



PCA7412E4S-64

PROM programming adapter for M16C/6V Group MCUs

User's Manual

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To use the product properly

Precautions for Safety





- In both this User's Manual and on the product itself, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties.
- The icons' graphic images and meanings are given in "Chapter 1. Precautions for Safety". Be sure to read this chapter before using the product.

1. Precautions for Safety


In this user's manual, several icons are used to insure proper handling of this product and also to prevent injuries to you or other persons, or damage to your properties.


This chapter describes precautions which should be taken in order to use this product safely and properly. Be sure to read this chapter before using this product.


1.1 Safety Symbols and Meanings

	WARNING	If the requirements shown in the "WARNING" sentences are ignored, the equipment may cause serious personal injury or death.
	CAUTION	If the requirements shown in the "CAUTION" sentences are ignored, the equipment may malfunction.
	IMPORTANT	It means important information on using this product.

In addition to the three above, the following are also used as appropriate.

△ means WARNING or CAUTION.
Example:  **CAUTION AGAINST AN ELECTRIC SHOCK**

⊘ means PROHIBITION.
Example:  **DISASSEMBLY PROHIBITED**

● means A FORCIBLE ACTION.
Example:  **UNPLUG THE POWER CABLE FROM THE RECEPTACLE.**

The following page describes the symbols "WARNING", "CAUTION", and "IMPORTANT".

WARNING

Warnings for Use Environment:



- This equipment is to be used in an environment with a maximum ambient temperature of 35°C. Care should be taken that this temperature is not exceeded.
- Select the proper programming mode of the PROM programmer.

CAUTION

Cautions to Be Taken for Modifying This Product:



- Do not disassemble or modify this product. Disassembling or modifying this product can cause damage.

Cautions to Be Taken for Handling This Product:



- Use caution when handling this product. Be careful not to apply a mechanical shock such as falling.
- Do not touch the connector pins of this product.
- Be careful with the static electricity when handling this product and the MCU.

When Not Using This Product for a Long Time:

- (1) Attach the connector pins of this product to the conductive sponge.
- (2) Put it into a conductive polyvinyl, and keep it in the package case shipped from the factory.
- (3) Store it in the place where humidity and temperature are low and direct sunshine does not strike.

IMPORTANT

When Using The Product:

- Attach this product to the IC socket on the PROM programmer properly.
- Insert the MCU to the IC socket of this product properly.
- When opening and closing the IC socket of this product, be sure to keep it horizontal.
- Be sure to set the programming area as described in this user's manual.
- Do not use the PROM programmer's device identification code readout function.

2. Introduction

This product is a PROM programming adapter for M16C/6V Group of 16-bit MCUs. The adapter is a tool that can be used to write programs into internal ROM of microcomputers using a commercially available PROM programmer. This manual describes the specifications and the operation.

Figure 2.1 shows the external view and constituent parts of the adapter.

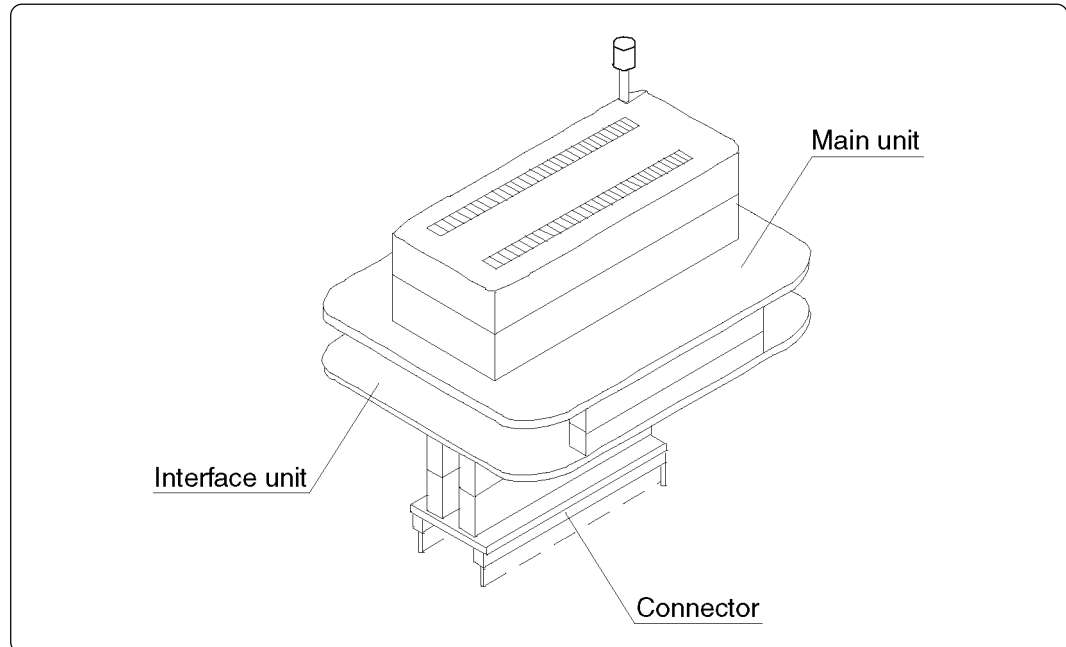


Figure 2.1 External view and constituent parts

2.1 Things to Check When Unpacking

This product consists of the items listed in Table 2.1. Check to see that it contains all of the items.

Table 2.1 Contents

Main unit	PCA7412E4S-64
Interface unit	PCA7412C
Connector	PCA7402E (32-pin)
User's manual	This manual

If any part is missing or there is any doubt about your product package, contact your local distributor.

3. Specifications

Table 3.1 lists the common specifications of the programming adapters, and Table 3.2 lists the specifications of the PCA7412E4S-64.

Table 3.1 Common specifications of the programming adapters

Item		Description
Operating clock frequency		8 MHz (Supplied by the mounted ceramic oscillator)
Power supply		Supplied from Vcc of the PROM programmer
Board configuration	Main unit	Board to insert a programmable MCU (IC socket mounted on it)
	PCA7412C (Interface unit)	Interface board (Buffer IC mounted on it) (Connected by two rows of standard-pitch 20-pin connectors and two rows of standard-pitch 16-pin connectors to the upper and lower boards)
	PCA7402E (Connector)	Board to connect to the PROM programmer (Standard-pitch 32-pin pin-header mounted)

Table 3.2 Specifications of PCA7412E4S-64

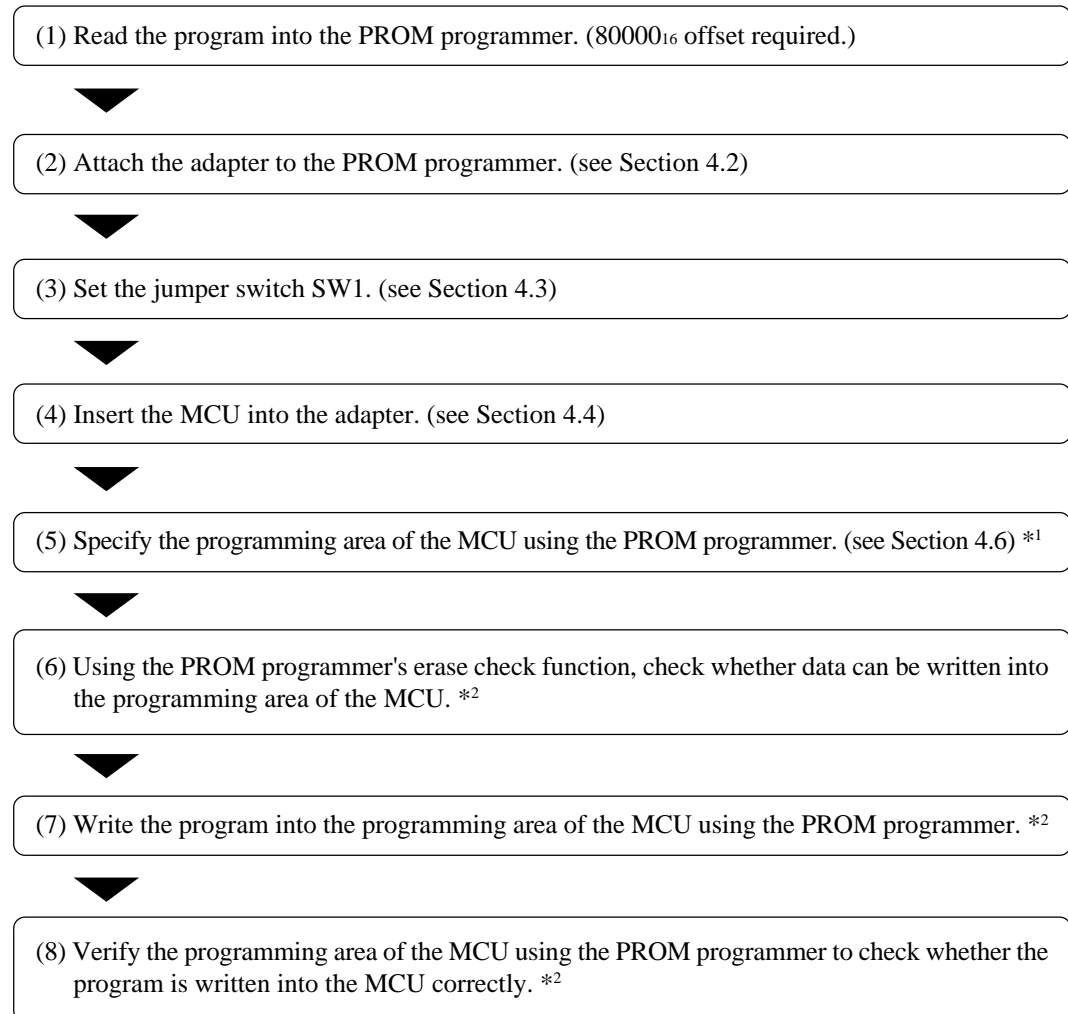
Product name	Item	Description
PCA7412E4S-64	MCU	M306V5EESP (64-pin 1.778-mm-pitch SDIP)
	IC socket	264-1300-00-0602J (Sumitomo 3M Limited)

4. How to Write the Program

This chapter describes how to write programs with a PROM programmer. For details on how to operate the PROM programmer, refer to the user's manual of the PROM programmer.

4.1 Programming Procedures

Follow procedures (1) to (8) to write programs into the MCU.



Notes:

*1 **Be sure to set the programming area. Otherwise the mode's shift to the programming mode may not be performed successfully. The erase check function etc. may not also be performed completely.**

*2 Some PROM programmers perform the steps (6) through (8) automatically.

4.2 Attaching the Adapter to a PROM Programmer

As shown in Figure 4.1, attach the No. 1 pin of the PCA7402E connector (standard-pitch 32-pin pin-header mounted) to the No. 1 pin of the IC socket of the PROM programmer.

Be careful when attaching to the PROM programmer because incorrect insertion can cause fatal damage to the MCU.

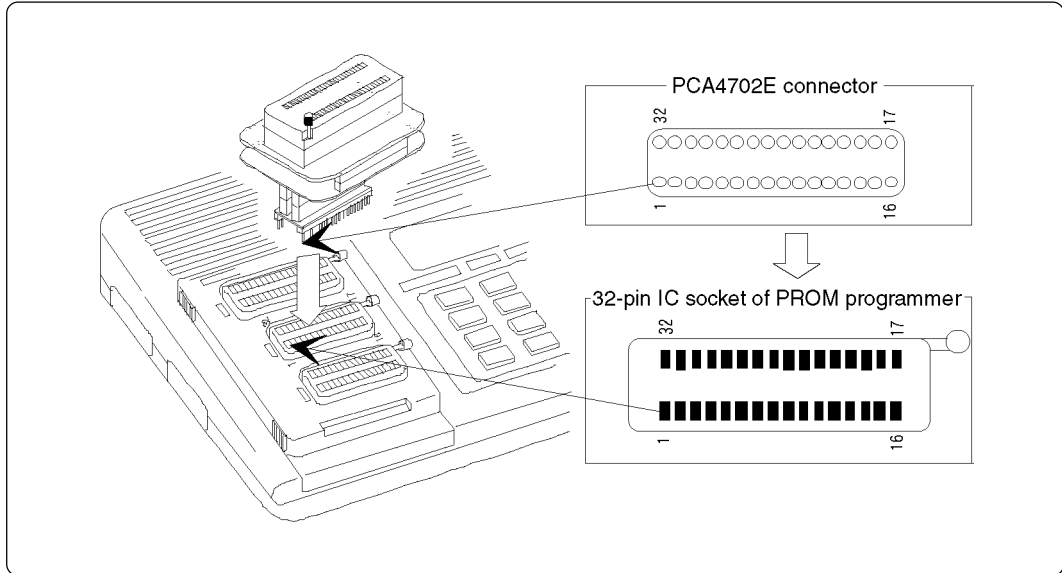


Figure 4.1 Attaching the adapter to a PROM programmer

4.3 Setting the Jumper Switch

(1) Jumper switch SW1

You can not set the SW1 to "1M". Set this switch to "4M" to use.

For details on the jumper switch setting, see Table 4.1 and Figure 4.2.

- SW1: 1M Prohibited
- SW1: 4M To write to OSD/Internal ROM

Table 4.1 Jumper switch setting

	SW1
OSDROM	4M
Internal ROM	4M

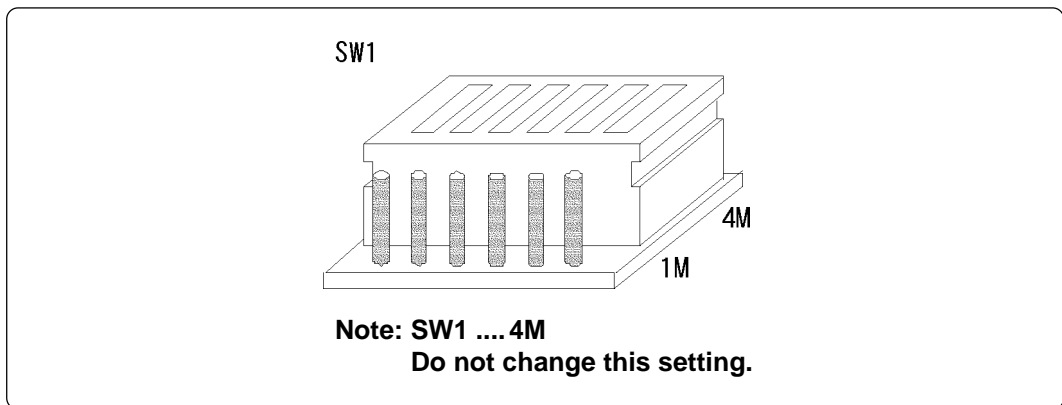


Figure 4.2 Jumper switch setting

4.4 Inserting an MCU into the Programming Adapter

As shown in Figure 4.3, insert the No. 1 pin of the MCU into the No. 1 pin of the IC socket on the main unit.

Be careful when inserting the MCU because incorrect insertion can cause fatal damage to the MCU.

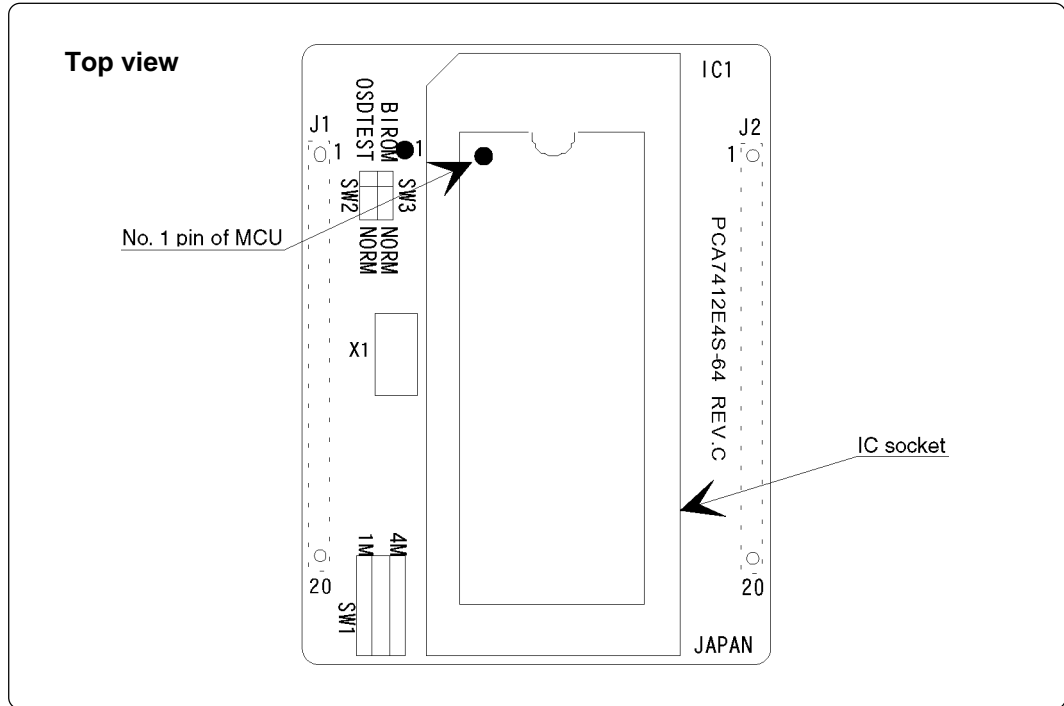


Figure 4.3 Inserting MCU

CAUTION

When Inserting an MCU:

- When inserting and pulling out the MCU, be sure to keep the IC socket side above and horizontal.

4.5 Precautions When Handling the Adapter

Do not directly touch the connector in the IC socket and the pins on the PROM programmer connector, otherwise dirt may cause an electrical insulation failure.

When not using this product, attach the connector pins of this product to the conductive sponge as it was shipped from the factory.

4.6 Setting Programming Area

When writing and erasing programs, be sure to set the programming area. And also, specify its device of the PROM programmer.

Table 4.2 Programming area

MCU type name	ROM size	PROM programmer		Internal ROM area of MCU
		Device	Programming area	
M306V5EESP	OSDROM (128K bytes)	M5M27C401	10000 ₁₆ - 2FFFF ₁₆	90000 ₁₆ - AFFFF ₁₆
	Internal ROM (192K bytes)		50000 ₁₆ - 7FFFF ₁₆	D0000 ₁₆ - FFFFF ₁₆

CAUTION

When Setting the Programming Area:

- (1) Choose the programming mode properly. Incorrect setting may destroy the MCU.
- (2) The programming method in M5M27C401 mode is the byte programming method.

5. Recommended PROM Programmers

The PROM programmers listed in Table 5.1 are recommended for this product. Using the actual products, we have verified that these PROM programmers can be used to write programs without problem. Nonconformity occurring by using any other PROM programmers can not be supported. For the latest type of PROM programmers, contact the manufacturer to confirm whether it can be used for your product.

Table 5.1 Recommended PROM programmers

Manufacturer	Type name	Device name	Programming voltage (Vpp)
Advantest	R4945	M5M27C401 mode	12.75 V
	R4945A		

CAUTION

Cautions for Recommended PROM Programmers:

- (1) Choose the programming mode properly. Incorrect setting may destroy the MCU.
- (2) The programming method in M5M27C401 mode is the byte programming method.

6. Memory Map

Figure 6.1 shows memory maps of the MCU and the PROM programmer.

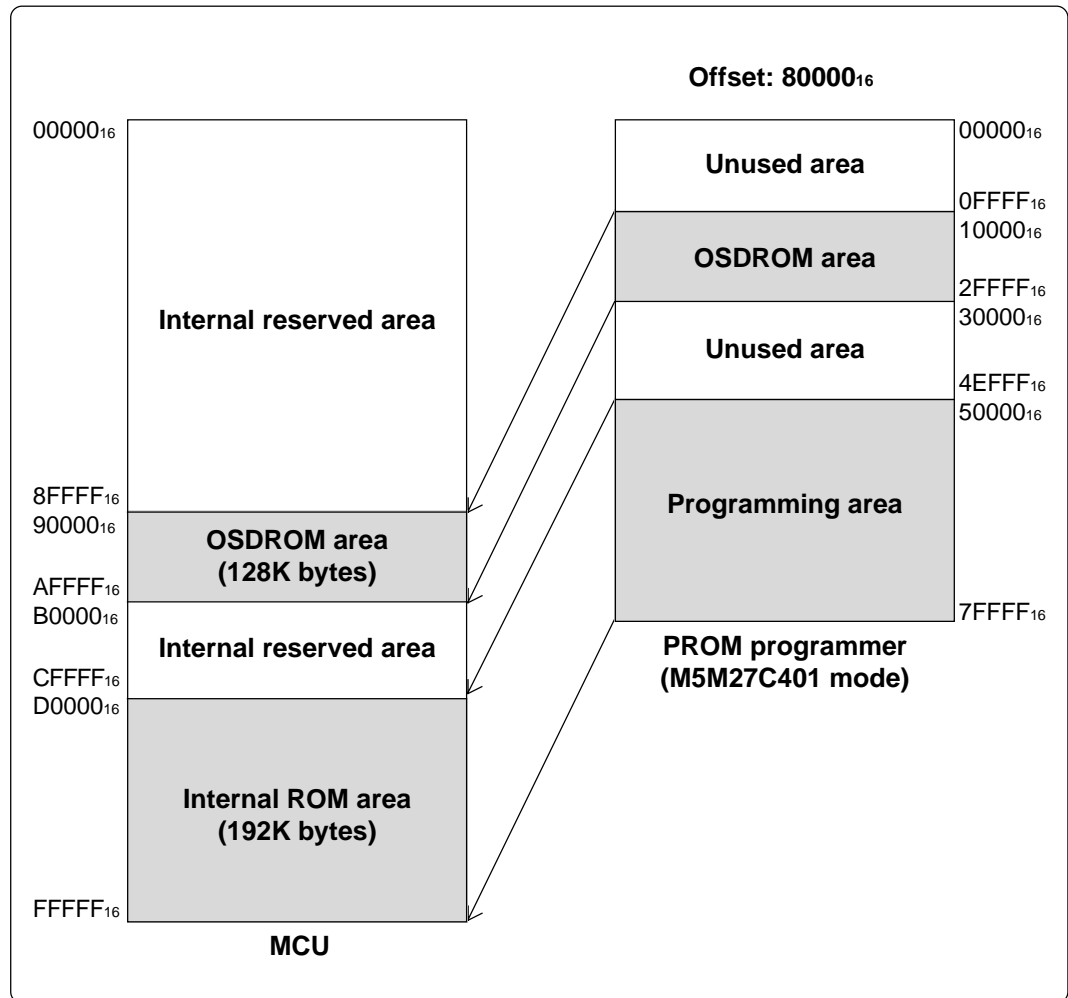


Figure 6.1 Memory map

7. How to Request for Support

After checking this manual, fill in the following information and email to your local distributor.

For prompt response, please specify the following information:

(1) Contact address

- Company name
- Department
- Responsible person
- Phone number
- Fax number
- E-mail address

(2) Product information

- Name of the programming adapter
- Serial number
- Date of purchase
- Target MCU
- Symptoms (Fails blank check/Cannot write a program/Fails verification etc.)
- Detailed symptoms
- How often does the problem occur? (2 out of 10 etc.)
- When did the problem start to occur? (Since purchase/Used to work correctly)
- Type name of the PROM programmer (Advantest R4945A etc.)
- Specified device when writing to PROM (M27C101 etc.)
- Specified programming area when writing to PROM
- Switch settings of the adapter when writing to PROM

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