Panasonic

PROGRRAMMABLE CONTROLLER

FP7 CPU Unit

User's Manual

Security Functions

WUME-FP7CPUSEC-03

2024.4 | industry.panasonic.com/

(MEMO)

Introduction

Thank you for buying a Panasonic product. Before you use the product, please carefully read the installation instructions and the users manual, and understand their contents in detail to use the product properly.

Types of Manual

- There are different types of users manual for the FP7 series, as listed below. Please refer to a relevant manual for the unit and purpose of your use.
- The manuals can be downloaded from our website:https://industry.panasonic.com/global/en/downloads/?tab=manual

Unit name or purpose of use	Manual name	Manual code
FP7 Power Supply Unit	FP7 CPU Unit Users Manual (Hardware)	WUME-FP7CPUH
FP7 CPU Unit	FP7 CPU Unit Command Reference Manual	WUME-FP7CPUPGR
	FP7 CPU Unit Users Manual (Logging Trace Function)	WUME-FP7CPULOG
	FP7 CPU Unit Users Manual (Security Function)	WUME-FP7CPUSEC
Instructions for Built-in LAN Port	FP7 CPU Unit Users Manual (LAN Port Communication)	WUME-FP7LAN
Instructions for Built-in COM Port	FP7 series Users Manual (SCU communication)	WUME-FP7COM
FP7 Extension (Communication) Cassette (RS-232C and RS485 type)		
FP7 Extension (Communication) Cassette (Ethernet type)	FP7 series Users Manual (Communication cassette Ethernet type)	WUME-FP7CCET
FP7 Extension (Function) Cassette Analog Cassette	FP7 Analog Cassette Users Manual	WUME-FP7FCA
FP7 Digital Input/Output Unit	FP7 Digital Input/Output Unit Users Manual	WUME-FP7DIO
FP7 Analog Input Unit	FP7 Analog Input Unit Users Manual	WUME-FP7AIH
FP7 Analog Output Unit	FP7 Analog Output Unit Users Manual	WUME-FP7AOH
FP7 High-speed counter Unit	FP7 High-speed counter Unit Users Manual	WUME-FP7HSC
FP7 Pulse Output Unit	FP7 Pulse Output Unit Users Manual	WUME-FP7PG
FP7 Positioning Unit	FP7 Positioning Unit Users Manual	WUME-FP7POSP
FP7 Serial Communication Unit	FP7 series Users Manual (SCU communication)	WUME-FP7COM
PHLS System	PHLS System Users Manual	WUME-PHLS
Programming software FPWIN GR7	FPWIN GR7 Introduction Guidance	WUME-FPWINGR7

Safety Precautions

- In order to prevent injuries and accidents, always adhere to the following.
- Always read this manual thoroughly before performing installation, operation, maintenance, and inspection, and use the device correctly.
- Ensure you are familiar with all device knowledge, safety information, and other precautions before use.
- In this manual, safety precaution levels are classified into "warnings" and "cautions".

⚠ WARNING	Cases where dangerous situations are expected to arise whereby the user could die or suffer serious injury if handled incorrectly

- Implement safety measures externally from this product so that the entire system can operate safely even if a failure occurs due to a fault in this product or some external factor.
- Do not use in an environment containing flammable gases.
  Doing so could cause explosions.
- Do not dispose of this product by placing it in fire.
  This could cause rupture of batteries, electronic components, etc.
- Do not apply force, electrical charge, fire or heat to the lithium batteries.
  It may lead to ignition and/or rupture.

⚠ CAUTION	Cases where dangerous situations are expected to arise whereby the user could suffer injury or physical damage could occur if handled incorrectly

- In order to prevent the product from generating abnormal heat or emitting smoke, use the product with some margin to the guaranteed characteristics and performance values.
- Do not disassemble or modify the product.
  Doing so could cause abnormal heat generation or smoke.
- Do not touch electrical terminals while the power is on.
  There is a risk of electrical shock.
- Construct external emergency stop and interlock circuits.
- Securely connect wires and connectors.
  Poor connections can cause abnormal heat generation or smoke.
- Do not perform work (connection, disconnection, etc.) while the power is on.
  There is a risk of electrical shock.
- If methods other than those specified by our company are used when operating this product, the protection functions of the unit may be lost.
- This product was developed and manufactured for use in industrial environments.

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Handling Precautions

■ In this manual, the following symbols are used to indicate safety information that must be observed.

	Indicates an action that is prohibited or a matter that requires caution.

!	Indicates an action that must be taken.
Info.	Indicates supplemental information.
Note	Indicates details about the subject in question or information useful to remember.
1 2 Procedure	Indicates operation procedures.

FP7 Connector Compatibility

The connectors of old and new model FP7CPU units and add-on cassettes (hereinafter "cassettes") are shaped differently. Please use old model cassettes with old model units and new model cassettes with new model units as shown in the table below.

■ Old Model

Type	Old Product No.
CPU unit	AFP7CPS41ES, AFP7CPS41E, AFP7CPS31ES, AFP7CPS31E, AFP7CPS31S, AFP7CPS31, AFP7CPS21
Serial Communication Unit	AFP7NSC
Cassette	AFP7CCS1、AFP7CCS2、AFP7CCM1、AFP7CCM2、AFP7CCS1M1、AFP7CCET1、AFP7FCA21、AFP7FCAD2、AFP7FCTC2

■ New Model

Type	New Product No.
CPU unit	AFP7CPS4RES, AFP7CPS4RE, AFP7CPS3RES, AFP7CPS3RE, AFP7CPS3RS, AFP7CPS3R, AFP7CPS2R
Serial Communication Unit	AFP7NSCR
Cassette	AFP7CCRS1、AFP7CCRS2、AFP7CCRM1、AFP7CCRM2、AFP7CCRS1M1、AFP7CCRET1、AFP7FCRA21、AFP7FCRAD2、AFP7FCRTC2

Note

- Each FP7 unit can be connected to the CPU unit of a new or old model.
- Firmware version upgrades for the CPU unit are available for both new and old models.
- When attaching expansion cassettes to the FP7CPU unit, please use only old models, or only new models. Trying to attach a combination of old models and new models may cause damage.

Selection of CPU Units

Note the following points when selecting a CPU unit.

■ Specification changes of CPU unit

- The firmware version of CPU units has been changed in accordance with the extension of the specifications. Specify units with new model numbers.

		Existing model number (Ver. 1)		New model number (Ver. 2/Ver. 3)	
Program capacity	Ethernet function	With Encryption function		No Encryption function	With Encryption function
196K steps	Available	AFP7CPS4E	→	AFP7CPS4RE	AFP7CPS4RES
120K steps	Available	AFP7CPS3E	→	AFP7CPS3RE	AFP7CPS3RES
	Not available	AFP7CPS3	→	AFP7CPS3R	AFP7CPS3RS

- The CPU units Ver.2 and Ver.3 are upward compatible with the conventional Ver.1.
- For using CPU units Ver.2, Ver.2.0 or later version of FPWIN GR7 is required.
- For using CPU units Ver.3, Ver.2.4 or later version of FPWIN GR7 is required.
- For using the projects (programs, comments and configuration data) created for the conventinal CPUs Ver.1, the projects must be converted to the projects for CPU units Ver.2 or Ver.3 using the "Convert PLC Type" function of the tool software.
- For information on the CPU versions and FPWIN GR7 version that can be used with each unit and extension cassettes, refer to "2.1 Unit to be Used and Applicable Versions".
- The layout of the operation monitor LEDs on Ver.1 of the CPU unit is different from that on Ver.2 or later.

■ Regulations on Encryption function in China

- Some CPU units have the encryption function which encrypts a part or all parts of programs in projects.
- In China, the types equipped with the encryption function cannot be used as they are subject to "Regulation of Commercial Encryption Codes". For using machines or systems incorporating FP7 series in China, or exporting and importing them, select the types without the encryption function.

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(MEMO)

1 Security Function

1.1 Overview of Security Function

1.1.1 Precautions on Using Security Function

- Security information set for each function can be cleared using the tool software, however, performing the clearing operation also deletes project data. Fully confirm before determining the operations of each security function.
- Although the encryption function encrypts programs to make them unreadable, it cannot protect projects from being read or rewritten. Use the password protection function in combination as necessary.

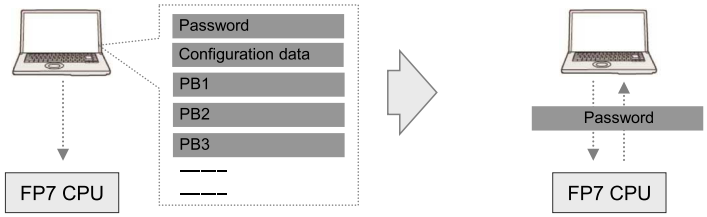
1.1.2 Type of Security Functions

■ Password function （1）

- This is a function to set a password for project data downloaded to the PLC for preventing data from being read and written. Using this function prevents unnecessary rewrting or leak of know-how.
- The password is valid for configuration data, ladder programs and comments.
- Operation memories can be read or written even when a password has been set.
- A project for which a password has been set is saved as a password-protected file even when it is saved on a PC. (Available in FPWIN GR7 Ver.1.3 or later)

Item	Specifications
No. of registerable passwords	16 (Settable as administrator or users) (Note 1)
No. of characters	8 to 16 characters
Open and close for each communication route	Only connected port is allowed to access.
Limit on number of failed open request	Access is blocked when opening operation failed three times. It is recovered when the power turns on again.
Status when power is on	All passwords are closed when the power turns on.

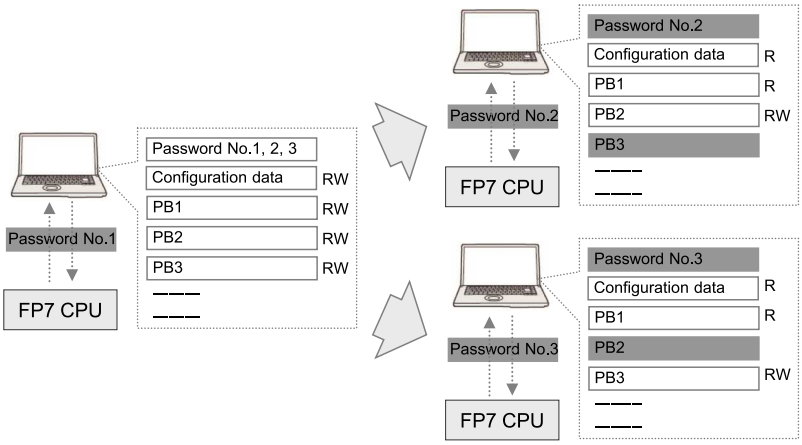
(Note 1) The number one password is set with administrator privileges.



■ Password function （2） User-level password

- This is a function to set passwords for administrator or each user, which enables to change levels of access.
- All operations can be performed with administrative privileges as in the case no password is set.

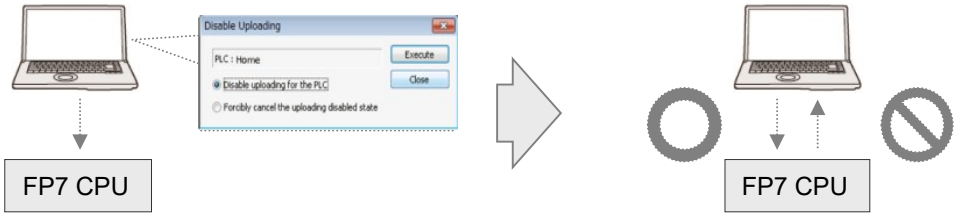
- For user-level passwords, it is possible to specify the allowable range of PB numbers of program blocks accessible when reading or writing.
- This function is available from FPWIN GR7 Ver.1.3 and CPU Ver.1.3.



Item	Privileges		Remarks
	Administrator	User	
Password registration, deletion, limited distribution settings, upload disabled settings, encryption settings and forcibly disable security	○		
Reading configuration data	○	○	
Writing or changing configuration data	○		
Reading files from PC	○	Δ	With user privileges, executable only in the range specified in the password setting dialog box
Saving files into PC	○	Δ	
Uploading program blocks from PLC	○	Δ	
Downloading program blocks to PLC	○	Δ	
Converting program blocks	○	Δ	
Converting projects	○	○	
Reading operation memories	○	○	
Writing operation memories	○	○	

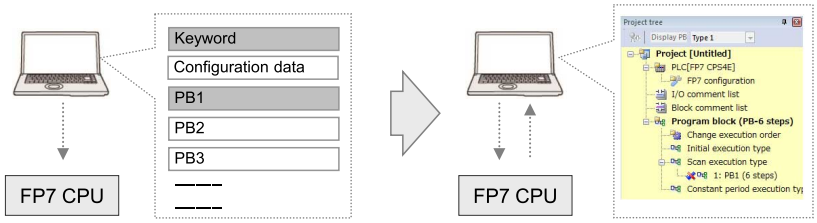
■ Upload protection function

- This is a function to prevent downloaded projects from being uploaded. This function prevents the leak of programs and know-how.
- The upload protection function is valid for configuration data, ladder programs and comments.
- Even when the upload protection function has been set, projects can be downloaded and overwritten.
- This function can be used in combination with the password function.



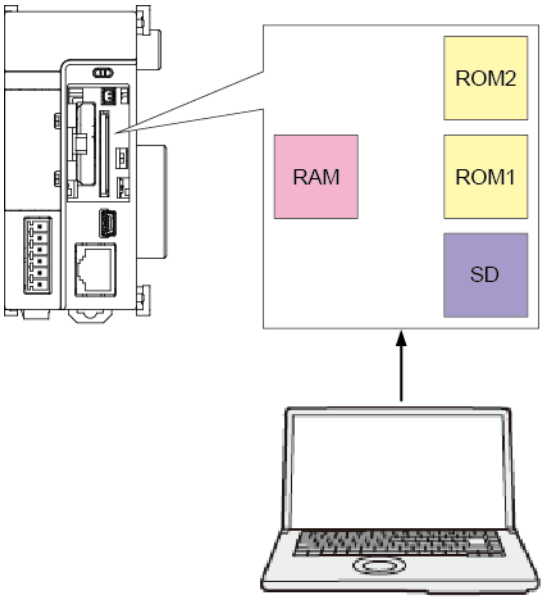
■ Encryption function (Models with the encryption function only)

- This is a function to encrypt a part or all parts of programs in projects.
- Encryption is valid for ladder programs and comments.
- Encryption can be performed for each program block (PB).
- Encrypted programs become valid only when an encryption key has been set to the PLC and it matches.
- A project for which an encryption keyword has been set is saved as a file with the encrypted keyword even when it is saved on a PC.
- This function can be used in combination with the password function.



1.1.3 Target Items of Security Functions

Available operations for each security function vary depending on target memories.



■ Operations for projects in operation program memories (RAM/ROM1)

- Downloading project data containing passwords
- Opening and closing password-protected items
- Setting and changing passwords
- Setting the read protection
- Downloading and uploading encrypted projects
- Canceling the security function

■ Operations for projects in program memories for backup (RAM/ROM2)

- Backing up and restoring encrypted projects

Password-protected projects cannot be backed up and restored.

■ Operations for projects in operation program memories (RAM/ROM1) in SD memory card operation

- Opening and closing password-protected items
- Copying data from SD memory cards using limited distribution passwords to operation program memories (RAM/ROM1) and SD memory card operation

It is not possible to edit project data, set or delete passwords.

1.2 Password Protection Function

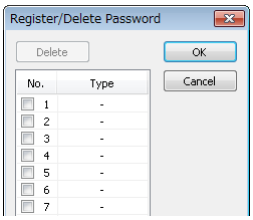
1.2.1 How to Set Password (1) Administrative Previleges

■ **Setting Method**

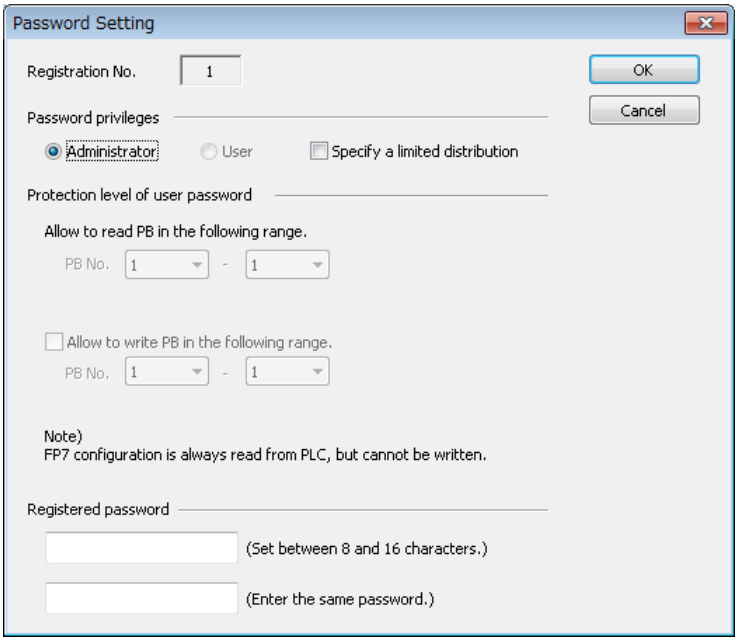
- The following procedure describes the case that a project is created offline with FPWIN GR7.

Procedure

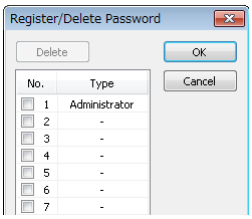
1. Select **Tools**>**PLC Security Settings**>**Register/Delete Password** in the menu bar.
   The "Register/Delete Password" dialog box is displayed.



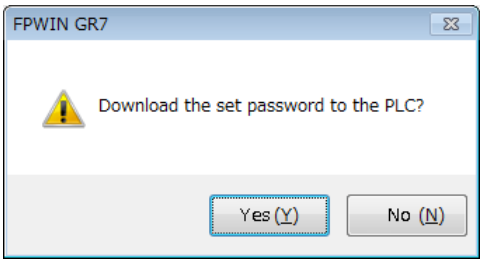
2. Select the desired number and double-click on it.
   The "Password Settings" dialog box is displayed.



3. Enter the desired password and press the [OK] button.
   "Administrator" is displayed in the "Password Settings" dialog box, and the password is registered.



When it is online, the following message box is displayed.



Info.

- Only an administrator password can be set in the password number one. User-level passwords cannot be set.
- An administrator password can be also set in numbers 2 to 16.
- If necessary, change passwords by a similar procedure as above.

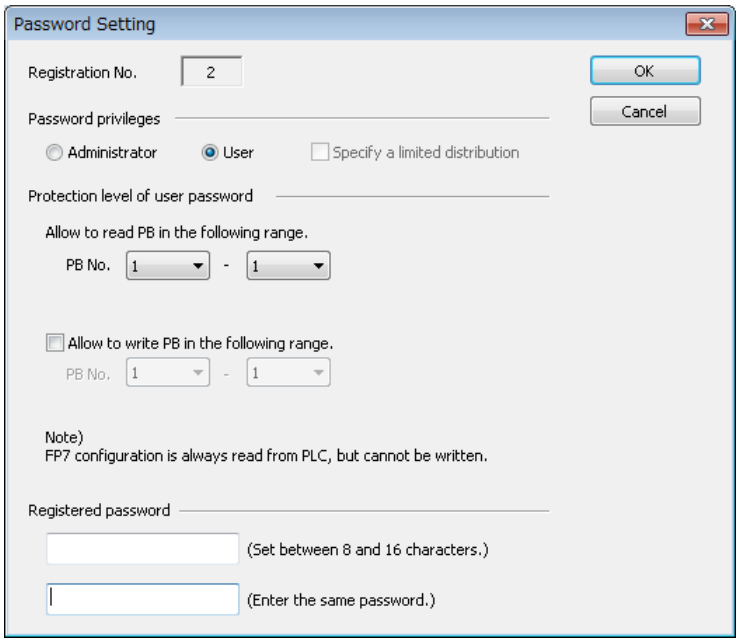
1.2.2 How to Set Password (2) User Privileges

■ Setting Method

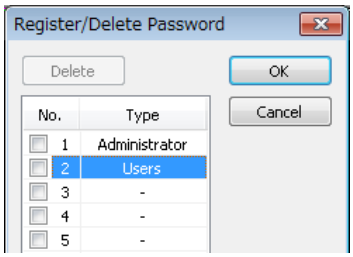
- The following procedure describes the case that an administrator password has been already set in the registration number one.

Procedure

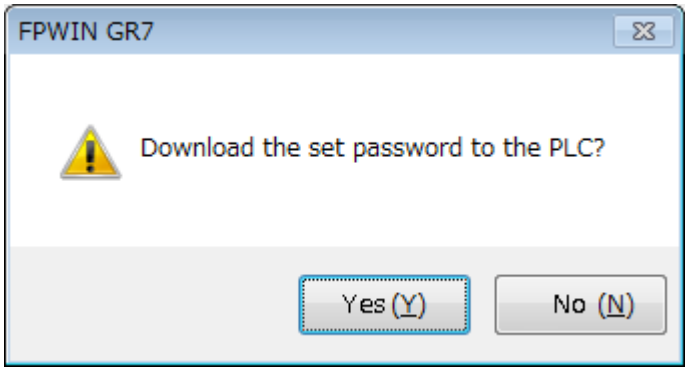
1. Select **Tools**>**PLC Security Settings**>**Register/Delete Password** in the menu bar.
2. Select the desired number and double-click on it.
   The "Password Settings" dialog box is displayed.
3. Change the password privileges to "User" and set the protection level.



4. Enter the desired password and press the [OK] button.
"User" is displayed in the "Password Settings" dialog box, and the password is registered.



When it is online, the following message box is displayed.



Info.

- User passwords and protection levels can only be set by those with administrator privileges.
- As for user passwords, the range of PB numbers that are readable or writable can be specified for each registration number.

1.2.3 Reading Project that Password Has Been Set (1) Administrative Previleges

■ Setting Method

- The following procedure describes the case that a project with a password is uploaded from the PLC.

1 2 Procedure

1. Select **Online**>**Upload From PLC (Entire Project)** in the menu bar.
   The "Input Password" dialog box is displayed.

2. Enter the registration number and the password, and press the [OK] button.
   When the password matches, the project is uploaded from the PLC.

"Input a Password" dialog box settings options

Item	Description
After completion, the PLC will revert to the protected state.	Uncheck the box for canceling the protection of PLC temporarily or permanently after the completion of upload.
Open time	The PLC returns to the password protected state after the elapse of a specified time.
Number of retries	It indicates the allowable number of times for the entry of wrong password. The set value is always 3 times. If wrong passwords have been entered three times, you cannot enter a password any more unless the CPU unit is turned off and on again.

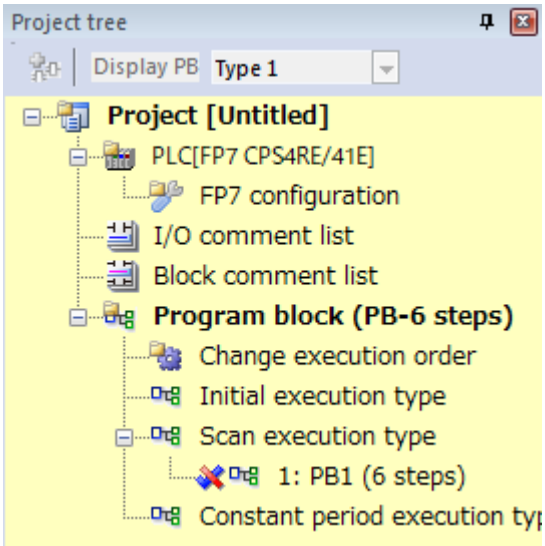
Info.

- When the read project has been changed, the "Input a Password" dialog box is displayed before downloading the changes to the PLC.

1.2.4 Reading Project that Password Has Been Set (2) User privileges

■ Operation when reading a project with user privileges

- Reads the program blocks in the range of PB numbers that are allowed to be read.
- The background color of the project tree is cream when the project is read with user privileges.
- A red line is displayed at the PB number of the project tree in the range of PB numbers that are not allowed to be written.



Info.

- When the read project has been changed, the "Input a Password" dialog box is displayed before downloading the changes to the PLC. With user privileges, only the range of program blocks that are allowed to be written is downloaded.

1.2.5 Canceling Password

■ Setting Method

- The following procedure describes the case that a project with a password has been uploaded from the PLC.