9 23:59:06 | 0   | 3         | 400000    | FFFD      | BBBBFFFD  | 1.30E+00    | ABCD             |
| 5     | 2009/ 9/ 9 23:59:08 | 0   | 4         | 500000    | FFFE      | BBBBFFFE  | 1.40E+00    | ABCDE            |
| 6     | 2009/ 9/ 9 23:59:10 | 1   | 5         | 600000    | FFFF      | BBBBFFFF  | 1.50E+00    | ABCDEF           |
| 7     | 2009/ 9/ 9 23:59:20 | 1   | 6         | 700000    | 111A      | AAAA111A  | 1.60E+00    | ABCDEFG          |
| 8     | 2009/ 9/ 9 23:59:22 | 0   | 7         | 800000    | 111B      | AAAA111B  | 1.70E+00    | ABCDEFGH         |
| 9     | 2009/ 9/ 9 23:59:24 | 1   | 8         | 900000    | 111C      | AAAA111C  | 1.80E+00    | ABCDEFGHI        |
| 10    | 2009/ 9/ 9 23:59:26 | 0   | 9         | 1000000   | 111D      | AAAA111D  | 1.90E+00    | ABCDEFGHIJ       |
| 11    | 2009/ 9/ 9 23:59:28 | 1   | 10        | 2000000   | 111E      | AAAA111E  | 1.11E+00    | ABCDEFGHIJ       |
| 12    | 2009/ 9/ 9 23:59:30 | 0   | 20        | 3000000   | 111F      | BBBB111F  | 1.12E+00    | ABCDEFGHI        |
| 13    | 2009/ 9/ 9 23:59:32 | 1   | 30        | 4000000   | 222A      | BBBB222A  | 1.13E+00    | ABCDEFGH         |
| 14    | 2009/ 9/ 9 23:59:34 | 0   | 40        | 5000000   | 222B      | BBBB222B  | 1.14E+00    | ABCDEFG          |
| 15    | 2009/ 9/ 9 23:59:36 | 1   | 50        | 6000000   | 222C      | BBBB222C  | 1.15E+00    | ABCDE            |
| 16    | 2009/ 9/ 9 23:59:38 | 0   | 60        | 7000000   | 222D      | BBBB222D  | 1.16E+00    | ABCDE            |
| 17    | 2009/ 9/ 9 23:59:40 | 1   | 70        | 8000000   | 222E      | BBBB222E  | 1.17E+00    | ABCD             |
| 18    | 2009/ 9/ 9 23:59:42 | 1   | 80        | 9000000   | 222F      | BBBB222F  | 1.18E+00    | ABC              |
| 19    | 2009/ 9/ 9 23:59:44 | 1   | 90        | 0         | 2222      | BBBB2222  | 1.19E+00    | AB               |
| 20    | 2009/ 9/ 9 23:59:46 | 0   | 100       | 100       | 3333      | BBBB3333  | 1.21E+00    | A                |

### 9.3.3 Device Assignments

| Device No. | Contents of operation                             |
|------------|---|
| X004       | Creates a mixed type file, and writes data names. |
| X005       | Writes data to the mixed type file.               |
| X006       | Reads data from the mixed type file.              |

| Device No.   | Contents of operation  |
|--------------|--|
| X007         | Deletes the mixed type file.   |
| M4           | Remains ON while a mixed type file is being created.                       |
| M5           | Remains ON while data is being written to the mixed type file.             |
| M6           | Remains ON while data is being read from the mixed type file.              |
| M7           | Remains ON while the mixed type file is being deleted.                     |
| M24          | Turns ON when a mixed type file is created successfully or already exists. |
| M25          | Turns ON when data is written successfully to the mixed type file.         |
| M26          | Turns ON when data is read successfully from the mixed type file.          |
| M27          | Turns ON when the mixed type file is deleted successfully.                 |
| M62          | Remains ON while a new mixed type file is being created.                   |
| M63          | Remains ON while data names of the mixed type are being written.           |
| M200         | Bit data written to the mixed type file.                                   |
| M400         | Bit data read from the mixed type file.                                    |
| D0           | File name (fixed to "FILE").   |
| D10          | Time stamp setting   |
| D11          | Data type  |
| D12          | Maximum Index value setting.   |
| D13          | Set the CompactFlash™ card use ratio.                                      |
| D20          | Specify the data writing type.   |
| D21          | Specify the Index value of the writing destination.                        |
| D22          | Specify the data column position in the writing destination.               |
| D23          | Number of written data points.   |
| D24          | Writing destination. (CompactFlash™ card)                                  |
| D30          | Specify the line position of the writing destination.                      |
| D31          | Specify the data column position in the writing destination.               |
| D40          | Specify the data reading type.   |
| D41          | Specify the line position from which data is read.                         |
| D42          | Column position from which data is read.                                   |
| D43          | Number of read data points.  |
| D50          | Number of data points existing in the specified line                       |
| D114         | Error code when existence of a file whose file ID is "1" is confirmed      |
| D116         | Error code when a mixed type file is created                               |
| D118         | Error code when data names are written to the mixed type file              |
| D120         | Error code when data is written to the mixed type file                     |
| D122         | Error code when data is read from the mixed type file                      |
| D124         | Error code when the mixed type file is deleted                             |
| D180         | File ID information read when the mixed type file is created               |
| D300 to D336 | Data name data written to the mixed type file                              |
| R0           | 16-bit decimal data written to the mixed type file                         |
| R11, R10     | 32-bit decimal data written to the mixed type file                         |
| R20          | 16-bit hexadecimal data written to the mixed type file                     |
| R31, R30     | 32-bit hexadecimal data written to the mixed type file                     |
| R41, R40     | Real number data written to the mixed type file                            |
| R50 to R54   | Character string data written to the mixed type file                       |
| R100         | 16-bit decimal data read from the mixed type file                          |
| R111, R110   | 32-bit decimal data read from the mixed type file                          |
| R120         | 16-bit hexadecimal data read from the mixed type file                      |
| R131, R130   | 32-bit hexadecimal data read from the mixed type file                      |
| R141, R140   | Real number data read from the mixed type file                             |
| R150 to R159 | Character string data read from the mixed type file                        |

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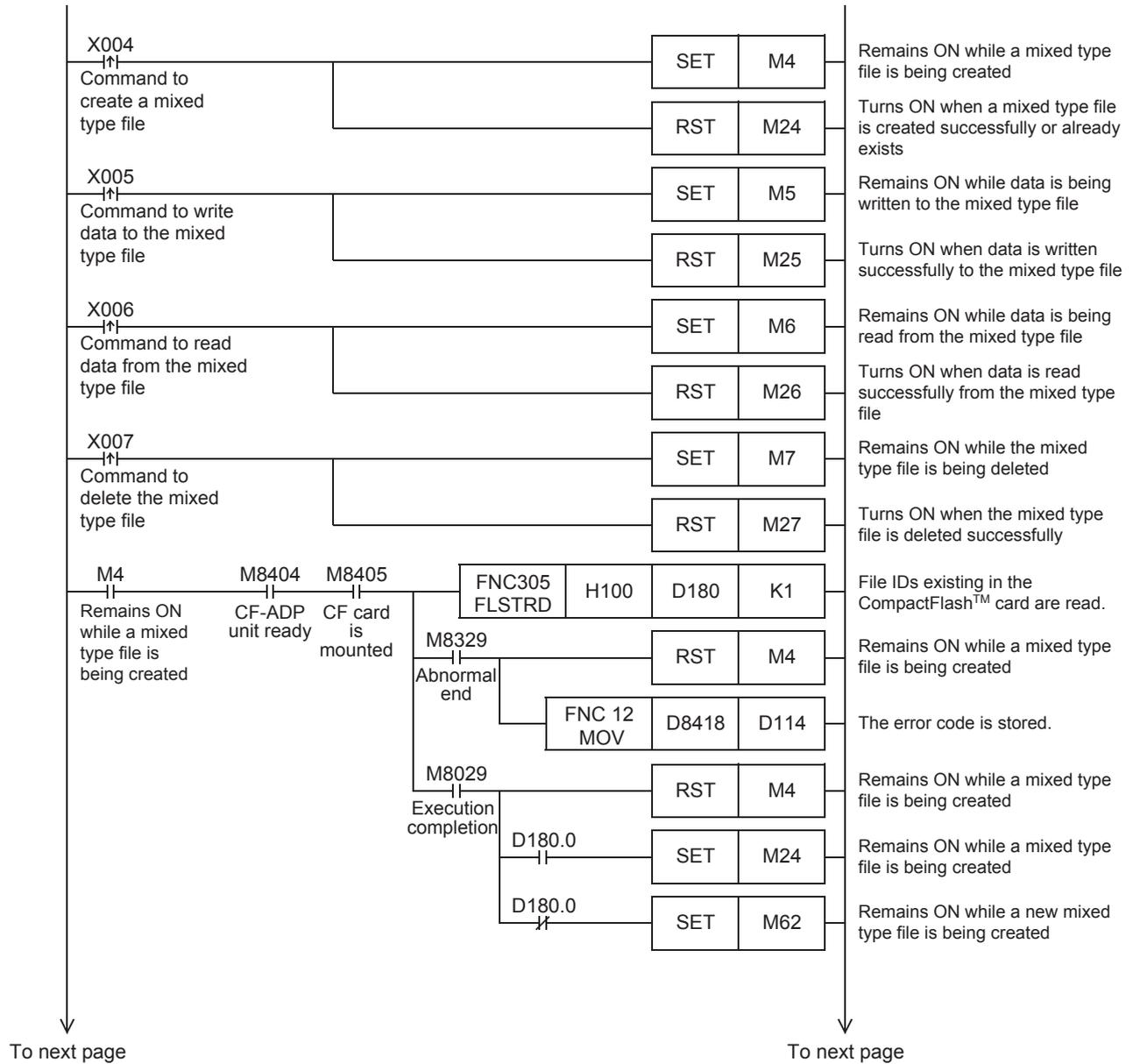
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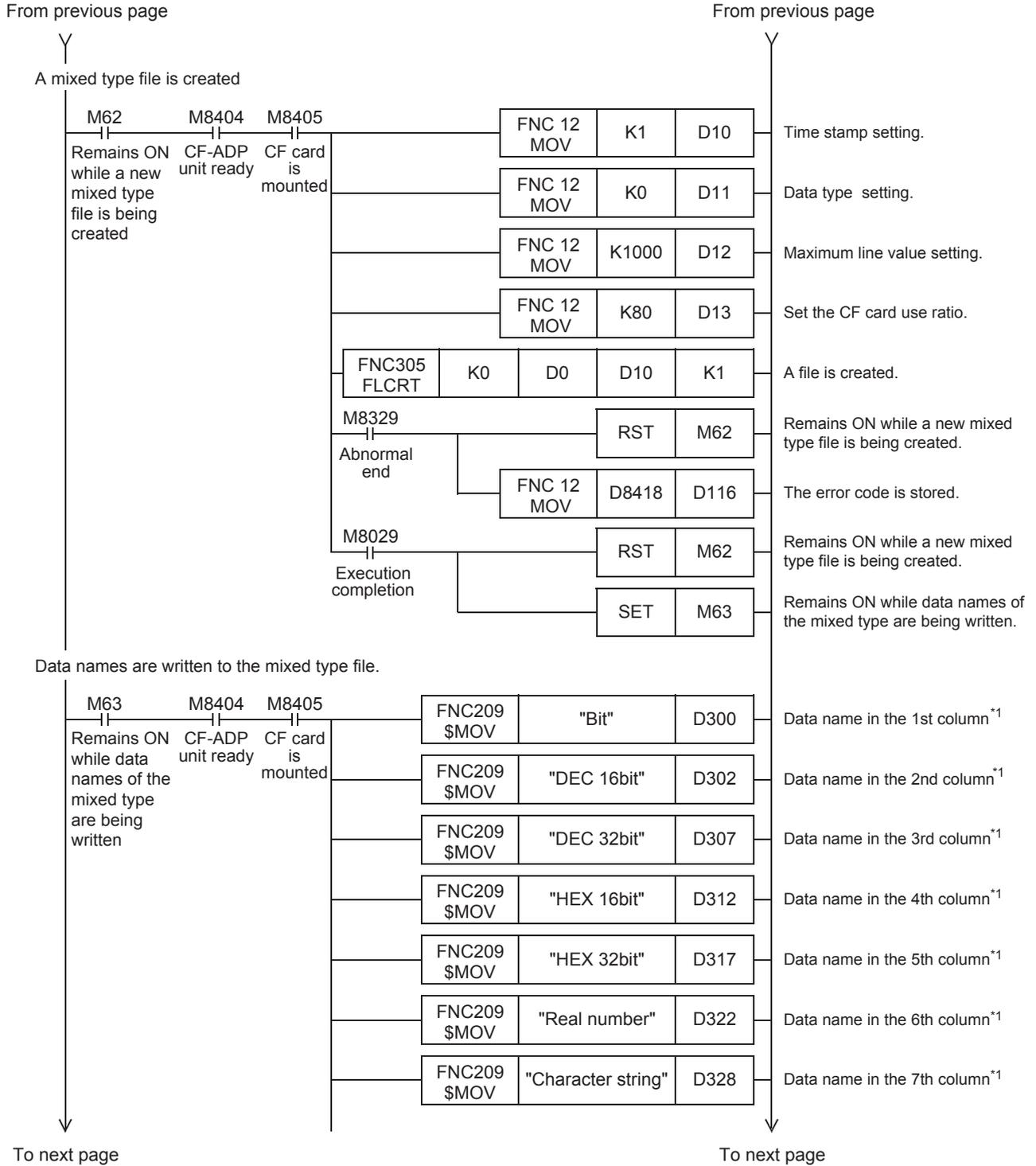
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### 9.3.4 Sequence Program

This program example describes the sequence program for channel 1 (ch1). Rewrite the channel No. with the actual system configuration to be used.

- For explanation of operations, refer to Subsection 9.3.1.
- For an example of a mixed type file in "csv" format after writing, refer to Subsection 9.3.2.
- For device assignments, refer to Subsection 9.3.3.



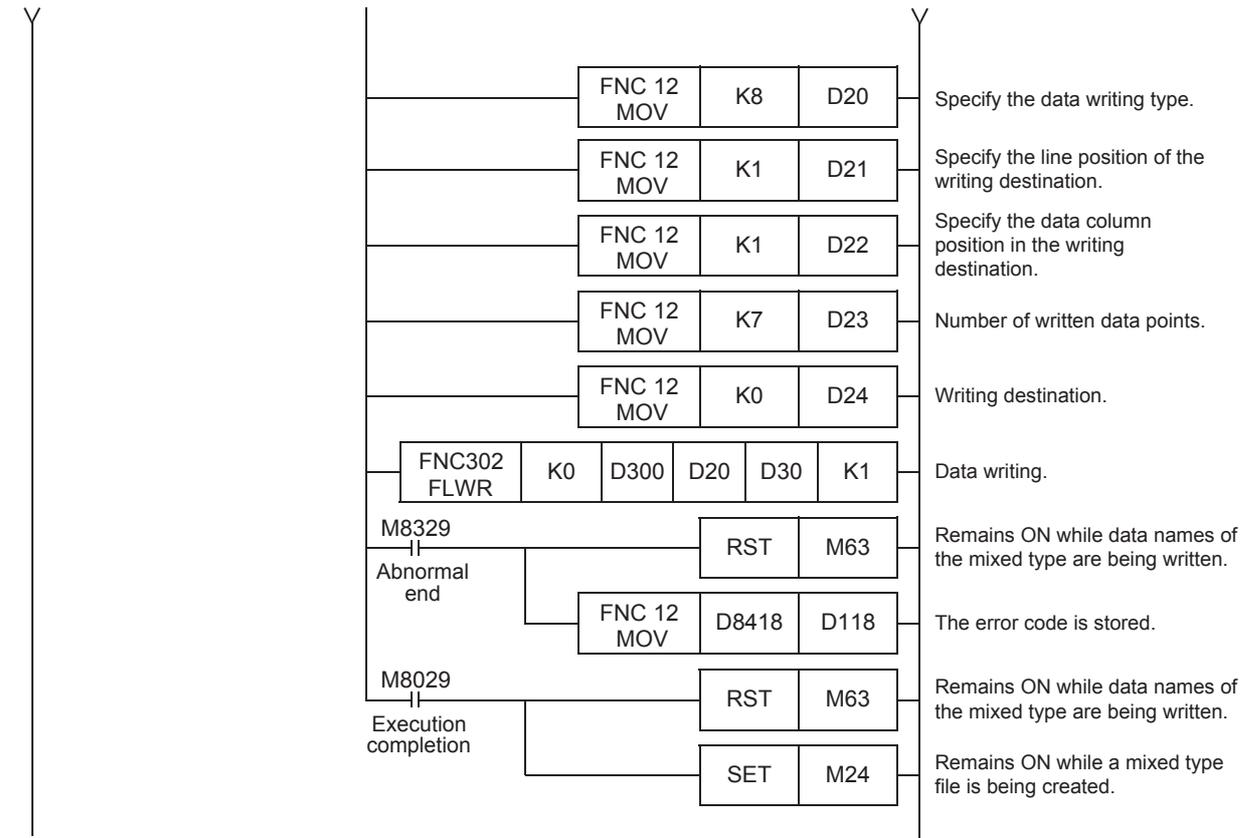


\*1. "00H", which indicates the end of the string, must be added to the end of the character string. The program example is written in such a way that "00H" is placed at the end of each character string by the \$MOV instruction. When a character string is modified, it is necessary ensure that "00H" is placed at the end of the character string.

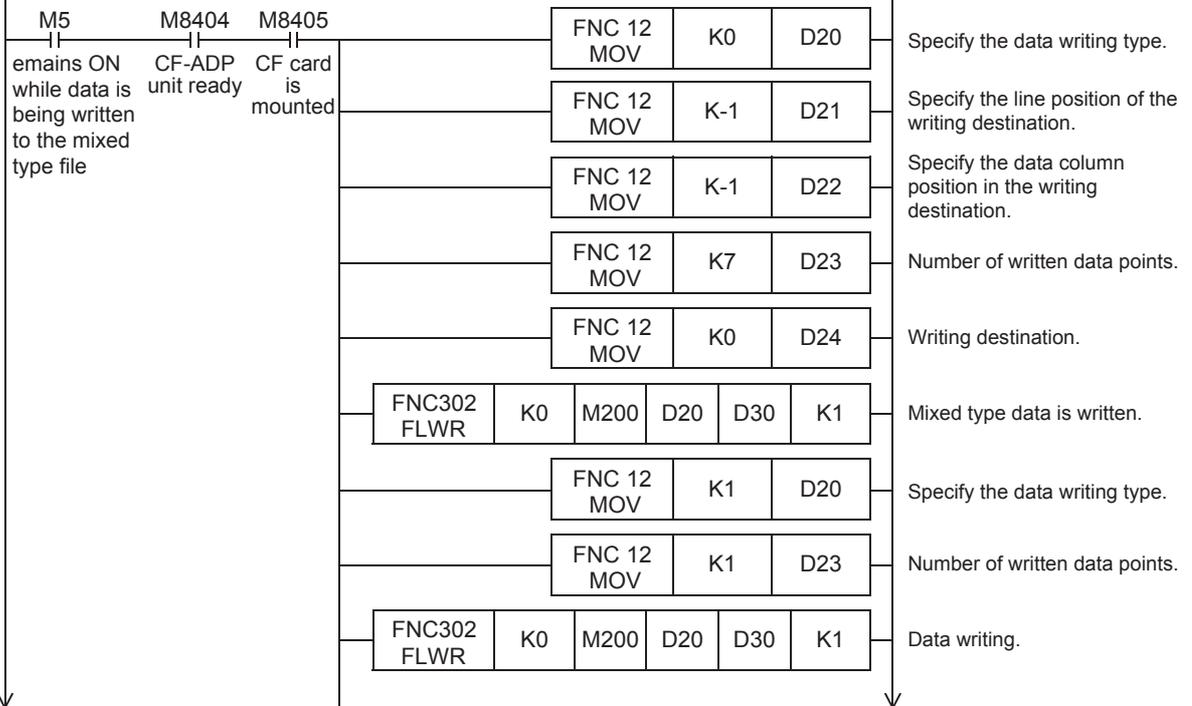
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Mixed type data is written

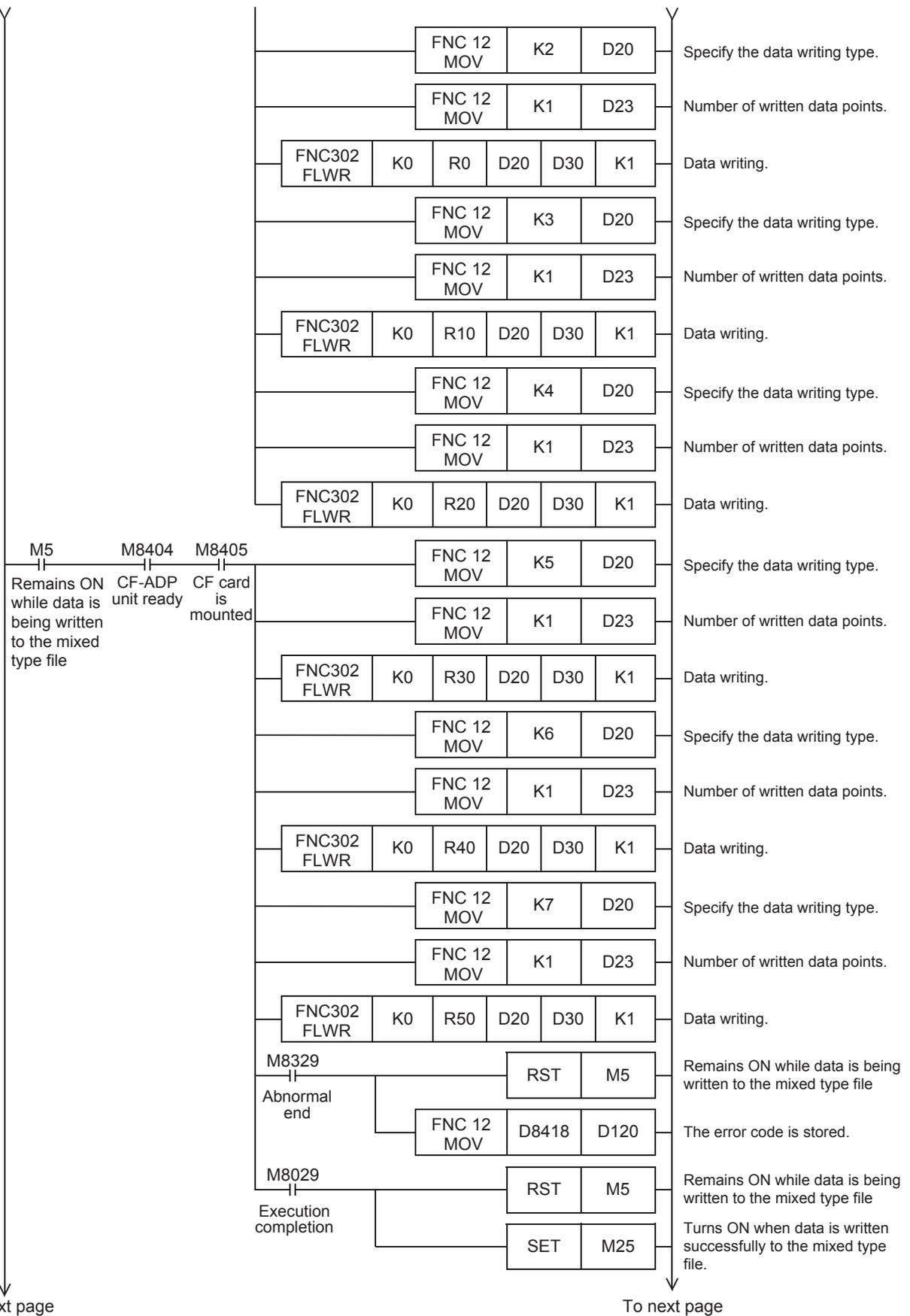


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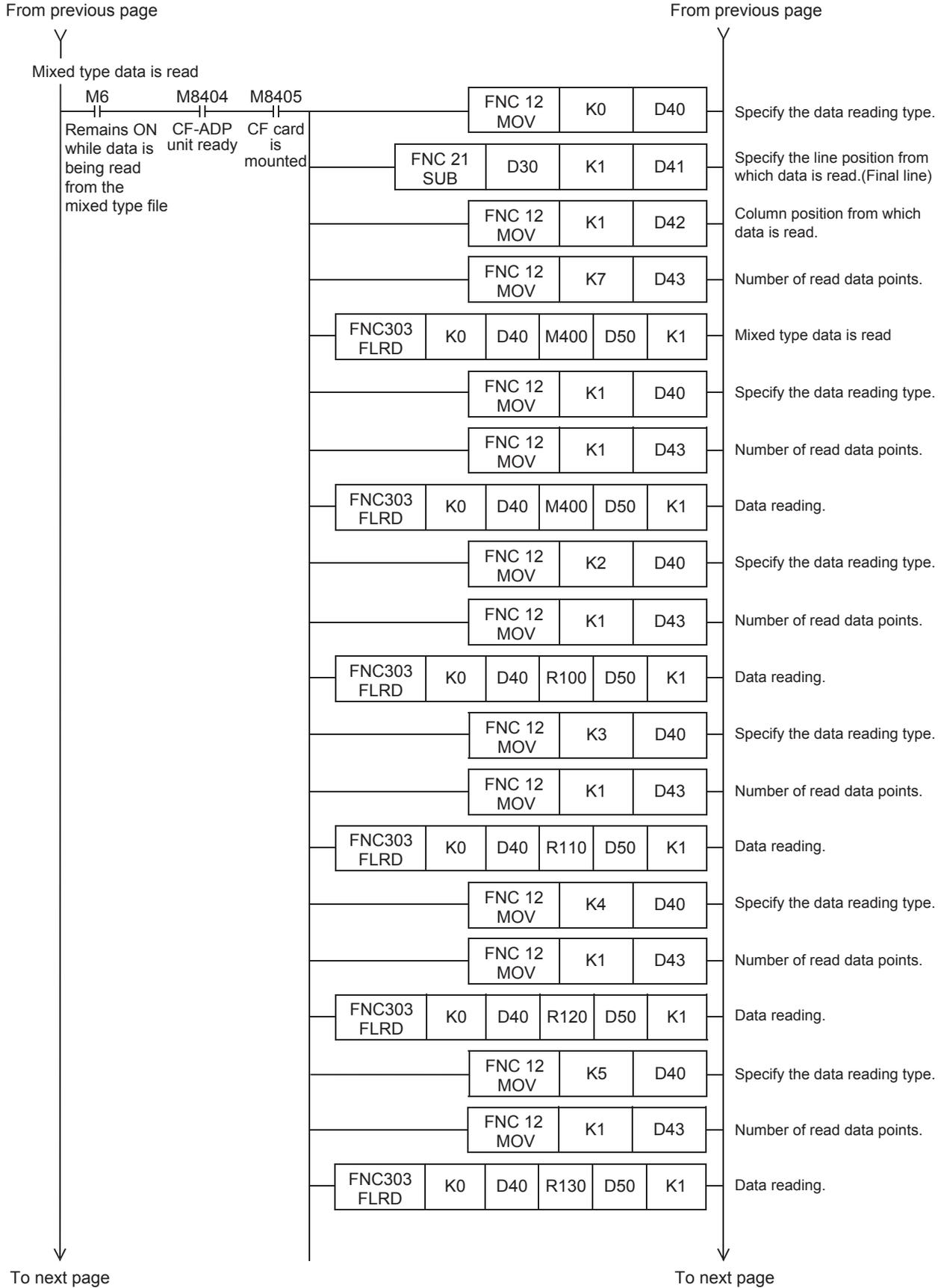
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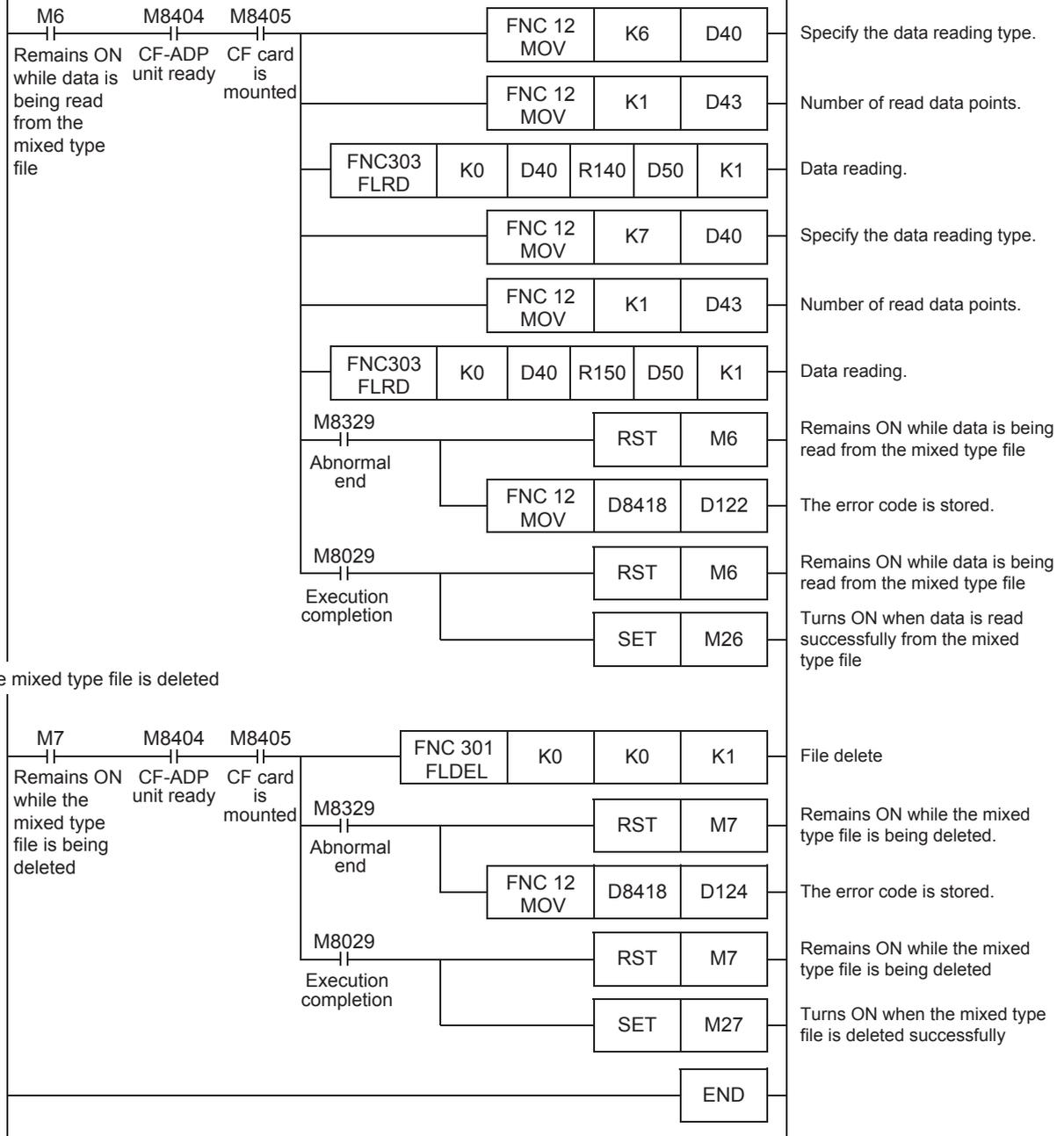
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## 9.4 Program Example 3

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### 9.4.1 Operation details

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When X010 turns ON, error codes and error code information (error flag) of the CF-ADP are read.

### 9.4.2 Device Assignments

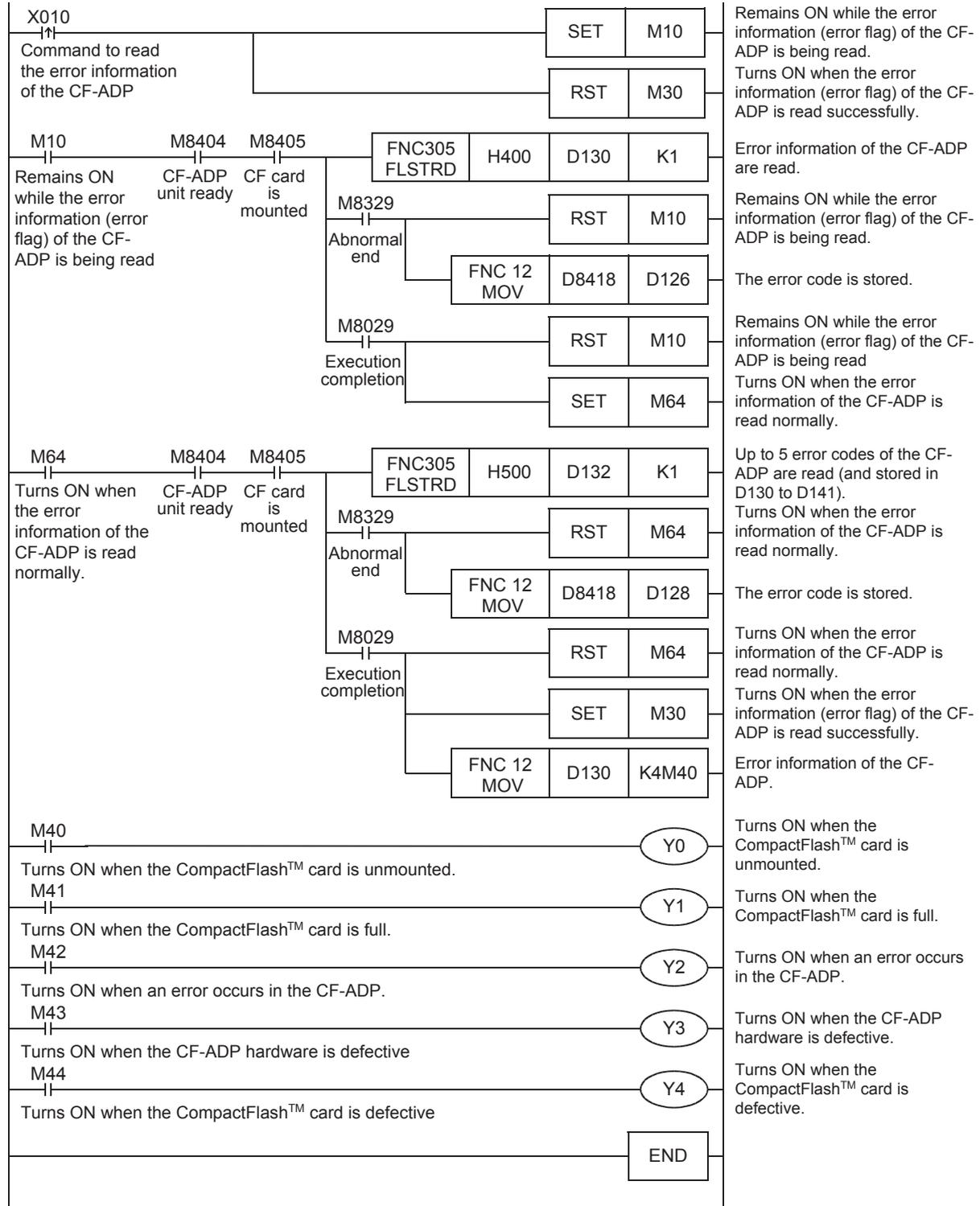
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| Device No. | Contents of operation  |
|------------|--|
| X010       | Reads error codes and error code information (error flag) of the CF-ADP.             |
| M10        | Remains ON while the error information (error flag) of the CF-ADP is being read.     |
| M30        | Turns ON when the error information (error flag) of the CF-ADP is read successfully. |
| M40        | Turns ON when the CompactFlash™ card is unmounted.                                   |
| M41        | Turns ON when the CompactFlash™ card is full.  |
| M42        | Turns ON when an error occurs in the CF-ADP.   |
| M43        | Turns ON when the CF-ADP hardware is defective                                       |
| M44        | Turns ON when the CompactFlash™ card is defective                                    |
| M64        | Turns ON when the error information of the CF-ADP is read normally.                  |
| D126       | Error code when the error information of the CF-ADP is read.                         |
| D128       | Error code when error codes of the CF-ADP are read.                                  |
| D130       | Error information (error flag) of the CF-ADP.  |
| D132       | Stores the error code 1 of the CF-ADP.   |
| D134       | Stores the error code 2 of the CF-ADP.   |
| D136       | Stores the error code 3 of the CF-ADP.   |
| D138       | Stores the error code 4 of the CF-ADP.   |
| D140       | Stores the error code 5 of the CF-ADP.   |

9.4.3 Sequence Program

This program example describes the sequence program for channel 1 (ch1).  
Rewrite the channel No. with the actual system configuration to be used.

→ For explanation of operations, refer to Subsection 9.4.1.  
→ For device assignments, refer to Subsection 9.4.2.



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## 10. Troubleshooting

### INSTALLATION PRECAUTIONS



- Make sure to shut down all phases of the power supply externally before installing the FX3U-CF-ADP. Failure to do so may cause electric shock or damage to the product.

### INSTALLATION PRECAUTIONS



- Use the product within the generic environment specifications described in PLC main unit manual (Hardware Edition). Never use the product in areas with excessive dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl<sub>2</sub>, H<sub>2</sub>S, SO<sub>2</sub>, or NO<sub>2</sub>), flammable gas, vibration or impacts, or expose it to high temperature, condensation, or rain and wind. If the product is used in such conditions, electric shock, fire, malfunctions, deterioration or damage may occur.
- Do not touch the conductive parts of the product directly. Doing so may cause device failures or malfunctions.
- Install the product securely using a DIN rail or mounting screws.
- Install the product on a flat surface.
  - If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformities.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.
- Be sure to remove the dust proof sheet from the PLC's ventilation port when installation work is completed. Failure to do so may cause fire, equipment failures or malfunctions.
- Connect the FX3U-CF-ADP securely to special adapter connector. Loose connections may cause malfunctions.
- Connect the power connector of the power supply cable securely to the CF-ADP power supply connector. Loose connections may cause malfunctions.
- When inserting a CompactFlash™ card into the FX3U-CF-ADP, push it into the CF card slot until the EJECT button pops out. Loose connections may cause malfunctions.
- Before inserting/removing a CompactFlash™ card into/from the FX3U-CF-ADP, set the CF card ACCESS switch to OFF and confirm that the BUFFER LED and ACCESS LED are both OFF. Failure to do so may corrupt data within the CompactFlash™ card.
- When removing a CompactFlash™ card from the FX3U-CF-ADP, make sure to support the CompactFlash™ card by hand, as it may pop out. Failure to do so may cause the CompactFlash™ card to fall from the FX3U-CF-ADP and break.
- Turn off the power to the PLC before attaching or detaching the following devices. Failure to do so may cause device failures or malfunctions.
  - Peripheral devices, display modules, expansion boards and special adapters
  - I/O extension units/blocks, FX Series terminal block and the special function units/blocks
  - Battery and memory cassette

### WIRING PRECAUTIONS



- Make sure to cut off all phases of the power supply externally before attempting wiring work. Failure to do so may cause electric shock or damage to the product.

### WIRING PRECAUTIONS



- Connect the DC power supply wiring to the dedicated terminal described in this manual. If an AC power supply is connected to a DC input/output terminal or DC power supply terminal, the PLC will burn out.
- Connect the DC power supply wiring to the dedicated connector described in this manual. If an AC power supply is connected to a DC power supply connector, the PLC will burn out.
- When drilling screw holes or wiring, make sure that cutting and wiring debris do not enter the ventilation slits. Failure to do so may cause fire, equipment failures or malfunctions.

**STARTUP AND MAINTENANCE  
PRECAUTIONS****WARNING**

- Make sure to connect the battery for memory backup correctly. Do not charge, disassemble, heat, short-circuit, or expose the battery to fire.  
Doing so may rupture or ignite it.
- Do not touch any terminal while the PLC's power is on.  
Doing so may cause electric shock or malfunctions.
- Before modifying or disrupting the program in operation or running the PLC, carefully read through this manual and the associated manuals and ensure the safety of the operation.  
An operation error may damage the machinery or cause accidents.

**STARTUP AND MAINTENANCE  
PRECAUTIONS****CAUTION**

- Do not disassemble or modify the PLC.  
Doing so may cause fire, equipment failures, or malfunctions.  
For repair, contact your local Mitsubishi Electric representative.
- Turn off the power to the PLC before attaching or detaching the following devices.  
Failure to do so may cause device failures or malfunctions.
  - Peripheral devices, display modules, expansion boards and special adapters
  - I/O extension units/blocks, FX Series terminal block and the special function units/blocks
  - Battery and memory cassette

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Troubleshooting

## 10.1 Troubleshooting procedure

### 10.1.1 LED status check

The table below describes details for LED statuses.

| LED display | Color | Status  | Description   | Error corrective action   |
|-------------|-------|---------|---|---|
| POWER       | Green | OFF     | Power is not being supplied from the external power supply (24V DC).  | <ul style="list-style-type: none"> <li>Correctly connect the power cable.</li> <li>Correctly connect the wiring to the external power supply.</li> <li>When the service power supply of the PLC main unit is in use, make sure that the supply capacity is not being exceeded.</li> </ul> |
|             |       | ON      | Power is being supplied from the external power supply (24V DC).  | The power supply is normal.   |
| BUFFER      | Green | OFF     | Data is not stored in the internal buffer.  | -   |
|             |       | ON      | Data is stored in the internal buffer.  | -   |
| ERR.        | Red   | OFF     | No errors.  | -   |
|             |       | ON      | CF write error, CompactFlash™ card error, etc. has occurred.  | <p>An error has occurred in the CF-ADP. Check the error code, and perform the appropriate action according to the content of the error. For details on error codes, refer to the following.</p> <p style="text-align: right;">→ <b>Refer to Subsection 10.1.3</b></p>                     |
| FULL        | Red   | OFF     | The CompactFlash™ card has free space.  | -   |
|             |       | Flicker | The free space in the CompactFlash™ card is at 20% or less of the full capacity.  | -   |
|             |       | ON      | The CompactFlash™ card has no free space. The free space in the CompactFlash™ card is at 1% or less of the full capacity. | Delete unnecessary data, or replace the CompactFlash™ card.   |
| ACCESS      | Green | OFF     | CompactFlash™ card not accessed   | -   |
|             |       | ON      | CompactFlash™ card being accessed   | -   |
| SLOT        | Green | OFF     | The CompactFlash™ card is not inserted, or the slot is in the CompactFlash™ card unmounted status.                        | The CompactFlash™ card is not inserted<br>Insert a CompactFlash™ card.  |
|             |       | ON      | The CompactFlash™ card is inserted, or the slot is in the card mounted status.  | -   |

### 10.1.2 Troubleshooting by error code

When an error occurs, the PLC turns ON the special auxiliary relay M8329 (instruction execution abnormal end), and aborts execution of the instruction. After that, the PLC stores error codes in the special data register for error code storage, and turns ON the error flag.

#### 1. Checking the error status by monitoring special data registers

Monitor the special data registers shown below to check the error code and step number where the error has occurred.

The error code and error occurrence step number are stored in the data registers for the channel number specified in the CF-ADP applied instruction.

| Error code storage device |       | Error detected step number storage device |             |
|---------------------------|-------|---|-------------|
| ch1                       | ch2   | ch1                                       | ch2         |
| D8418                     | D8438 | D8415,D8414                               | D8435,D8434 |

#### 2. Checking the error status by executing the FLSTRD instruction

Execute the FLSTRD instruction (FNC305 for the CF-ADP) to check the error code of the 5 latest errors.

→ For details of the instruction, refer to Chapter 8.

→ For details of error codes, refer to Subsection 10.1.3.

### 10.1.3 Error Code List and Action

The list below shows error codes and corrective actions.

#### 1. Error code list

| Error code | Error definition  | Error corrective action   |
|------------|---|---|
| 1          | Parity, Framing, Overrun error  | Check the connection to the CF-ADP.   |
| 2          | Communication character error   |   |
| 3          | Communication SUM error   |   |
| 4          | Data format error   |   |
| 5          | Timeout error   |   |
| 7          | Frame format error  |   |
| 8          | Response error  | Something may be wrong with mixed type instructions. Check the parameter contents, execution order, etc. in mixed type instructions.  |
| 9          | Outside parameter device range  | Check the parameter contents.   |
| 12         | The CF-ADP is being started up, or the power is OFF.  | Check the power supply for the CF-ADP and its connection.   |
| 16         | Command code error in mixed type specification  | Something may be wrong with mixed type instructions.  |
| 18         | Outside channel number range in mixed type specification  | Check the parameter contents, execution order, etc. in mixed type instructions.   |
| 21         | Outside 1st parameter range   | The contents specified by the 1st parameter such as the file ID are outside the setting range.  |
| 22         | Outside file ID range in mixed type specification   |   |
| 23         | File name error   | Something is wrong with the file name.  |
| 24         | File name length error  | The file name exceeds 8 half-width characters.  |
| 25         | Reserved word in file name  | The file name contains unavailable reserved words.<br>Reserved words<br>"CON", "PRN", "AUX", "CLOCK\$", "NUL", "COM0", "COM1", "COM2", "COM3", "COM4", "COM5", "COM6", "COM7", "COM8", "COM9", "LPT0", "LPT1", "LPT2", "LPT3", "LPT4", "LPT5", "LPT6", "LPT7", "LPT8", "LPT9" |
| 26         | Outside line range  | The line number is outside the setting range.   |
| 27         | Outside line range in mixed type specification  | The line number is outside the setting range.<br>Something may be wrong with mixed type instructions. Check the parameter contents, execution order, etc. in mixed type instructions.   |
| 28         | Outside column number range   | The column number is outside the setting range.   |
| 29         | Outside setting range of CompactFlash™ card utilization/operation when the maximum line number has been reached | The CompactFlash™ card utilization or operation when the maximum Index value has been reached is outside the setting range.   |
| 30         | Outside time stamp setting range  | The time stamp is outside the setting range.  |
| 31         | Outside data format specification range   | The data format is outside the setting range.   |
| 32         | Data format error in mixed type specification   | The data format is incorrect.<br>Something may be wrong with mixed type instructions. Check the parameter contents, execution order, etc. in mixed type instructions.   |
| 33         | Data name writing error while a mixed type instruction is being executed  | It is possible that data name was written while a mixed type instruction was being executed.<br>Check the parameter contents, execution order, etc. in mixed type instructions.   |
| 34         | FLDEL instruction format specification error  | Parameters in the FLDEL instruction are outside the setting range.  |
| 35         | Device range error  | Devices specified by parameters are outside the setting range.  |
| 36         | Device point number range error   | The number of written points/read points specified by the parameter is outside the setting range.   |
| 37         | Outside device point number range in mixed type specification   | The number of written points/read points specified by the parameter is outside the setting range.<br>Something may be wrong with mixed type instructions. Check the parameter contents, execution order, etc. in mixed type instructions.                                     |

| Error code | Error definition                       | Error corrective action  |
|------------|--|--|
| 38         | Mixed type instruction execution error | The number of written/read points specified by the parameter is outside the setting range.<br>Check the parameter contents, execution order, etc. in mixed type instructions.  |
| 42         | Response device type error             |  |
| 43         | Frame number error                     |  |
| 46         | Too many characters                    | The character string exceeds 512 full-width characters, or the data name exceeds 32 full-width characters.   |
| 200        | System error                           | Something may be wrong with the hardware.<br>Contact your local Mitsubishi Electric representative.  |
| 201        | Power shutdown history reading error   | Check whether a CompactFlash™ card having sufficient free space is mounted correctly. When a CompactFlash™ card is mounted correctly, something may be wrong with the hardware.<br>Contact your local Mitsubishi Electric representative.  |
| 202        | Power shutdown history writing error   |  |
| 203        | Power shutdown history corruption      |  |
| 204        | Power shutdown history backup error    |  |
| 205        | System error                           | Something may be wrong with the hardware.<br>Contact your local Mitsubishi Electric representative.  |
| 206        | Power shutdown detection               | Shutdown of the supply voltage is detected.<br>Check whether the power is supplied correctly.  |
| 300        | SDRAM error                            | Something may be wrong with the hardware.<br>Contact your local Mitsubishi Electric representative.  |
| 301        | ROM error                              |  |
| 302        | EPROM error                            |  |
| 303        | SRAM error                             |  |
| 304        | SUM check error                        |  |
| 400        | CompactFlash™ card unmounted error     | The CompactFlash™ card is not mounted in the CompactFlash™ card slot.<br>Mount the CompactFlash™ card correctly in the CompactFlash™ card slot.  |
| 401        | CompactFlash™ card error               | The CompactFlash™ card may be defective.<br>Replace the CompactFlash™ card with another one.   |
| 402        | CompactFlash™ card mount error         | The CompactFlash™ card is not formatted correctly.<br>Format the CompactFlash™ card, or replace it with another one.   |
| 404        | CF free space acquisition error        | The CompactFlash™ card may be defective.<br>Format the CompactFlash™ card, or replace it with another one.   |
| 405        | CF FULL                                | The CompactFlash™ card is full.<br>Delete unnecessary data, or replace the CompactFlash™ card with another one.  |
| 406        | Directory creation error               | A folder was not able to be created in the CompactFlash™ card.<br>Check whether the number of files and folders in the root directory in the CompactFlash™ card does not exceed 512.<br>Check whether the CompactFlash™ card is formatted, and whether it is ready for data writing. |
| 407        | CompactFlash™ card format error        | The CompactFlash™ card is not formatted correctly.<br>Check whether the CompactFlash™ card is mounted correctly.<br>Format the CompactFlash™ card, or replace it with another one.   |
| 500        | Line file error                        | Access to the file management information file has failed.<br>Check whether the CompactFlash™ card is mounted correctly.   |
| 501        | ID table open error                    | The file management information was not able to be read from the CompactFlash™ card.<br>When reading or deleting a file, confirm that the target file exists.  |
| 502        | ID table write error                   | The file management information was not able to be created in the CompactFlash™ card.<br>Check whether the CompactFlash™ card is ready for data writing.   |
| 503        | ID table read error                    | The file management information was not able to be read from the CompactFlash™ card.<br>When reading or deleting a file, confirm that the target file exists.  |
| 504        | ID table corruption error              | The file management information is corrupt.  |
| 505        | ID table not found                     | The file management information does not exist in the CompactFlash™ card.  |

| Error code | Error definition   | Error corrective action  |   |
|------------|--|--|---|
| 600        | Parity, Framing, Overrun error   | Check the connection to the main unit.   |   |
| 601        | Communication character error  |  |   |
| 602        | Communication sum error  |  |   |
| 603        | Outside channel number range   | Check the version of the main unit.<br>Something may be wrong with the hardware.<br>Contact your local Mitsubishi Electric representative. |   |
| 604        | Undefined command error  |  |   |
| 605        | Time check error   |  |   |
| 606        | Address error inside adapter   |  |   |
| 607        | Consecutive execution serial number error  |  |   |
| 608        | Consecutive execution serial number error (serial number)                            |  |   |
| 609        | Outside data type range  |  | The data type specified during file creation is different from the data type to be written.   |
| 610        | Outside transfer point number range  |  | Check the version of the main unit.<br>Something may be wrong with the hardware.<br>Contact your local Mitsubishi Electric representative.  |
| 611        | Total transfer point number error  |  |   |
| 612        | Transfer point number error, minimum value error or maximum value error in each type |  |   |
| 613        | Outside single type or mixed type command range                                      |  |   |
| 614        | Mixed type data in single type command   |  |   |
| 615        | Mismatch between total number of points and sum of number of points of each type     |  |   |
| 616        | Deletion method error  |  |   |
| 617        | Outside FAT format range   |  |   |
| 619        | Outside error code clear command range   |  |   |
| 620        | Divided character string receiving error   |  |   |
| 700        | Command execution error  | The data name can be written only in the head line.<br>Check whether data does not exist in the writing target file.                       |   |
| 701        | Command sequence error   |  |   |
| 702        | Data name not set in head record   |  |   |
| 703        | ACCESS switch OFF error  |  | Check whether the ACCESS switch is set to ON.   |
| 704        | Access error in unmounted status   |  | Check whether the SLOT LED or M8405/M8425 (CF card mounting status) is ON.<br>If the SLOT LED or M8405/M8425 is OFF, pull out the CompactFlash™ card once and insert it again, or execute CompactFlash™ card mounting processing. Confirm that the SLOT LED or M8405/M8425 turns ON, and then execute the instruction again.                  |
| 801        | File ID specification error  |  | The specified file ID does not exist.<br>Check whether the specified file ID has been used.   |
| 802        | CF file ID number error  |  | The specified file ID is outside the setting range.<br>Specify the file ID within the range from 0 to 63.   |
| 803        | CF file ID duplication error   |  | The specified file ID already exists.<br>If the specified file already exists, the same file cannot be created or confirmed because parameters set at file creation are changed. When the file has already been created, confirm the parameters. When the file has not been created yet, delete the existing file or specify another file ID. |
| 804        | Existing file line position larger than specified maximum line position              |  | The maximum line position of the target file to be associated is larger than the maximum line position of the file specified in the file creation instruction.<br>Review the maximum line position in the file creation instruction.  |
| 805        | Outside data line position range   |  | Data cannot be written to the line position specified in the file writing instruction.<br>Specify line position smaller than "Index value existing in the file +1" or "Maximum line position specified in the file creation instruction".   |
| 806        | Specified data line position not found in file                                       | The line position specified in the file reading instruction does not exist in the file.<br>Specify line position existing in the file.     |   |

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| Error code | Error definition                                  | Error corrective action   |
|------------|---|---|
| 807        | CF file name duplication error                    | The file specified in the file creation instruction already exists.<br>Specify another file name.   |
| 808        | CF file name length error                         | In the file creation instruction, specify the file name within 8 characters.  |
| 809        | CF file name character error                      | The file name specified in the file creation instruction contains unavailable characters.<br>Review the file name.  |
| 810        | CF file time stamp error                          | The time stamp format specified in the file creation instruction is outside the setting range.<br>Review the specified value.   |
| 811        | CF file maximum line position error               | The maximum line position specified in the file creation instruction is outside the setting range.<br>Review the specified value.   |
| 812        | CF file information number error                  | The maximum line position, file processing when the maximum line position is reached or CompactFlash™ card utilization of FIFO files specified in the file creation instruction is outside the setting range.<br>Review the specified value.  |
| 813        | File data type error                              | The data type specified in the file creation instruction is outside the setting range.<br>Review the specified value.   |
| 815        | Outside column position range                     | The column position specified in the file writing/reading instruction is outside the setting range.<br>Review the specified value.  |
| 817        | Plural data types specified in mixed type file    | Data of multiple data types was attempted to be read from a file for which a type other than mixed type is specified in the file creation instruction.<br>Review the data type in the existing file, or data type to be read.   |
| 818        | Outside line position range                       | The file specified in the file writing instruction has already reached the maximum line position, and will not accept any more additional writing.<br>Delete the file, or specify another file.   |
| 900        | Line search error                                 | The specified line is not found in the file.<br>Check whether the file is corrupt, and whether its contents agree with the specification.<br>Check whether the file contains a line larger than the maximum line position specified in the file creation instruction.   |
| 901        | File reading error                                | Data was not read correctly from the file.<br>Check whether the file is corrupt, and whether its contents agree with the specification.   |
| 902        | File writing error                                | Data was not written correctly to the file.<br>Check whether the CompactFlash™ card is mounted correctly, whether the CompactFlash™ card is full, and whether the CompactFlash™ card is ready for data writing.   |
| 903        | File creation error                               | The file was not created correctly.<br>Check whether the CompactFlash™ card is full, and whether the CompactFlash™ card is ready for data writing.  |
| 905        | File deletion error                               | The file was not deleted correctly.<br>Check whether the deletion target file is ready for deletion.  |
| 906        | File opening error                                | The file was not open correctly.<br>Check whether the CompactFlash™ card is mounted correctly, and whether the file is ready for opening.   |
| 908        | FIFO file creation error                          | A FIFO file was not able to be created.<br>Check whether the CompactFlash™ card is mounted correctly, and whether the CompactFlash™ card utilization specified in the file creation instruction is exceeded.  |
| 909        | Buffered data writing error to CompactFlash™ card | Buffered data was not able to be written to the CompactFlash™ card.<br>Check whether the CompactFlash™ card is mounted correctly, and whether it has sufficient free space.<br>In the case of FIFO file, check whether the CompactFlash™ card utilization specified in the file creation instruction is not exceeded. |
| 1000       | Specified column position not found in data       | The column position specified for overwriting in the file writing instruction does not exist in the overwriting target data.<br>Review the specified column position.   |

| Error code | Error definition   | Error corrective action   |
|------------|--|---|
| 1001       | Data reading error   | Data was not read correctly from the line position specified in the file reading instruction.<br>Check the contents of the file, and the data type specified in the file reading instruction.   |
| 1002       | Data type mismatch   | Target data was attempted to be overwritten with data of a different type in the file writing instruction. Or the file contains data whose type is different from the type of data to be read specified in the data reading instruction. Check the contents of the file, and the data type specified in the file writing instruction. |
| 1003       | Data not found   | The data specified in the file reading instruction does not exist in the file.<br>Check whether the data specified in the file reading instruction exists in the file.  |
| 1004       | Character string size error  | The character string exceeds 512 full-width characters, the data name exceeds 32 full-width characters, or the total size of one line exceeds 16 kB.  |
| 3000~      | Refer to the following manual for error codes Nos. 3000 or later.<br>→ Refer to the FX3U Hardware Edition<br>→ Refer to the FX3UC Hardware Edition |   |

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## 10.2 Diagnostics on the PLC Main Unit

The following describes some of the PLC errors from the LED lights on the PLC.

For details related to the PLC main unit wiring, special auxiliary relays, and special data registers, refer to the following respective manuals.

→ Refer to the FX3U Hardware Edition

→ Refer to the FX3UC Hardware Edition

### 10.2.1 POWER(POW) LED [on/flashing/off]

The table below describes details for the LED statuses.

| Status  | PLC Status  | Error corrective action   |
|---------|---|---|
| ON      | Power of the specified voltage is being supplied to the power supply terminal.  | The power supply is normal.   |
| Flicker | One of the following causes may have occurred. <ul style="list-style-type: none"> <li>Power and current of the specified voltage is not being supplied to the power supply terminal.</li> <li>Incorrect external wiring.</li> <li>Internal errors in the PLC.</li> </ul>                      | <ul style="list-style-type: none"> <li>Check the supply voltage.</li> <li>After disconnecting cables other than the power cable, turn the power ON again, and check for changes in the state. If no improvement is obtained, consult your local Mitsubishi Electric representative.</li> </ul>  |
| OFF     | One of the following causes may have occurred. <ul style="list-style-type: none"> <li>The power supply is OFF.</li> <li>Incorrect external wiring.</li> <li>Power of the specified voltage is not being supplied to the power supply terminal.</li> <li>The power cable is broken.</li> </ul> | <ul style="list-style-type: none"> <li>If the power is not OFF, check the power supply and the power supply route. If power is being supplied correctly, consult your local Mitsubishi Electric representative.</li> <li>After disconnecting cables other than the power cable, turn the power ON again, and check for changes in the state. If no improvement is obtained, consult your local Mitsubishi Electric representative.</li> </ul> |

### 10.2.2 BATT(BAT) LED [on/off]

The table below describes details for the LED statuses.

| Status | PLC Status   | Error corrective action          |
|--------|--|----------------------------------|
| ON     | The battery voltage is low.                              | Immediately replace the battery. |
| OFF    | The battery voltage is higher than the value with D8006. | Normal                           |

### 10.2.3 ERROR(ERR) LED [on/flashing/off]

The table below describes details for the LED statuses.

| Status  | PLC Status   | Error corrective action  |
|---------|--|--|
| ON      | A watchdog timer error may have occurred, or the hardware of the PLC may be damaged.   | <ol style="list-style-type: none"> <li>1) Stop the PLC, and turn the power ON again.<br/>If the ERROR(ERR) LED goes out, a watchdog timer error may have occurred. Adopt any of the following measures:               <ul style="list-style-type: none"> <li>- Review the program.<br/>Set the maximum value (D8012) lower than the watchdog timer value.</li> <li>- Check that the input used for input interrupt or pulse catch is not being abnormally turned ON and OFF in one scan.</li> <li>- Check that the frequency of the pulse (duty 50%) input to the high-speed counter is not exceeding the specified range.</li> <li>- Add WDT instructions.<br/>Add some WDT instructions to the program, and reset the watchdog timer several times in one scan.</li> <li>- Change the watchdog timer value.<br/>Change the watchdog timer setting (D8000) in the program so that the setting is larger than the maximum value of the scan time (D8012).</li> </ul> </li> <li>2) Remove the PLC and supply the power to it from another power source. If the ERROR(ERR) LED goes out, noise may have affected the PLC. Adopt the following measures:               <ul style="list-style-type: none"> <li>- Check the ground wiring, and re-examine the wiring route and installation location.</li> <li>- Fit a noise filter onto the power supply line.</li> </ul> </li> <li>3) If the ERROR(ERR) LED does not go out even after measures in 1) and 2) are adopted, consult your local Mitsubishi Electric representative.</li> </ol> |
| Flicker | One of the following errors has occurred on the PLC: <ul style="list-style-type: none"> <li>• Parameter error</li> <li>• Syntax error</li> <li>• Ladder error</li> </ul> | Perform PLC diagnosis and program check with the programming tool.   |
| OFF     | No errors to stop the PLC have occurred.   | If the operations of the PLC are abnormal, perform PLC diagnosis and program check with the programming tool.<br>An I/O error, parallel link/communication error, or operation error may have occurred.  |

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## Appendix A: Related Devices

### Appendix A-1 Related Device List

The tables below show special auxiliary relays and special data registers used in CF-ADP instructions (FNC300 (FLCRT) to FNC305 (FLSTRD)).

The channel number of the device corresponds to the channel number specified in the CF-ADP applied instruction.

#### 1. Special auxiliary relays

R: Read only    W: Write only    R/W: Read or Write

| Device |       | Name                                   | Description  | R/W |
|--------|-------|--|--|-----|
| ch1    | ch2   |  |  |     |
| M8029  |       | Instruction execution complete         | Turns ON when the execution of CF-ADP instructions is completed, and remains ON for 1 scan.                                | R   |
| M8329  |       | Instruction execution abnormal end     | Turns ON when the execution of CF-ADP instructions has ended abnormally, and remains ON for 1 scan.                        | R   |
| M8067  |       | Operation error                        | Turns ON when an operation error occurs.   | R   |
| M8402  | M8422 | CF-ADP instruction executing           | Remains ON while an instruction for the CF-ADP is being executed.  | R   |
| M8404  | M8424 | CF-ADP unit ready                      | Remains ON when the CF-ADP is ready for receiving commands.  | R   |
| M8405  | M8425 | CF card mount status                   | ON : CompactFlash™ card mounted status<br>OFF : CompactFlash™ card unmounted status  | R   |
| M8410  | M8430 | CF-ADP status renewal stop             | Stops communication executed by the system to update the status of special data registers (D8406 and D8426). <sup>*2</sup> | R/W |
| M8418  | M8438 | CF-ADP instruction error <sup>*1</sup> | Turns ON when an error occurs in an instruction for the CF-ADP.  | R/W |

\*1. Cleared when the PLC mode is changed from STOP to RUN.

\*2. When an instruction for the CF-ADP is driven while the system is updating the status of special data registers, execution of the instruction for the CF-ADP may be delayed by several scans. If this delay is regarded as a problem, use this flag to stop the updating of the status.

#### 2. Special data registers

R: Read only    W: Write only    R/W: Read or Write

| Device         |                | Name   | Description  | R/W |
|----------------|----------------|--|--|-----|
| ch1            | ch2            |  |  |     |
| D8067          |                | Error code for operation error                                       | Stores the error code when an operation error occurs.                          | R   |
| D8402<br>D8403 | D8422<br>D8423 | Step number of executing CF-ADP instruction <sup>*1</sup>            | Stores the step number of an instruction for the CF-ADP.                       | R   |
| D8406          | D8426          | CF-ADP status  | Stores the status information of the CF-ADP.                                   | R   |
| D8408          | D8428          | CF-ADP version   | Stores the version of the CF-ADP.  | R   |
| D8414<br>D8415 | D8434<br>D8435 | Error step number of M8418, Error step number of M8438 <sup>*1</sup> | Stores the step number of an instruction for the CF-ADP where an error occurs. | R   |
| D8418          | D8438          | Error code for CF-ADP instructions <sup>*1</sup>                     | Stores the error code when an error occurs in an instruction for the CF-ADP.   | R   |
| D8419          | D8439          | Operation mode display   | Stores the communication function status being executed.                       | R   |

\*1. Cleared when the PLC mode is changed from STOP to RUN.

## Appendix A-2 Details of related devices

---

This section explains devices used during CF-ADP.

### Appendix A-2-1 Instruction execution complete [M8029]

---

When execution of CF-ADP instructions is completed, this device turns ON.

#### 1. Detailed contents

When execution of CF-ADP instructions is completed, M8029 turns ON, and remains ON for 1 scan.

#### 2. Cautions on use

M8029 is used as the instruction execution complete flag for other instructions (such as positioning instructions).

When using M8029, place the contact just under the instruction whose execution completion is to be checked.

### Appendix A-2-2 Instruction execution abnormal end [M8329]

---

When execution of CF-ADP instructions has ended abnormally, this device turns ON.

#### 1. Detailed contents

When execution of CF-ADP instructions is has ended abnormally, M8329 turns ON, and remains ON for 1 scan.

#### 2. Cautions on use

M8329 is used as the instruction execution abnormal end flag for other instructions.

When using M8329, place the contact just under the instruction whose instruction execution abnormal end is to be checked.

### Appendix A-2-3 CF-ADP instruction executing [M8402, M8422]

---

When an instruction for the CF-ADP is executed, one of these devices turns ON.

#### 1. Detailed contents

When an instruction for the CF-ADP is executed and communication with the CF-ADP starts, one of these devices turns ON.

When communication port ch1 is used, M8402 turns ON.

When communication port ch2 is used, M8422 turns ON.

The CF-ADP instruction executing flag (M8402 or M8422) turns ON, and D8403 and D8402 (or D8423 and D8422) store the step number of the instruction which is using the communication port.

#### 2. Cautions on use

While the CF-ADP instruction executing flag (M8402 or M8422) remains ON, another instruction for the CF-ADP cannot be executed.

### Appendix A-2-4 CF-ADP unit ready [M8404, M8424]

---

When the CF-ADP is ready for receiving commands, one of these devices remains ON.

#### 1. Detailed contents

These devices indicate whether the CF-ADP is ready for operation.

When the CF-ADP becomes ready for operation, one of these devices automatically turns ON.

When communication port ch1 is used, M8404 turns ON.

When communication port ch2 is used, M8424 turns ON.

**Appendix A-2-5 CF card mount status [M8405, M8425]**

These devices indicate the CompactFlash™ card status.

**1. Detailed contents**

When the CompactFlash™ card is mounted, one of these devices turns ON.

When communication port ch1 is used, M8405 turns ON.

When communication port ch2 is used, M8425 turns ON.

**Appendix A-2-6 CF-ADP status renewal stop [M8410, M8430]**

Stops the communication executed by the system to update the status of special data registers (D8406 and D8426).

**1. Detailed contents**

Stops the communication executed by the system to update the status of special data registers (D8406 and D8426).<sup>\*1</sup>

When communication port ch1 is used, M8410 turns ON.

When communication port ch2 is used, M8430 turns ON.

- \*1. When an instruction for the CF-ADP is driven while the system is updating the status of special data registers, execution of the instruction for the CF-ADP may be delayed by several scans. If this delay is regarded as a problem, use this flag to stop updating of the status.

**Appendix A-2-7 CF-ADP instruction error [M8418, M8438]**

These devices turn ON when an error occurs in an instruction for the CF-ADP.

**1. Detailed contents**

These devices indicate that an error occurs in an instruction for the CF-ADP.

When communication port ch1 is used, M8418 turns ON.

When communication port ch2 is used, M8438 turns ON.

When either of these devices turns ON, D8418 or D8438 stores the error code.

**2. Cautions on use**

These devices do not turn OFF even if the next instruction is completed normally.

Cleared when the PLC mode is changed from STOP to RUN.

**Appendix A-2-8 CF-ADP status [D8406, D8426]**

These devices store the status information of the CF-ADP.

**1. Detailed contents**

These devices store the status information of the CF-ADP as "ON" or "OFF" of b0 to b15.

| Bit No.   | Description                          |
|-----------|--------------------------------------|
| b0        | An error has occurred in the CF-ADP. |
| b1 to b15 | Not applicable                       |

**Appendix A-2-9 CF-ADP version [D8408, D8428]**

These devices store the version information of the CF-ADP.

**1. Detailed contents**

These devices store the version information of the CF-ADP.

When communication port ch1 is used, D8408 stores the value.

When communication port ch2 is used, D8428 stores the value.

## Appendix A-2-10 Step number of an instruction for the CF-ADP where an error has occurred [D8415, D8414][D8435, D8434]

These devices store the step number of an instruction for the CF-ADP where an error has occurred.

### 1. Detailed contents

These devices store the step number of an instruction for the CF-ADP where an error has occurred.

When communication port ch1 is used, (D8415, D8414) stores the value.

When communication port ch2 is used, (D8435, D8434) stores the value.

If an error has occurred in two or more instructions, these devices store the step number of the instruction for the CF-ADP where an error occurred first.

If no error has occurred, these devices store "-1".

### 2. Cautions on use

These devices store 32-bit data.

## Appendix A-2-11 Error code for CF-ADP instructions [D8418, D8438]

These devices store the error code when an error is caused by an instruction for the CF-ADP.

### 1. Detailed contents

These devices store the error code of an error caused by an instruction for the CF-ADP.

When communication port ch1 is used, D8418 stores the value.

When communication port ch2 is used, D8438 stores the value.

### 2. Error codes

For error codes, refer to Chapter 10.

## Appendix A-2-12 Operation mode display [D8419, D8439]

These devices store the communication type being used.

### 1. Detailed contents

These devices store the code of the communication type currently being used in the communication port.

D8419 stores the communication type code currently used in communication port ch1.

D8439 stores the communication type code currently used in communication port ch2.

The table below shows the details of the codes.

| Code | Description  |
|------|--|
| 0    | Programming communication                              |
| 1    | Programming communication (PP modem mode)              |
| 2    | Protocol dedicated to computer link                    |
| 3    | N:N Network  |
| 4    | RS instruction   |
| 5    | RS2 instruction  |
| 6    | Parallel link  |
| 7    | Inverter instruction                                   |
| 8    | Variable analog potentiometer expansion board is used. |
| 9    | MODBUS communication                                   |
| 10   | CF-ADP instruction <sup>*1</sup>                       |
| 11   | FX3U-ENET-ADP  |

\*1. When a CF-ADP applied instruction is executed, the communication function code K10 (CF-ADP applied instruction operation) is stored in "Operation mode display (D8419/D8439)" corresponding to the channel specified in the instruction.

## **MEMO**

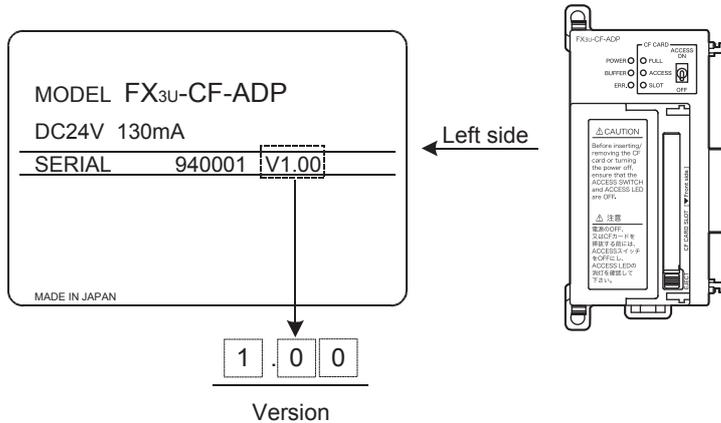
# Appendix B: Version Information

## Appendix B-1 Version information

### Appendix B-1-1 Version check method

#### 1. Checking the nameplate

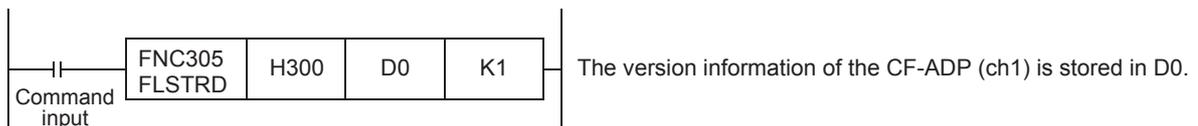
The CF-ADP version is indicated by "SERIAL" on the label attached to the left side of the module when viewed from the front.



#### 2. Checking the CF-ADP instruction

In CF-ADP, users can obtain the CF-ADP version information by FLSTRD instruction.

##### Program Example



#### 3. Checking the special data register

In CF-ADP, users can obtain the CF-ADP version information by monitoring special data register D8408(ch1)/D8428(ch2) (decimal number).

### Appendix B-1-2 Version upgrade history

The table below shows the version upgrade history for the CF-ADP.

| Version  | Contents of version upgrade |
|----------|-----------------------------|
| Ver.1.00 | First product               |

## MEMO

# Warranty

Please confirm the following product warranty details before using this product.

## 1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company. However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

### [Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

### [Gratis Warranty Range]

- 1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- 2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
  - a) Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
  - b) Failure caused by unapproved modifications, etc., to the product by the user.
  - c) When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
  - d) Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
  - e) Relay failure or output contact failure caused by usage beyond the specified Life of contact (cycles).
  - f) Failure caused by external irresistible forces such as fires or abnormal voltages, and failure caused by force majeure such as earthquakes, lightning, wind and water damage.
  - g) Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
  - h) Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

## 2. Onerous repair term after discontinuation of production

- 1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.  
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- 2) Product supply (including repair parts) is not available after production is discontinued.

## 3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

## 4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user or third person by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

## 5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

## 6. Product application

- 1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- 2) The Mitsubishi programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable logic controller applications.  
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable logic controller range of applications.  
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

## Revised History

| Date    | Revision | Description  |
|---------|----------|--|
| 6/2009  | A        | First Edition  |
| 9/2010  | B        | <ul style="list-style-type: none"><li>FX3UC-32MT-LT-2 was added.</li><li>The notation change of "Compliance with EC directive".</li><li>Errors are corrected.</li></ul>  |
| 5/2014  | C        | <ul style="list-style-type: none"><li>GX Works2/FX-30P was added.</li><li>Supplement was written for D8419/D8439.</li><li>"Preparing the power cable by yourself" is deleted. (Subsection 5.1.2)</li><li>Errors are corrected.</li></ul> |
| 11/2014 | D        | <ul style="list-style-type: none"><li>The notation change of "Power-on/off timing".</li><li>Errors are corrected.</li></ul>  |
| 4/2015  | E        | <ul style="list-style-type: none"><li>A part of the cover design is changed.</li></ul>   |
|         |          |  |



**FX3U-CF-ADP**

**USER'S MANUAL**

**MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE: TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

|            |                 |
|------------|-----------------|
| MODEL      | FX3U-CF-ADP-U-E |
| MODEL CODE | 09R720          |