EPSON

Application Manual

SG-WRITERII

SEIKO EPSON CORPORATION

Before Use

⚫ **Please read the instructions carefully and use correctly**

For safe usage

Guide to symbols

The following signs are used in order to ensure correct and safe product usage and to prevent personal injury or property damage.
Their meanings are as follows. Please read and understand the contents before reading the text.

⚠ WARNING   This mark indicates the nature of a hazard that could potentially result in death or serious injury if instructions are ignored and the product is used improperly.

⚠ CAUTION   This mark indicates the nature of potential personal injuries or potential property damage if instructions are ignored and the product is used improperly.

Safety Precautions

⚠ WARNING

⚫ The product referred to in this document is for general consumer use. Do not use it in a life support system or in other applications that require extremely high reliability.

⚫ Do not continue operating if you notice smoke, unusual odors or sounds.
   Continued operation may result in electric shock or fire.
   Immediately remove the USB cable and contact your dealer or your nearest EPSON sales representative.
   Due to the danger, do not attempt repairs yourself.

⚫ Do not disassemble or modify the product in any way.
   Doing so may result in injury, electric shock or fire.

⚫ Do not supply power from sources other than the USB cable
   Using other power sources may result in electric shock or fire.

⚫ Do not handle the USB cable with wet hands.
   Doing so may result in electric shock.

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<table>
<tr><td colspan="1" align="center">⚠ WARNING (Continued)</td></tr>
</table>

- Do not insert or drop any foreign objects into the product.
  Doing so may result in fire or electric shock.

- If water or other liquid enters the product, immediately remove the USB cable and contact your dealer or your nearest EPSON sales representative.
  There is the risk of fire or electric shock.

<table>
<tr><td colspan="1" align="center">⚠ CAUTION</td></tr>
</table>

- Do not place the product on an unstable surface (such as an unsteady table or inclined surface)
  Doing so could result in injury should the product fall or collapse.

- Do not install or store in dusty locations or locations subject to high humidity.
  Doing so could result in breakdown, fire or electric shock.

- Do not climb or place heavy objects on this product.
  Doing so could result in injury from falling or breakage.

- To ensure safety, remove the USB cable when the product is not in use.

- Abide by national and local regulations when disposing of this product. Please ask about the regulations in your country and locality.

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1. SG-WRITER Components

1)Components
- SG-WRITERII
- Documents
- Please download SG-Writer software and USB Driver from HP.
  http://www5.epsondevice.com/en/information/support/sg8000/sg_writer2_software.html

2) Customer-prepared Items
(1) PC
- Available OS: Windows 7(32bit, 64bit), Windows Vista(32bit), Windows XP(32bit)
- Recommend CPU: Pentium4 1.4GHz or better
- Recommended memory capacity: Over 512MB(Windows XP 32bit), Over 1GB(Windows 7/Vista 32bit), Over 2GB(Windws7/Vista 64bit).

(2) USB Cable (mini B)

2. USB Driver Installation
1) Driver Package
WinUSBDriver folder
- x86 folder: driver files for 32bit version Windows7, Vista.
- ams64 folder: driver files for 64bit version Windows7, Vista.
- XP_x86 folder: driver files for 32bit version Windows XP.

2) Installation Procedure
(1) Installation procedure for systems running Windows 7/Vista

a. Run dpinst.exe in the amd64 folder for 64bit version windows, and in the x86 folder for 32bit version Windows.

b. The "Welcome to the Device Driver Installation Wizard!" dialog appears. Click "Next".

c. The "Would you like to install this device software?" dialog appears. Click "Install".

d. Driver installation is complete, so click "Finish".

(2) Installation procedure for Windows XP

a. Connect the SG-WRITER to the USB port.

b. The "Found New Hardware Wizard" dialog appears. Check the "Install from a list or specified location" box (name may be slightly different), then click "Next".

c. Click the "Search for the best driver in these locations." radio button.

d. Check the "Include this location in the search:" box, and click "Browse...", and specify the directory "XP_x86". After specifying the directory, click "OK".

e. Because the driver has not passed WHQL certification for Windows XP, a warning message appears. Click "Continue" to move to the next step.

f. Driver installation is complete, so click "Finish".

3) Uninstall Procedure

(1) Uninstall procedure for Windows 7/Vista

Click on the Start menu, and click "Control Panel".
Click "Uninstall a program" to view a list of currently installed programs.
Then, double-click "Windows Driver Package – SEIKO EPSON CORPORATION(WinUSB) USB" In the list.
The "All devices using this driver will be removed. Do you wish to continue?" dialog appears. Click "OK".

(2) Uninstall procedure for Windows XP

a. Launch Device Manager.
Click on the Start menu, go to "Settings" and click "Control Panel". Double-click the "System" icon to display the "System Properties" screen. Click the "Hardware" tab, then click the "Device Manager…" button to launch Device Manager.

b. Delete the driver.
Click "Universal Serial Bus controllers" to view a list of controllers contained therein. Then, double-click "EPSON SGWRITERII" In the PROM Writer Properties window, click on the "Driver" tab, and then click "Uninstall." The "Confirm Device Removal" dialog appears. Click "OK".

3. Software Installation

∗Please download SG-Writer software from HP.

1) Software structure
- SGWriter.exe   - executable program file
- Sglib.dll   - library file
- SGWriterLib03.dll   - library file
- SGWriterLib04.dll   - library file
- mfc100.dll   - run time library
- msvcr100.dll   - run time library

2) Installation Procedure
a. Copy software files to the same directory.
b. Connect the SG-WRITER to a PC. A USB cable is required.
c. Double-click the executable file SGWriter.exe
d. "Select Deivce" window is appeared.
   Click the button of the device to programming.
   - SG-8002 / SG-8003, SG-8101 / SG-9101, SG85xx
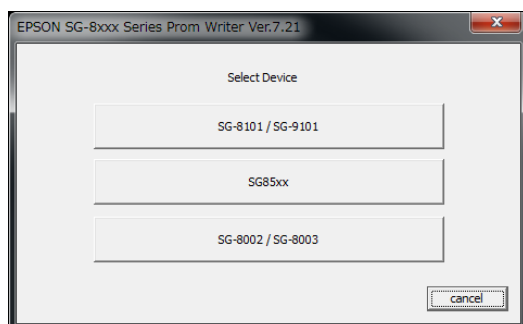
.net framework 4
   To use this software. The installation of net framework4 is needed. Please the warning message "Please install microsoft .net framework 4." must be displayed when it is not installed, and download from the site of Microsoft, and install it. Please refer to the Web site of Microsoft for the installation method.
   https://www.microsoft.com/en-us/download/details.aspx?id=17718
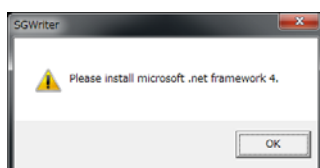
   If "SG-8002/SG-8003" is clicked when the SG-WRITER is not connected to a PC, a screen such as that shown below appears, and the software will start up in a mode that enables calculations only. To write and perform measurements, click "No." Then, after checking that the SG-WRITER and PC are connected, once again double-click SGWriter.exe to execute the program.
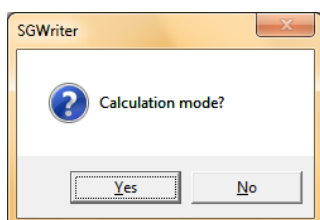
4. SG-8101/SG-9101   Operation Procedures

4-1. SG-8101/SG-9101   Programming Operation

a. Enter Operation Buttons
    (1) Model name   Select SG-8101 / SG-9101
    (2) Package type   Select package CA/CB/CE/CG
    (3) Frequency   Enter frequency
    (4) Vcc   Select power voltage
    (5) Temperature   Select   G:-40~+85degC/H:-40~+105degC
    (6) OE Function   Select OE Terminal Function   P(Output Enable) / S(Standby)
    (7) Slew rate   Select Slew rate A:Default/B:Fast/C:Slow
    (8) Tolerance   Select frequency tolerance   B/C/J
    (9) SS Function (SG-9101)
                          Select Modulation, rate, Profile

b. Click "CheckParameter" button.
    When Programing is possible, "Burn" button is enabled.
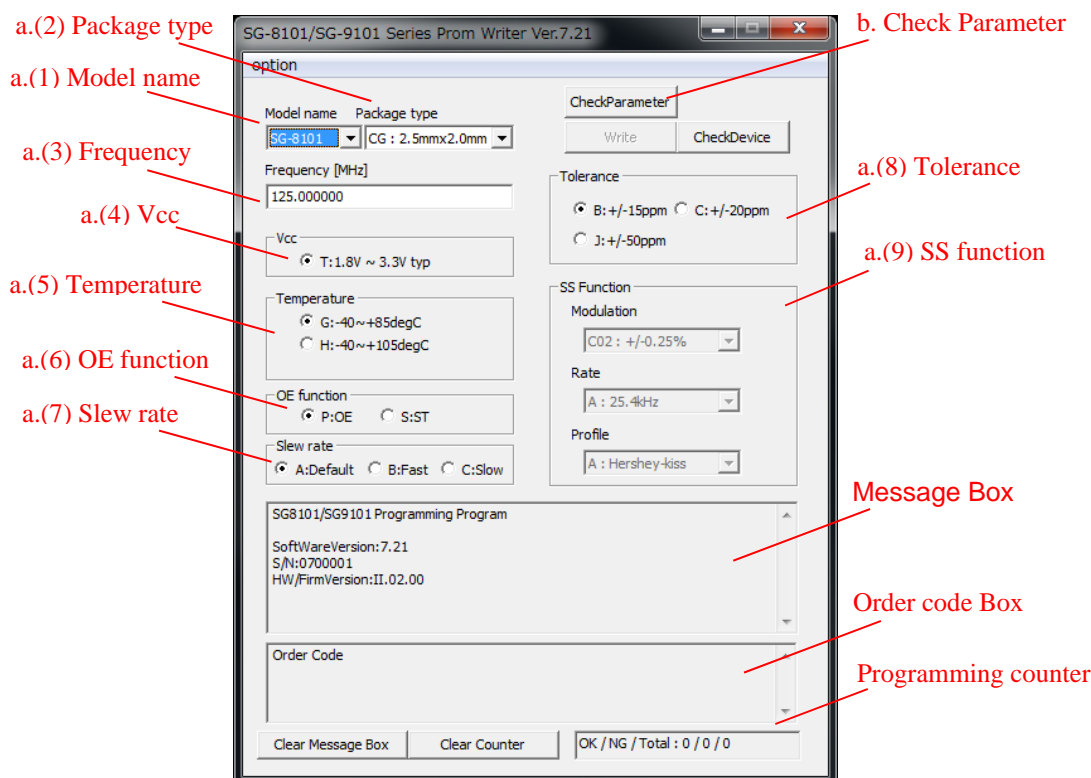
c.   Set the product (SG8101/SG9101) in the PROM WRITER socket.
    • Set the product with the lever up. SMD devices need adapter socket
    • Keep the product in place by lowering the lever.
    • Do not carry the product (SG8101/SG9101) in your hand.
   • Do not expose the product to static electricity.   (Remove electricity with a wrist strap.)

d. Execute Writing, Click the "Burn" button.

e. In the case of acceptable product, "Programming procedure … OK" will be displayed in the message box.
    An error message will be displayed in the case of defects.

f. Raise the lever and remove the product (SG8101/SG9101).
    • Do not carry the product (SG8101/SG9101) in your hand.
    • Do not expose to static electricity. (Remove electricity with a wrist strap, etc.)

d. "Write" Programming device
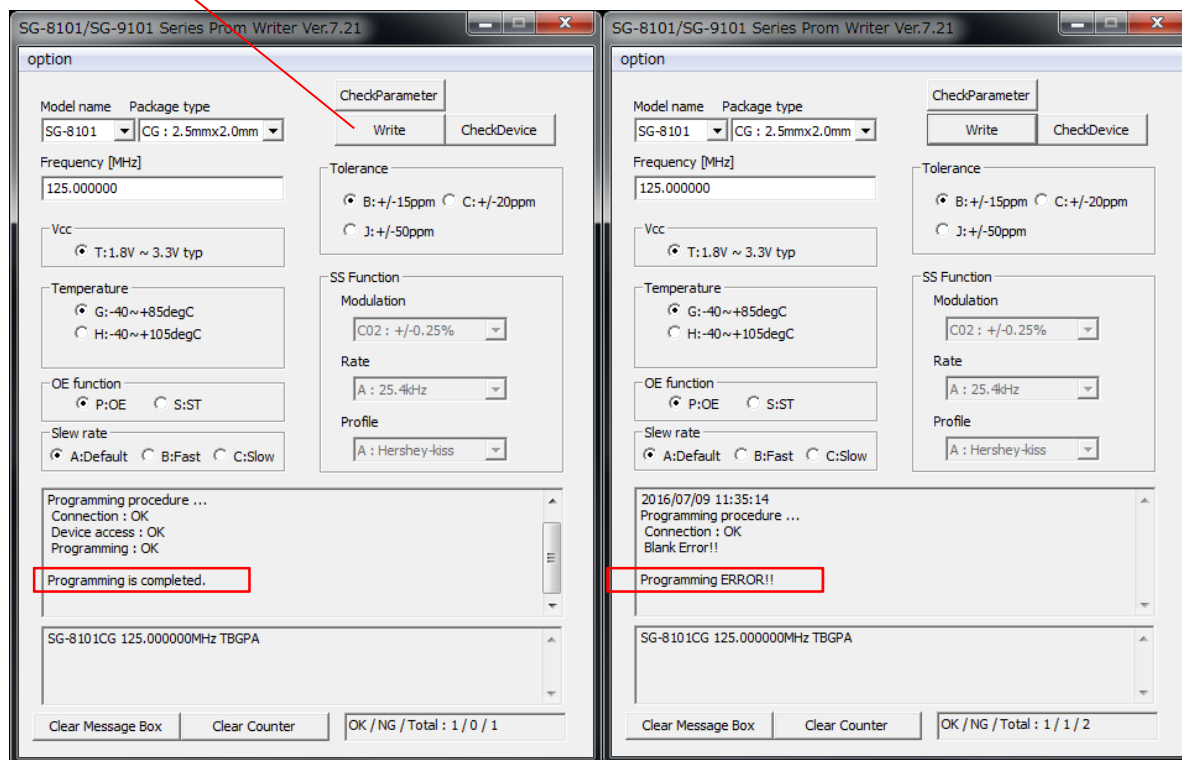
4-2. SG-8101/SG-9101 Check Device Operation

a) Set the product (SG8101/SG9101) in the PROM WRITER socket.

b) Execute "CheckDevice" button.

c) An Order Code or "Blank Sample" messages is displayed in the "Order code box"
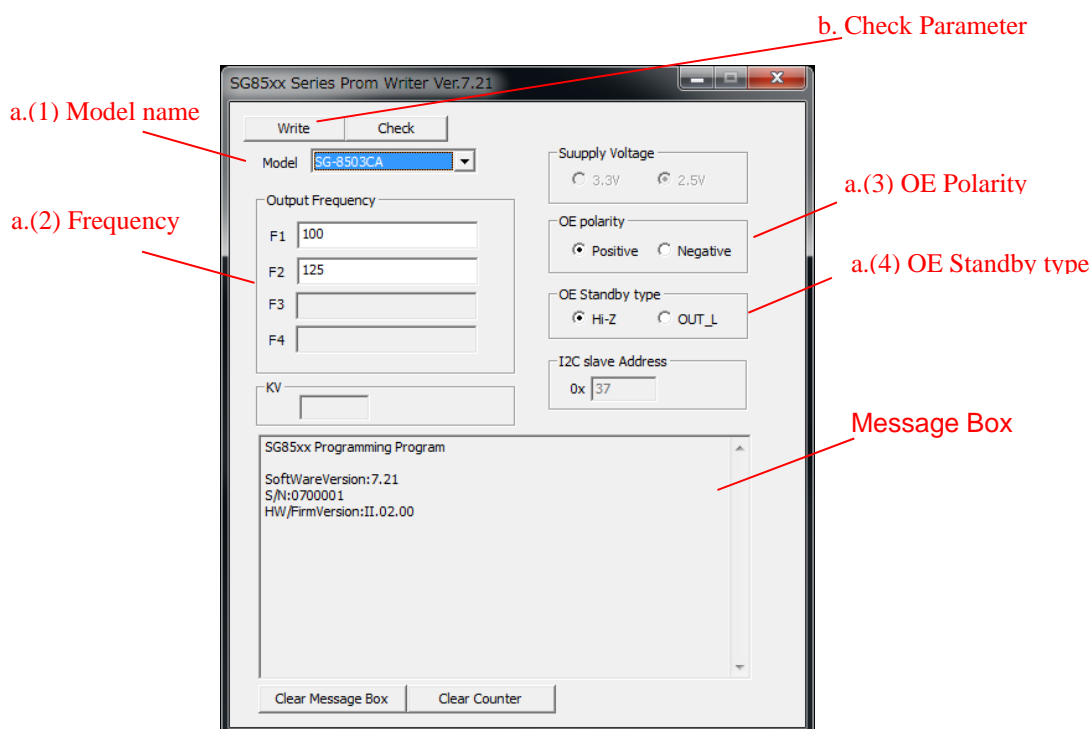

"CheckDevice"

Order code Box
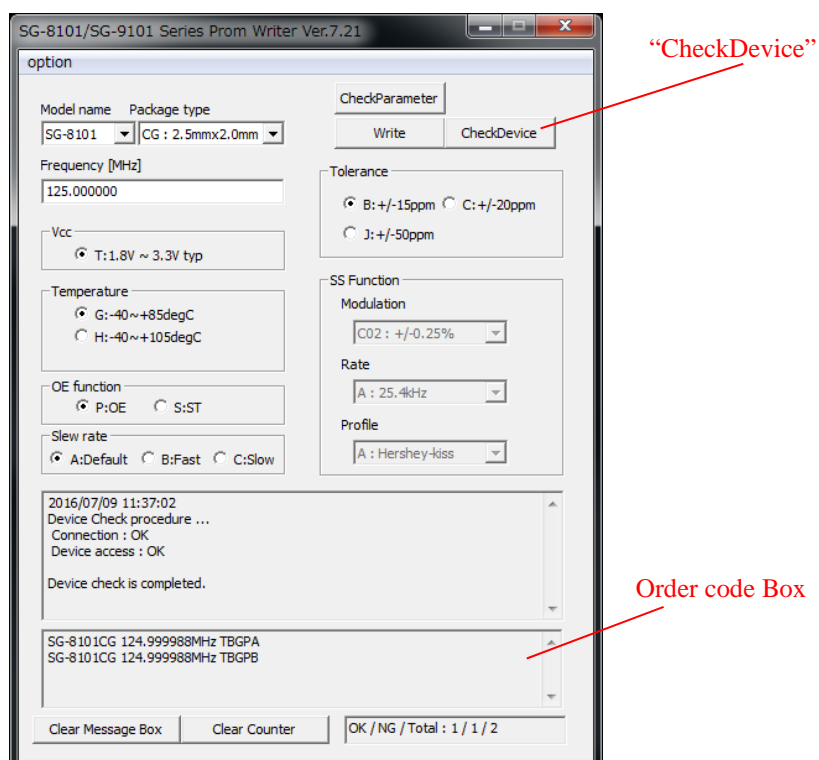
5. SG-85xx   Programming Procedures

5-1. SG-85xx   Programming Operation

a. Enter Operation Buttons
- (1) Model name   Select SG-8503CA / SG-8504CA / SG-8506CA
- (2) Frequency   Enter frequency
- (3) OE Polarity   Select OE Polarity   Positive / Negative
- (4) OE Standby type   Select OE Standby type   Hi-Z / OUT_L
- (5) I2C slave address   Enter I2C slave address(SG-8506CA)

b. Check Parameter

a.(1) Model name

a.(2) Frequency

a.(3) OE Polarity

a.(4) OE Standby type

Message Box

c.   Set the product (SG85xx) in the PROM WRITER socket.
- Set the product with the lever up. SMD devices need adapter socket
- Keep the product in place by lowering the lever.
- Do not carry the product (SG85xx) in your hand.
- Do not expose the product to static electricity.   (Remove electricity with a wrist strap.)

d. Execute Writing, Click the "Write" button.

e. In the case of acceptable product, "Programming is completed!!" will be displayed in the message box.
   An error message will be displayed in the case of defects.

f. Raise the lever and remove the product (SG85xx).
- Do not carry the product (SG85xx) in your hand.
- Do not expose to static electricity. (Remove electricity with a wrist strap, etc.)

5-2. SG-85xx   Check Device Operation

a) Set the product (SG85xx) in the PROM WRITER socket.

b) Execute "Check" button.

c) Programmed settings or "Blank device" messages is displayed in the "Message box"

6. SG-8002/SG-8003 Operation Procedures

6-1. Operation
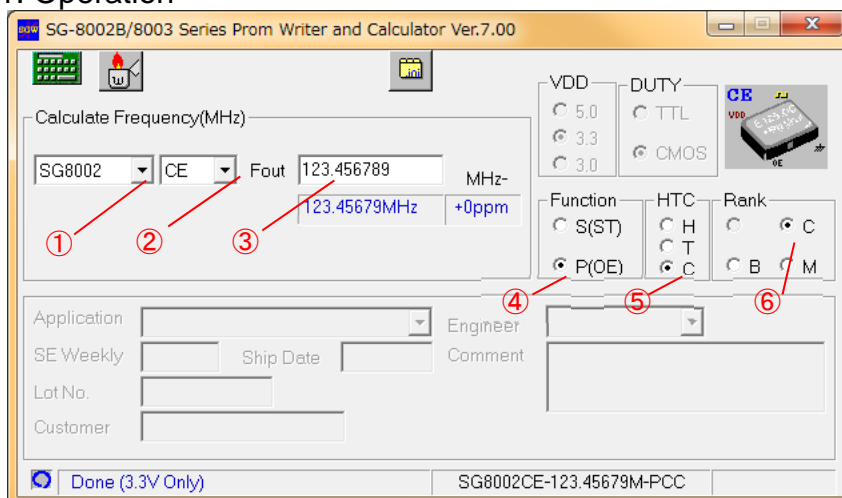
a. Enter Operation Buttons
- (1) Device   Select SG8002 / SG8003
- (2) Package Select package JA/JC/DB/DC/CA/CE/LB/LA/CG
- (3) Fout   Enter frequency
- (4) Function Select OE Terminal Function S (Standby) / P(Output Enable)
- (5) HTC   Select power voltage and output wave form H/T/C
- (6) Rank   Select frequency accuracy B/C/M

b. Execute Calculate button
- • Fcalc   Displays entered frequency
- • ppm   Displays deviation between Fout and Fcalc.
- • Message bar Message bar   Displays messages.

  ∗When writing is possible, the Writer button is enabled.

c. Execute the Writer button, and the Write and Test dialog is displayed.

d.   Set the product (SG8002/SG8003) in the PROM WRITER socket.
- • Set the product with the lever up. SMD devices need adapter socket
- • Keep the product in place by lowering the lever.
- • Do not carry the product (SG8002/SG8003) in your hand.
- • Do not expose the product to static electricity. (Remove electricity with a wrist strap.)

e. Execute the Write&Test button
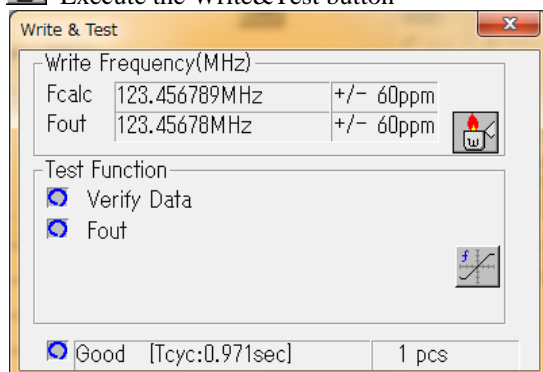
- • Do not expose the product and SG-WriterII to static electricity. (Remove electricity with a wrist strap.)

f. Acceptable and defective products will be marked with an O or × respectively.   An error message in addition to the × will be displayed in the case of defects.

g. Raise the lever and remove the product (SG8002/SG8003).
- • Do not carry the product (SG8002/SG8003) in your hand.
- • Do not expose to static electricity. (Remove electricity with a wrist strap, etc.)

Calculation mode
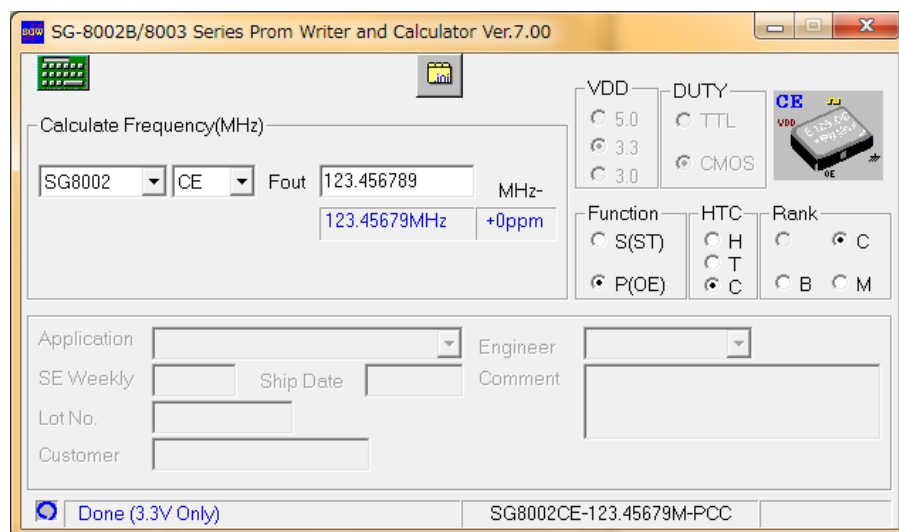
This mode can perform calculations only and can check whether a frequency is writable or not.

As with item 1), operations can be performed, but the ⊞ button does not appear. To perform writes / measurements, exit the software, connect the SG-WRITER to a PC, then relaunch the software.

6-2. Operation Buttons

1) Package Combo Box

This is the box for selecting the Package (JA/JC/DB/DC/CA/JF/CE/LB/LA/CG). Conditions for calculating change by package. Make sure they are right for your product. (If you selected SG8002JC, you will not be able to select M Rank.)

2) Fout Edit Box

This is the frequency input box. To improve calculating accuracy, please enter to six decimal places. The range of frequencies for which input is possible is from 1~125MHz (this can differ by condition):SG8002, 1~166MHz:SG8003. If you enter a value that clearly exceeds the range (ex 333.333), the Calculate button will be covered with the no mark , and you will be unable make calculations. The no mark will disappear and you will be able to calculate when a value within the range is entered.

3) Function Radio Button

This is the button for selecting the OE terminal function.

- When the S(ST) OE terminal is Low, the internal oscillation circuit stops, and power consumption decreases. (This is most appropriate for low power products.)
- When the P(OE) OE terminal is Low, output from the Fout terminal stops, but because the internal oscillation circuit is oscillating, the oscillation start time rises during the transition of the OE terminal from Low to High. (This is most appropriate for products requiring a high speed response.)

4) HTC Radio Button

This is the button for selecting electrical voltage and CMOS/TTL output.

- H   5.0V(4.5 ~ 5.5)   CMOS output
- T   5.0V(4.5 ~ 5.5)   TTL output
- C   3.3V(3.0 ~ 3.6)   CMOS output (for specifications of 3.0V please consult seller.)
- D   2.5V(2.2 ~ 2.8)   CMOS output
- E   1.8V(1.6 ~ 2.2)   CMOS output

5) Rank Radio Button

This is the button for selecting frequency accuracy.

- B: frequency accuracy of $\pm 50 \times 10^{-6}$(-20 °C ~ 70 °C)
- C: frequency accuracy of $\pm 100 \times 10^{-6}$ (-20 °C ~ 70 °C)
- M: frequency accuracy of $\pm 100 \times 10^{-6}$ (-40 °C ~ 85 °C)
- L: frequency accuracy of $\pm 50 \times 10^{-6}$ (-40 °C ~ 85 °C)

6-3. Calculate Button

This button is for calculating the most appropriate value from frequency (Fout) and conditions (Function / HTC / Rank). Deviance from frequency is displayed in blue letters in the Fcalc/ppm display area (bottom of Fout).

- This appears when the frequency exceeds the range and when calculating. It means that a calculation cannot be done.
- Fcalc frequency is displayed to five decimal places.
- ppm is displayed in units of 1×10^{-6} (For accuracy reasons, less than 1×10^{-6} is not displayed.)
- There are cases where due to Package/HTC/Rank and other settings, unwritable frequencies emerge.

1) **Writable Frequencies**

The Writer button is enabled , and the deviance from written frequency is displayed in blue letters.

2) **Unwritable Frequencies**

"This frequency need to be confirmed by EPSON".is displayed. Please consult seller. When click OK button, A "No

answer ..." error is displayed in red in the Message bar, and Writer button is write disabled ⬜. Writing is not possible while this is displayed.

∗ This can change due to setting conditions (Package/Rank).

6-4. Write and Test

When this button 🖊 is clicked, the Write and Test dialog appears, and Write & Test 🖊 and Monitor 📈 become possible.
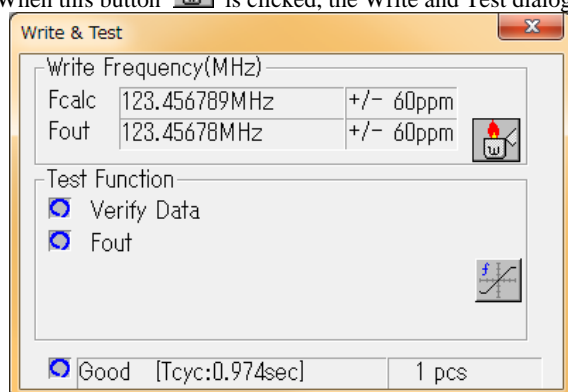
1) 🖊 (Write & Test)

This button is for Write and Test (Function Test).

- **Fcalc**   Displays written frequency (MHz) and acceptable deviance (ppm).
- **Fout**   Displays calculated value for output frequency (MHz) and deviance (ppm) from Fcalc.
        Less than 1×10^{-6} is not displayed.

- 🖊   Write enabled
- ⬜   Write disabled

2) 📈 (Monitor)

This button is for monitoring SG8002/SG8003 after writing. (Write and Data Verification cannot be performed.)   Test results are displayed as O ×to the left of the function.

- Verify Data   Function for comparing written data and data read by SG8002/SG8003
- Fout   Function for comparing output frequency and acceptable deviation

6-5. Configuration Button

This button 🔳 should be clicked when setting small details such as write conditions.

1) General Configuration
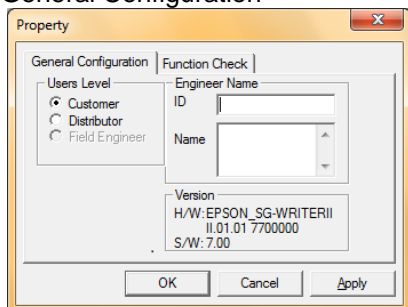
a) Users Level

- Customer Default

- Distributor Distributor settings
  Revision history is saved in a file.

b) Engineer Name
   This is necessary when Distributor is selected.   (It will be saved as information in a file under product revision.)
- ID   Enter company name, etc.
- Name   Enter user name, etc. (Up to 16 names can be entered.)

c) Version
   Current hardware and software versions are displayed.
- H/W Hardware Version
- S/W Software Version

2) Function Check
Displays content of Function Test.   (Everything is checked, but these values cannot be changed.)

7. **Hardware Specifications**

USB Connector

1) USB Connector
   A connector for connecting with a DOS/V USB port and USB cable (mini B).

2) Socket
   This is a socket for installing the SG8xxx Products other than the SG8xxxx should not be installed. This could cause a malfunction.
   1) Lever is up   Lever raises when the SG8xxx is ejected.
   2) Lever is in parallel position   Lever should be parallel when the SG8002/SG803 is writing, or being calibrated
   * For SMD devices, please use the adapter socket

3) Socket Pin Layout

No	Signal Name	No	Signal Name
1	OE	14	VDD
2	NC	13	NC
3	NC	12	NC
4	OE	11	VDD
5	OE	10	VDD
6	NC	9	NC
7	GND	8	FOUT

* Do not connect NC to anything

7) Operating Range

	Min.	Typ.	Max.	Unit	Comment
DC-IN	4.75	5	5.25	V	USB bus power
IDD		0.9	2.5	W	
VDD	0		8	V	
OE	0		13	V	
Environmental Temperature	10	25	40	°C	*1

*1 Do not write to the product (SG8xxx) above the environmental temperature.

8.Error Message

Table of Error Messages

Message	Content	Cause
Confirm connection Check USB connection	SG-WRITERII is not connected	USB cable is not connected
Check USB cable	SG-WRITERII is not connected	USB cable is not connected
Version error HW/Firm Version Error	Improper version	Wrong Hardware & Software versions
DLL Version error	Improper DLL version	Wrong software version
No answer	No calculation results or analysis	Unwritable frequency
Current Error Short Check error	Power is improperly flowing to device. ("Check Direction!" is displayed in message box.)	• Direction of devices is backward • Device is defective • SG-WRITERII is defective
Pin Error	Pins are not making contact	• Device is defective • Defective device connection • Device is not SG8002/SG8003
Blank Error	Device already written	• Device is defective • Defective device connection • Device is not SG8002/SG8003
Reference Error	Quartz frequency is out of appropriate range	• Packages are different • Device is defective • Defective device connection • Device is not SG8002/SG8003
Device Error	Device has other errors	Same as above
Verify Error	Inconsistent Write Data and Read Data	• Device is defective • Defective device connection
Fout Error	Output frequency is outside of designated Rank	• Trimming defect when writing • Defective device connection
IDD Error	Exceeds standard value for power consumption	• Device is defective • Calibration of current measuring section necessary
OE Error	OE function is defective	• Device is defective • Defective device connection • Calibration of current measuring section necessary
Vrange Error	VDD(min) / VDD(max) error	• Device is defective

# 9. Warnings and Cautions

Please consider the following points when using this product and manual.

Points of Caution:

(1) Content of this manual is subject to change without notice.

(2) Frequency calculated with this software doesn't guarantee that product of SG-8xxx.
Using it in range of the specification of SG-8xxx (load / temperature condition).

(3) Do not disassemble SG-WRITERII. This can have a serious impact on the SG-WRITERII and the product (SG-8xxx). If it has been disassembled, the company cannot take any responsibility for damage that occurs to the SG-WRITERII or product (SG-8xxx).

(4) This company's approval is necessary to mass produce the product.

(5) Reprinting or other copying of all or part of this material without permission and use for purposes other than those intended are strictly prohibited.

(6) Applied circuits, programs, methods of use, etc. contained in this material are for reference purposes only. This company makes no assurances with regard to damages to or infringements on rights (including industrial property rights) held by third parties.

(7) The size of numeric values on the characteristics chart are displayed according to their graphed sizes.

(8) Some products mentioned in this material are defined as strategic goods under the Foreign Exchange and Foreign Trade Control Laws, and as such export permits are necessary when exporting these products.
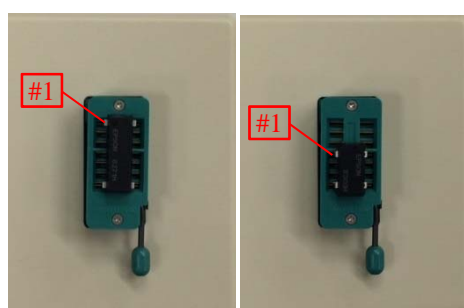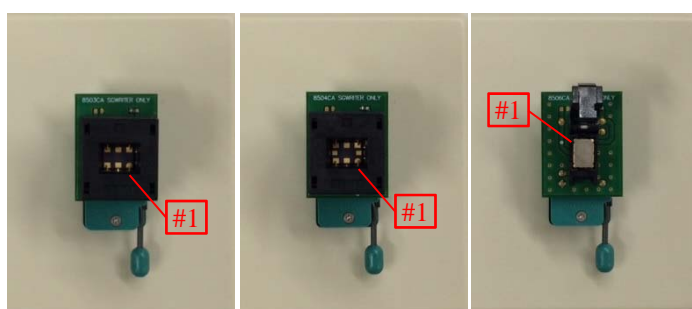
Appendix
IC Socket and device setting.
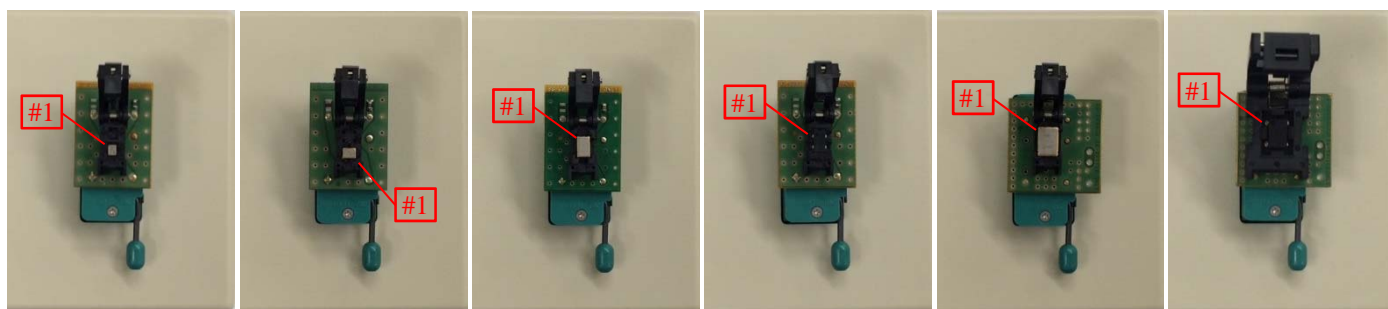
CG Q91PR10W00024	CE Q91PR10W00018	CB Q91PR10W00025	LB Q91PR10W00019	CA Q91PR10W00021	JF Q91PR10W00020
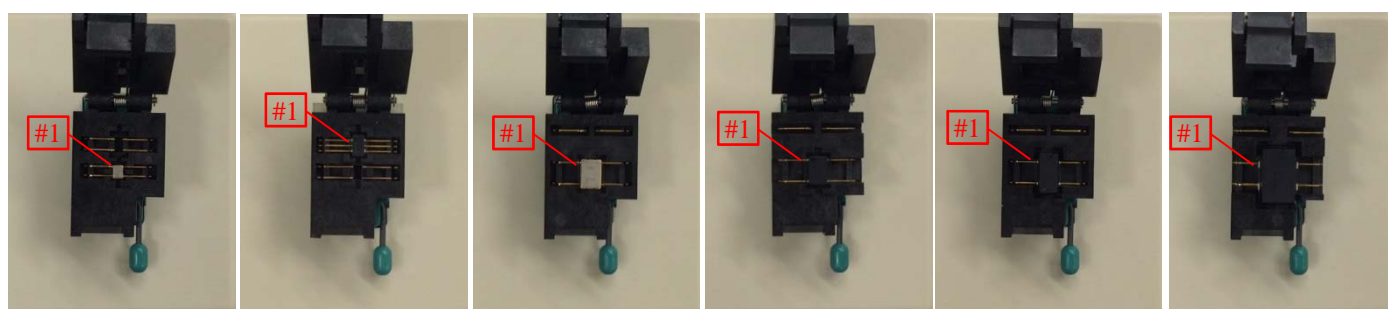
CE Q91PR10W00010	LB Q91PR10W00011	CA Q91PR10W00005	JF Q91PR10W00016	JC Q91PR10W00004	JA Q91PR10W00003

SG-8002DB	SG-8002DC

SG-8503CA** Q91PR10W00026	SG-8504CA** Q91PR10W00027	SG-8506 Q91PR10W00028

**flip and insert

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