EPSON
EXCEED YOUR VISION

S1C88 Family, For S1C88Family Flash microcomputer

Multiple-Programming ROM Writer SoftWare (GW88)

SEIKO EPSON CORPORATION

Rev.1.0

NOTICE

No part of this material may be reproduced or duplicated in any form or by any means without the written permission of Seiko Epson. Seiko Epson reserves the right to make changes to this material without notice. Seiko Epson does not assume any liability of any kind arising out of any inaccuracies contained in this material or due to its application or use in any product or circuit and, further, there is no representation that this material is applicable to products requiring high level reliability, such as, medical products. Moreover, no license to any intellectual property rights is granted by implication or otherwise, and there is no representation or warranty that anything made in accordance with this material will be free from any patent or copyright infringement of a third party. This material or portions thereof may contain technology or the subject relating to strategic products under the control of the Foreign Exchange and Foreign Trade Law of Japan and may require an export license from the Ministry of Economy, Trade and Industry or other approval from another government agency.

All other product names mentioned herein are trademarks and/or registered trademarks of their respective companies.

©SEIKO EPSON CORPORATION 2008, All rights reserved.

Table of Contents

1. OVERVIEW OF MULTIPLE-PROGRAMMING ROM WRITER SOFTWARE (GW88)..... 1

2. HOW TO DO PROM PROGRAMMING 2

2.1 System environments required for PROM programming 2

2.2 Connection within PROM Programming System 3

2.3 PROM Programming Steps 4

2.4 PROM Programming 7

2.5 Multiple-Programming ROM Writer SoftWare 10

2.5.1 How to Start the Software 10

2.5.2 Setting Up the Protect 11

2.5.3 Changing MCU Type 11

2.5.4 How to Use the Software 12

2.5.4.1 LOAD (PSA FILE) 13

2.5.4.2 PROGRAM 14

2.6 Command List 15

2.7 Error Message List 15

1. OVERVIEW OF MULTIPLE-PROGRAMMING ROM WRITER SOFTWARE (GW88)

The Multiple-Programming ROM Writer SoftWare (GW88) is a tool to write user data to Flash memory inside microcomputer by connecting several sets of OnBoardWriter (S5U1C88000W41) through a PC or USB hub. It can write up to 10 channels at the same time. The Multiple-Programming ROM Writer SoftWare supports only S1C88Family Flash built-in microcomputers.

■Configuration
- USB-Serial on Board Writer (Model name : S5U1C88000W4)
- Multiple-Programming ROM Writer SoftWare (GW88.EXE)
- USB-Serial conversion driver [*1]

Operating voltage : 3.3±0.3 V (C8F626: shared with the operating power supply voltage for a target board)
: 5.0 ±0.3 V (C8F360: shared with the operating power supply voltage for a target)
Interface with PC : USB ver. 1.1

Caution!
When using an external USB hub to connect this board, use a USB hub allowing external power supply to input the external power supply.

[*1]USB-Serial conversion driver is included in the S1C88 Family Integrated tool Package (S5U1C88000C1) ver.6 or later.

2. HOW TO DO PROM PROGRAMMING

2.1 System environments required for PROM programming

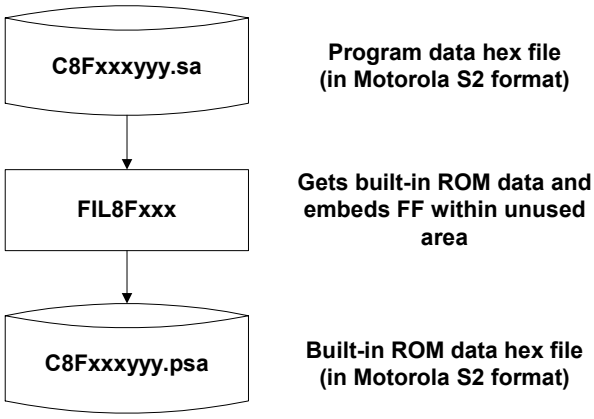
Prepare first a PC to be used as host computer with the following configuration, second a pertinent tool to write to PROM, and then data to be written to a target microcomputer.

(1) PC
- IBM-PC/AT or compatible machine with USB ports

(2) OS
- Japanese/English version Windows2000/XP

(3) A tool to write to PROM
- S5U1C88000W4 (up to 10 sets)
- Multiple-Programming ROM Writer SoftWare (GW88.EXE)
- USB-Serial conversion driver [*1]

(4) User data (PROM data hex file)
Execute FIL8Fxxx to create a hex file (C8Fxxxyyy.PSA) for built-in PROM from a program data hex file (C8Fxxxyyy.SA). For details on FIL8Fxxx, refer to the S5U1C88000C manual.[*1]

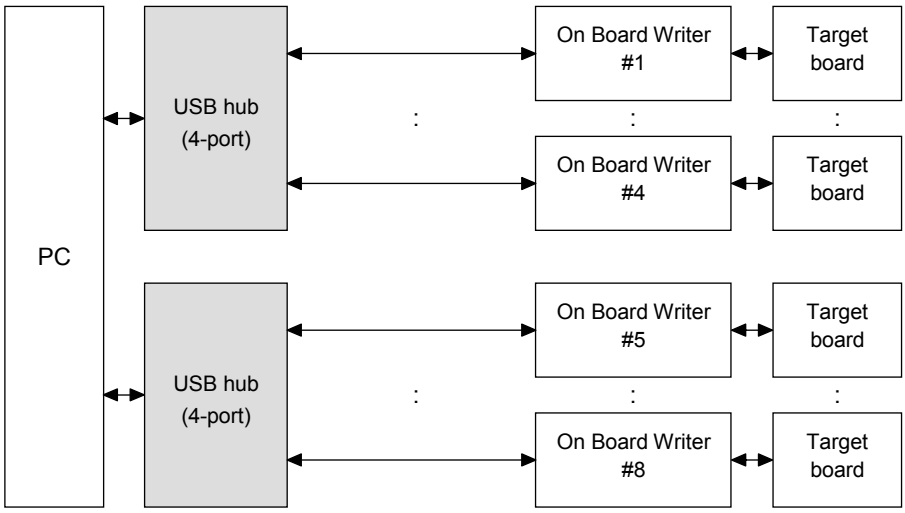


[*1]USB-Serial conversion driver is included in the 6 or later version of the integrated tool package (S5U1C88000C1).

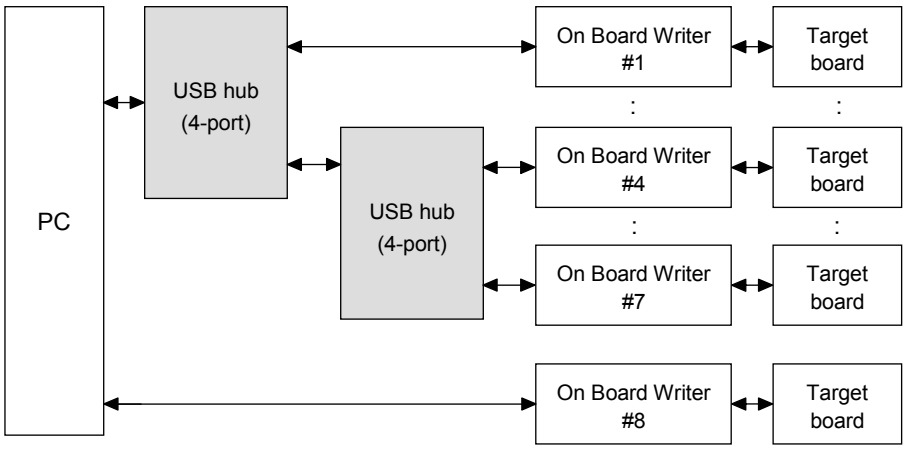
2.2 Connection within PROM Programming System

The following diagram shows the connection of a PC, USB hubs, the USB-Serial on Board Writer (S5U1C88000W4) sets, and target boards.

■4 sets of the on Board Writer are connected to a 4-port hub (When 8 devices are connected).



■A 4-port hub is connected to another 4-port hub. (When 8 devices are connected).



Caution!
When using an external USB hub to connect this board, be sure to use a USB hub allowing external power supply to input the external power supply.

2.3 PROM Programming Steps

(1) Connecting the USB-Serial on Board Writer to a PC
Refer to Section 2.2 to connect the USB-Serial on Board Writer (S5U1C8800W4) with a PC. When using the on Board Writer, the connection may be made after turning on the PC.

(2) Turning ON the PC
Turn ON the power of the PC.

(3) Installing the tool package
Install the S1C88Family integrated tool package (S5U1C88000C1). For information about the installation procedure, refer to the S5U1C88000C manual.

(4) Installing USB-Serial conversion driver
The driver installation dialog appears on the PC screen. Follow the steps indicated on the screen to install the driver. The USB-Serial conversion driver is located in "¥EPSON¥S1C88¥writer¥driver", a folder created after installing the 6 or later version of the S1C88Family integrated tool package (S5U1C88000C1). This folder must be specified.

Caution!
- **The same number of drivers must be installed as that of the USB-Serial on Board Writer (S5U1C8800W4) connected.**

(5) Preparing the Multiple-Programming ROM Writer SoftWare
Create the "GW" folder under "¥EPSON¥S1C88¥writer" that has been created after installing the S1C88Family integrated tool package (S5U1C88000C1), then copy following files to any folder in the PC.
- GW88.EXE

(6) Connecting targets to the USB-Serial on Board Writer
Refer to Section 2.2 to connect targets to the USB-Serial on Board Writer (S5U1C8800W4) using attached SIO cables.

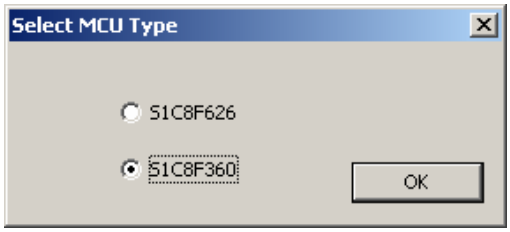
(7) Connecting the target power supply
Connect the PROM programming power supply (3.3 V or 5.0 V) to target boards.

Caution!
- **If other power supply except the PROM programming power supply is connected to targets, this power supply must be turned OFF.**
- **Because the PROM programming voltage is defined for each model of microcomputer, be aware of the pertinent supply voltage. Be aware also of the rated voltage allowed for each component on target boards.**
- **Set the power supply voltage to 5.0 V for the use of S1C8F360, whereas 3.3 V for S1C8F626.**

(8) Turning on PROM programming
Turn on the power for PROM programming. Then the power is supplied to the USB-Serial on Board Writer (S5U1C88000W4) via SIO cable.

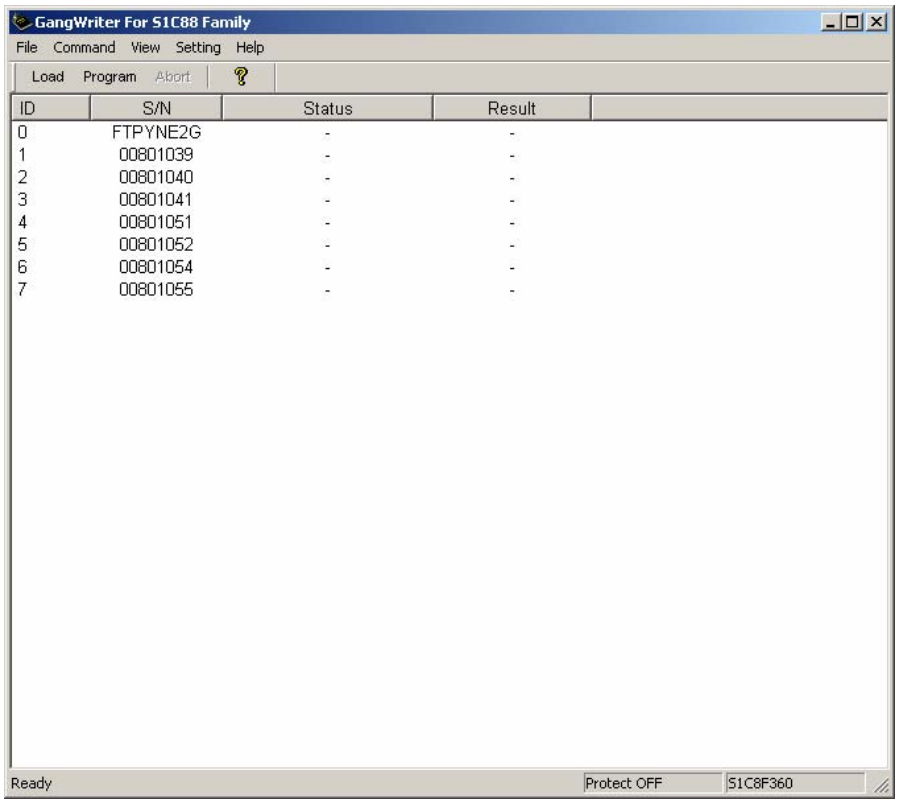
(9) Starting the Multiple-Programming ROM Writer SoftWare

Double-click GW88.EXE.
When the Multiple-Programming ROM Writer SoftWare has been started, the [Select MCU Type] dialog box appears.



Select the radio button for the target microcomputer type, then click OK button.

The step displays the following panel.



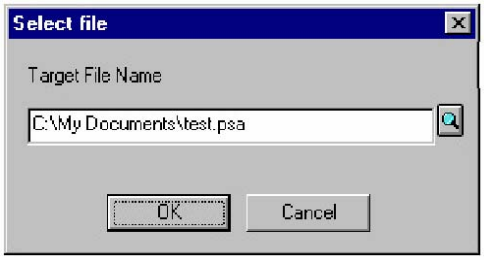
ID : The number assigned to the USB-Serial on Board Writer (S5U1C88000W4) that is connected when starting the Multiple-Programming ROM Writer SoftWare.
S/N : The serial number belonging to the USB-Serial on Board Writer (S5U1C88000W4)
Status : Execution contents and detailed results
Result : Progress and result

Caution!
Even by disconnecting and then reconnecting, the USB-Serial on Board Writer (S5U1C88000W4) is not recognized anew while the Multiple-Programming ROM Writer SoftWare is activated. To change the number of the USB-Serial on Board Writer (S5U1C88000W4) sets, therefore, exit and restart the Multiple-Programming ROM Writer SoftWare.

(10) Loading user data

Clicking the [Load] button (or selecting [Load] from the [Command] menu) displays the [Select file] dialog box.

Load [Load] button



Select a PSA file using the [Browse] button, then click [OK] button.

[Browse] button

If the data has been loaded successfully, "Complete" is displayed in the output panel.

(11) Writing user data

Clicking the [Program] button (or selecting [Program] from the [Command] menu) starts the processes of erasing, writing to and protecting PROM. *1

Program [Program] button

"Complete" is displayed in the status field, while "OK" is in the result field if the processes are completed successfully.

Caution!

• If other application is brought to foreground during the processes, a communication error may occur.

*1 The PROM with data written by customers is read protected as default at shipment. When program is executed, contents of PROM are erased, and read protect is cancelled, and then user data is written to the PROM. The user data is also verified at the same time as being written.

(12) Turning OFF the power of PROM programming

Turn OFF the power of PROM programming on target boards.

(13) Disconnecting target boards

After making sure that writing has been completed successfully, disconnect the target board.

Caution: Target boards must not be disconnected or connected unless the PROM programming power is turned OFF.

(14) Exit the On Board Writer control software

Selecting [Exit] from the [File] menu in the on Board Writer control window, or clicking the close box exits the software. If you continue writing process, repeat the steps (10) to (13).

(15) Turning OFF PC

Turn OFF the power of the PC.

2.4 PROM Programming

Figures 2.4.1 (a) and (b) show the connection diagram on a target board, whereas tables 2.4.1 (a) and (b) show signal specifications.

■When using S1C8F626

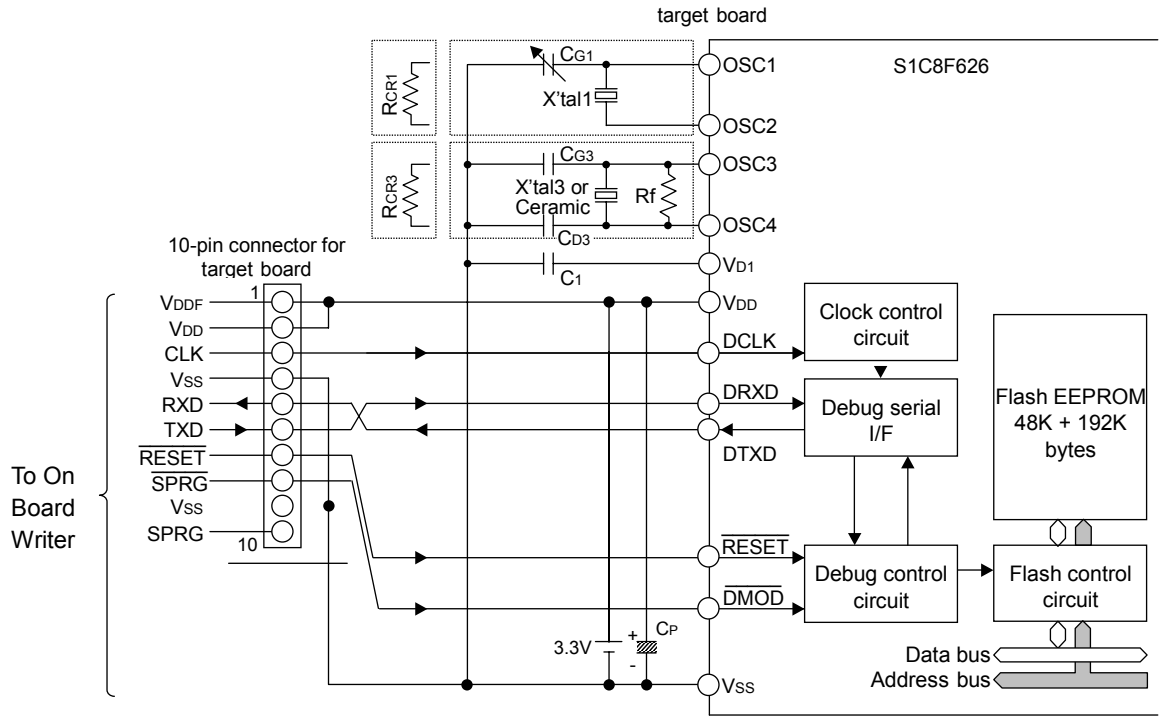


Fig.2.4.1(a) On-board programming connection diagram

Table 2.4.1(a) Signal specifications

Connector pin No.	Signal name	Function	Microcomputer connected to
1	VDDF	Programming power supply pin	VDD pin
2	VDD	Power supply pin	VDD pin
3	CLK	System clock output	DCLK pin
4	Vss	GND pin	Vss pin
5	RXD	Serial I/F data input	DTXD pin
6	TXD	Serial I/F data output	DRXD pin
7	/RESET	Initial reset output	/RESET pin
8	/SPRG	Programming mode setup output (for negative polarity type)	/DMOD pin
9	Vss	GND pin	Vss pin
10	SPRG	Programming mode setup output (for positive polarity type)	N.C.

Table 2.4.2(a) Connector components for connecting the USB-Serial on Board Writer

Name	Model name
Box header (plug) [on the target side]	3662-6002LCPL (3M) or equivalent
Socket connector (receptacle) [on the SIO cable side]	Socket connector 7910-B500FL (3M) Strain relief 3448-7910 (3M) or equivalent

■When using S1C8F360

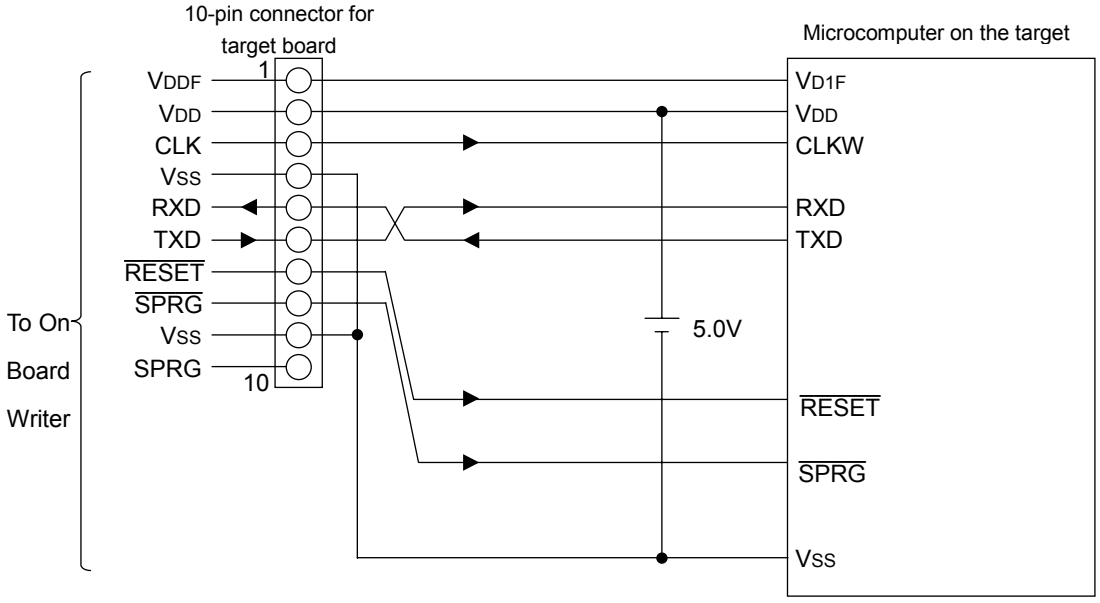


Fig.2.4.1(b) On-board programming connection diagram

Table 2.4.1(b) Signal specifications

Connector pin No.	Signal name	Function	Microcomputer connected to
1	VDDF	Programming power supply pin	VD1F pin
2	VDD	Power supply pin	VDD pin
3	CLK	System clock output	CLKW pin
4	Vss	GND pin	Vss pin
5	RXD	Serial I/F data input	TXD pin
6	TXD	Serial I/F data output	RXD pin
7	/RESET	Initial reset output	/RESET pin
8	/SPRG	Programming mode setup output (for negative polarity type)	/SPRG pin
9	Vss	GND pin	Vss pin
10	SPRG	Programming mode setup output (for positive polarity type)	N.C.

Table 2.4.2(b) Connector components for connecting the USB-Serial on Board Writer

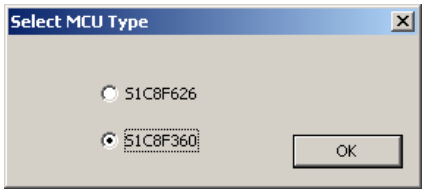
Name	Model name
Box header (plug) [on the target side]	3662-6002LCPL (3M) or equivalent
Socket connector (receptacle) [on the SIO cable side]	Socket connector 7910-B500FL (3M) Strain relief 3448-7910 (3M) or equivalent

2.5 Multiple-Programming ROM Writer SoftWare

2.5.1 How to Start the Software

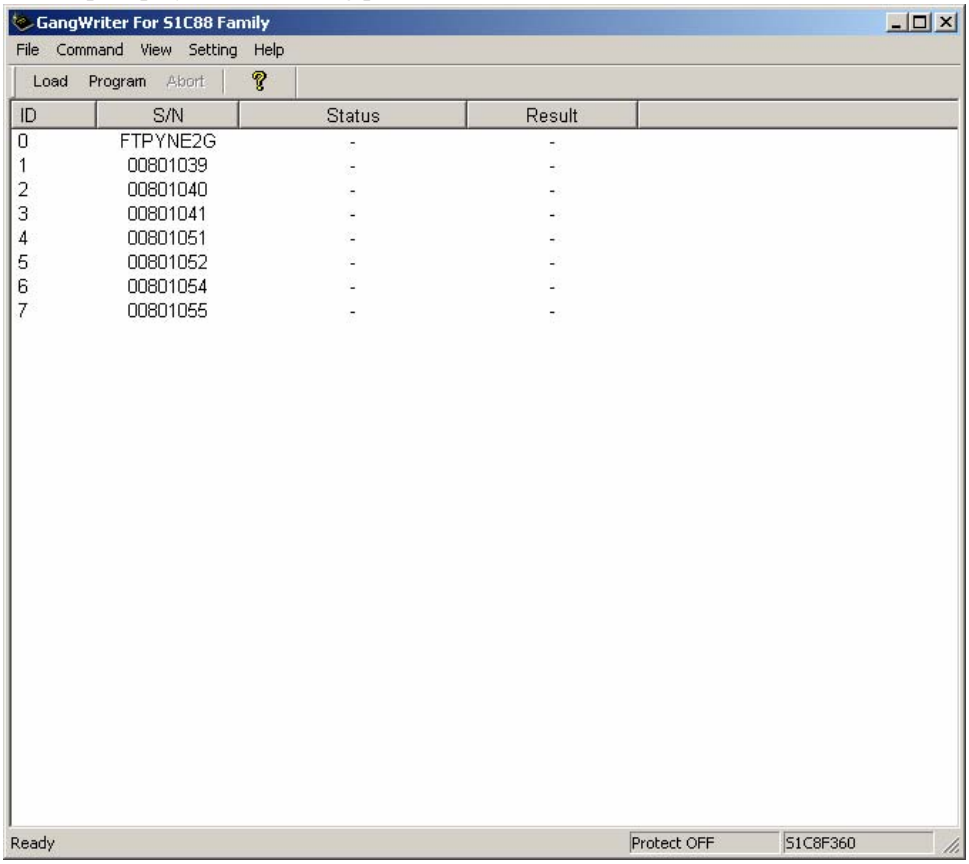
To start the Multiple-Programming ROM Writer SoftWare, double click GW88.EXE.

When the software has been started, the following dialog box appears.



Select the radio button for the target microcomputer type, then click OK button.

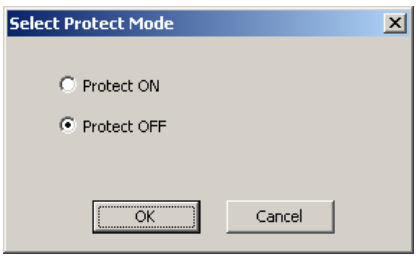
The step displays the following panel.



ID : The number assigned to the USB-Serial on Board Writer (S5U1C88000W4) that is connected when starting the Multiple-Programming ROM Writer SoftWare.
S/N : The serial number belonging to the USB-Serial on Board Writer (S5U1C88000W4)
Status : Execution contents and detailed results
Result : Progress and result

2.5.2 Setting Up the Protect

When clicking the protected mode from the [Setting] menu, the [Select Protect Mode] dialog box appears.
Default setting is Protected On when GW88 is started.
Change the Protect setting accordingly if necessary.

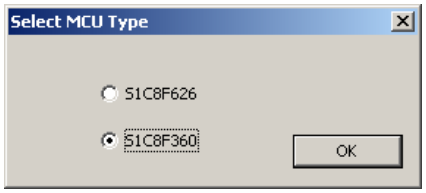


Caution!

- **The Protect is executed not immediately after completing the setting but when executing the program.**

2.5.3 Changing MCU Type

When clicking the Select CPU from the [Setting] menu, the [Select MCU Type] dialog box appears.
To change the MCU type of a target after starting GW88, select the MCU type to change and click OK button.



2.5.4 How to Use the Software

The write to PROM and all other commands can be executed using buttons in the window. This section explains each of the commands using the following format.

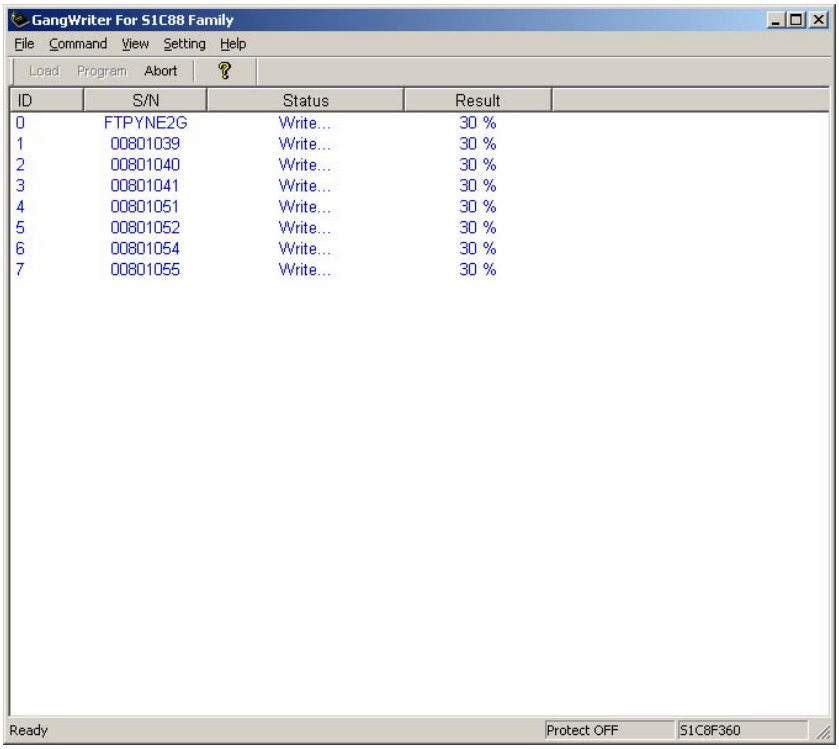
Function : Explains function of the command.

Execution : Button Program

Menu [Command] Menu [Program]

Shows the button and menu used to execute the command.

Operation : Shows how the command operates or displays after being executed.



Caution : Describes things to be noted.

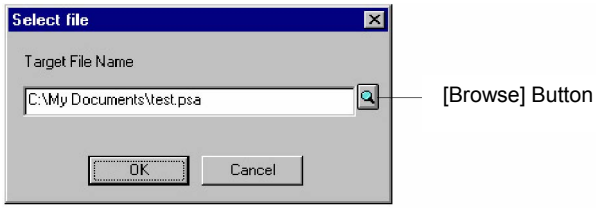
2.5.4.1 LOAD (PSA FILE)

Function : Loads the user data file (with .PSA extension) onto memory in a PC.

Excution : Button Load

Menu [Command] Menu [Load]

Operation : (1) Displays the [Select file] dialog box.



(2) Clicking the [Browse] button displays the Windows standard file selection dialog box. Select a file to be loaded from the dialog box. Then click [OK] to load the file.

Caution : Only Motorola S2 formatted files can be downloaded. The program cannot be executed for files with any other format.

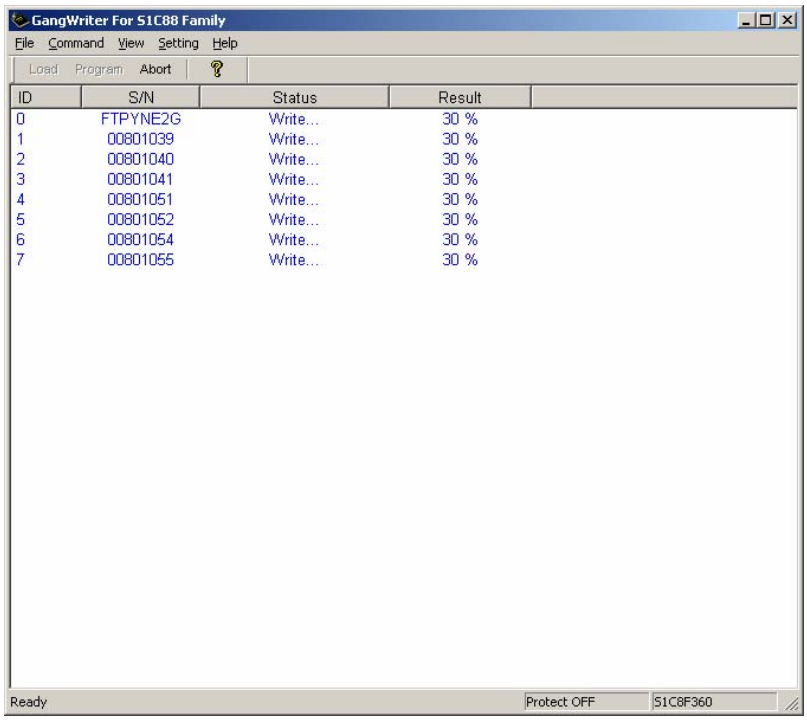
2.5.4.2 PROGRAM

Function : Writes data that has been loaded by the [Load] command to PROM.

Execution : Button Program

Menu [Command] Menu [Program]

Operation : (1) Starts executing processes in the order of erasing, writing and protecting when the program is clicked.
(2) The progress of processing is displayed in the status field of the main window. Clicking the [Abort] button aborts the processing.



(3) "Complete" is displayed in the status field, while "OK" is in the result field if the processes are completed successfully.

Caution : If other application is brought to foreground during the processes, a communication error may occur.

2.6 Command List

Table 2.6.1 Commands list

No.	Menu	Button	Function
1	[Command]-[Load]	Load	Loads a PSA file
4	[Command]-[Program]	Program	Writes PROM data

2.7 Error Message List

Error message	Description
Timeout	Communication timeout
NAK receive	Communication error
Send Error	Communication error
Verify Error	Verify error
Protected Error	Read protected
User Abort	The process is aborted.
Complete	Succeeded

EPSON

International Sales Operations

AMERICA

EPSON ELECTRONICS AMERICA, INC.
HEADQUARTERS
2580 Orchard Parkway
San Jose , CA 95131,USA
Phone: +1-800-228-3964 FAX: +1-408-922-0238

SALES OFFICES
Northeast
301 Edgewater Place, Suite 210
Wakefield, MA 01880, U.S.A.
Phone: +1-800-922-7667 FAX: +1-781-246-5443

EUROPE

EPSON EUROPE ELECTRONICS GmbH
HEADQUARTERS
Riesstrasse 15 Muenchen Bayern,
80992 GERMANY
Phone: +49-89-14005-0 FAX: +49-89-14005-110

ASIA

EPSON (CHINA) CO., LTD.
7F, Jinbao Bldg.,No.89 Jinbao St.,
Dongcheng District,
Beijing 100005, China
Phone: +86-10-6410-6655 FAX: +86-10-6410-7320

SHANGHAI BRANCH
7F, Block B, Hi-Tech Bldg., 900, Yishan Road,
Shanghai 200233, CHINA
Phone: +86-21-5423-5522 FAX: +86-21-5423-5512

EPSON HONG KONG LTD.
20/F., Harbour Centre, 25 Harbour Road
Wanchai, Hong Kong
Phone: +852-2585-4600 FAX: +852-2827-4346
Telex: 65542 EPSCO HX

EPSON (CHINA) CO., LTD.
SHENZHEN BRANCH
12/F, Dawning Mansion, Keji South 12th Road,
Hi- Tech Park, Shenzhen
Phone: +86-755-2699-3828 FAX: +86-755-2699-3838

EPSON TAIWAN TECHNOLOGY & TRADING LTD.
14F, No. 7, Song Ren Road,
Taipei 110
Phone: +886-2-8786-6688 FAX: +886-2-8786-6660

EPSON SINGAPORE PTE., LTD.
1 HarbourFront Place,
#03-02 HarbourFront Tower One, Singapore 098633
Phone: +65-6586-5500 FAX: +65-6271-3182

SEIKO EPSON CORPORATION
KOREA OFFICE
50F, KLI 63 Bldg., 60 Yoido-dong
Youngdeungpo-Ku, Seoul, 150-763, KOREA
Phone: +82-2-784-6027 FAX: +82-2-767-3677

GUMI OFFICE
2F, Grand B/D, 457-4 Songjeong-dong,
Gumi-City, KOREA
Phone: +82-54-454-6027 FAX: +82-54-454-6093

SEIKO EPSON CORPORATION
SEMICONDUCTOR OPERATIONS DIVISION

IC Sales Dept.
IC International Sales Group
421-8, Hino, Hino-shi, Tokyo 191-8501, JAPAN
Phone: +81-42-587-5814 FAX: +81-42-587-5117

Document Code: 411502900
First issue May 2008 in JAPAN