

Application Manual

SG-WRITER

SEIKO EPSON CORPORATION

Before Use

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

Please keep this CD-ROM in an easily accessible place so that any unclear points can be quickly solved

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.



WARNING (Continued)

- 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.



CAUTION

- 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.
- Close and lock the socket cover when carrying the product.
There is a risk of injury should the Socket Cover move.
- 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-WRITER 1
- CD-ROM 1
- Documents

2) Customer-prepared Items

(1) DOS/V PC

- Available OS: Windows XP
- Recommend CPU: Pentium4 1.4GHz or better
- Recommended memory capacity: Over 512MB(Windows XP 32bit)

(2) USB Cable (Series B)

2. USB Driver Installation

1) Driver File Structure

(1) File structure

- sgusb.sys - Sgusb driver file
- sgusb.inf - Sgusb driver uninstall file

2) Installation Procedure

- a. Create a directory on your hard disk (for example, C:\Sgusb), then copy sgusb.sys and sgusb.inf into that directory.
- b. Connect the SG-WRITER to the USB port.
- c. The "Found New Hardware Wizard" dialog appears. Check the "Install from list or specified location" box (name may be slightly different), then click "Next".
- d. Click the "Search for a suitable driver for my device (recommended)" radio button, and click "Next."
- 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

- 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 "PROM Writer." In the PROM Writer Properties window, click on the "Driver" tab, and then click "Uninstall." The "Confirm Device Removal" dialog appears. Click "OK".
- c. Delete the Inf file
Delete the Inf file that was copied to the Inf directory under the %WINDIR% (C:\WINNT, for example) using a filename "OemXX.inf" (where XX is a number starting from 0).
- d. Delete the Sys file.
Delete Sgusb.sys, which was copied to the System32\drivers directory under the %WINDIR%.

3. Software Installation

*Please download SG-Writer software from HP.

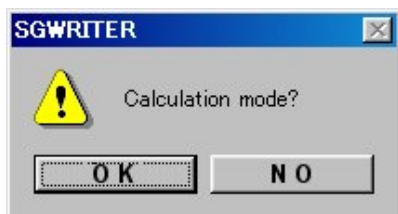
<http://www5.epsondevice.com/en/quartz/tech/support/sg8000/index.html>

1) Software structure

- SGWriter.exe - executable program file
- Sgwriter.hlp - help file
- Sglib.dll - library file
- mfc100.dll - run time library
- msucr100.dll - run time library

2) Installation Procedure

- a. Copy software files to the same directory.
- b. Connect the SG-WRITER to a PC. A Type B USB cable is required.
- c. Double-click the executable file SGWriter.exe (Power LED lights up in green.)
 - If an error occurs, read the error message.
- d. Initial entry
Enter your Login password, and click "OK." (Only necessary the first time you launch the software.)

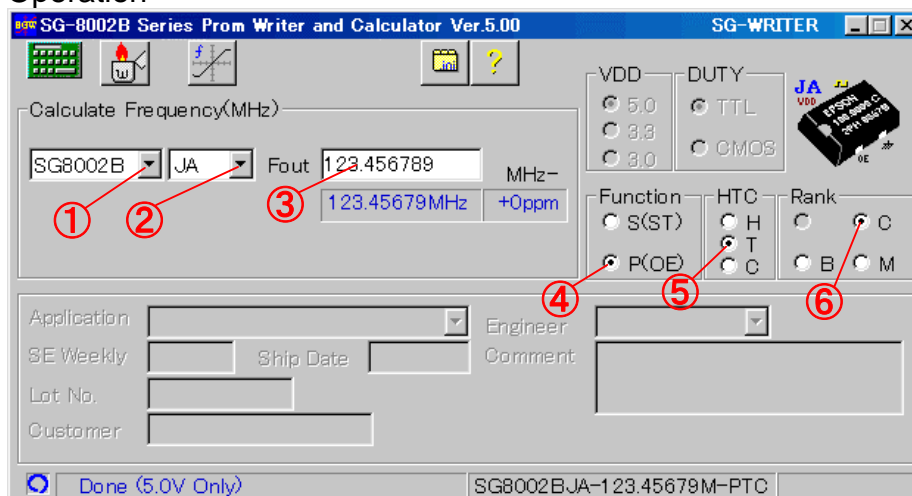


If "OK" is clicked when the SG-WRITER is not connected to a PC, a screen such as that shown below appears, and the software will start up in a mode that enables calculations only. To write and perform measurements, click "No." Then, after checking that the SG-WRITER and PC are connected, once again double-click SGWriter.exe to execute the program.

* The initial entry screen does not appear if the program has already been executed once.

4. Operation Procedures

1) Operation




a. Enter Operation Buttons

- (1) Device Select SG8002B / HG8002B ("HG8002B" Calculate only mode)
- (2) Package Select package JA/JC/DB/DC/CA/CE/LB/LA
- (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.

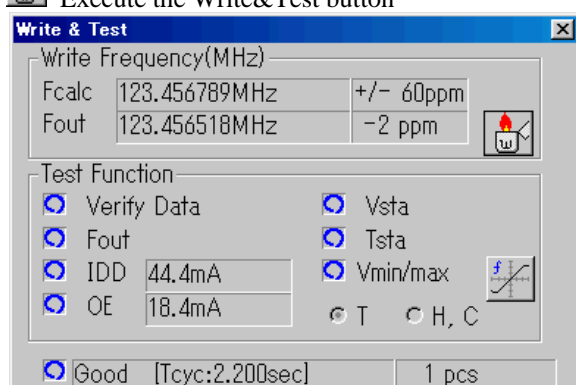
*When writing is possible, the Writer button is enabled. 

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

d. Set the product (SG8002) 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) in your hand.
- Do not expose the product to static electricity. (Remove electricity with a wrist strap.)
- Close the socket cover.

e. Execute the Write&Test button

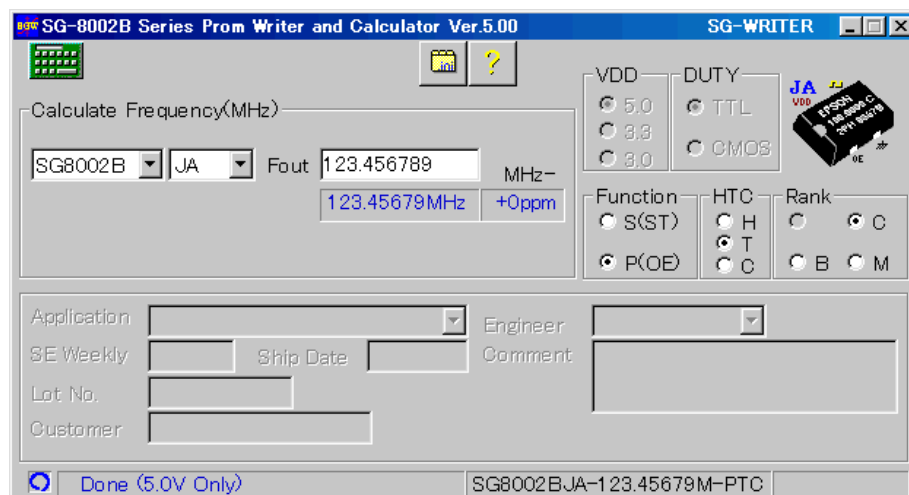


f. Acceptable and defective products will be marked with an O or x respectively. An error message in addition to the x will be displayed in the case of defects.



g. Raise the lever and remove the product (SG8002).

- Do not carry the product (SG8002) in your hand.
- Do not expose to static electricity. (Remove electricity with a wrist strap, etc.)

2) 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 neither the  button nor the  button appear. To perform writes / measurements, exit the software, connect the SG-WRITER to a PC, then relaunch the software.

5. Operation Procedures

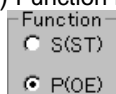
1) Package Combo Box

 This is the box for selecting the Package (JA/JC/DB/DC/CA/JF/CE/LB/LA). Conditions for calculating change by package. Make sure they are right for your product. (If you selected JC, 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). 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.)

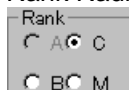
4) HTC Radio Button



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.)


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)
- *A Rank cannot be selected.

6. 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.

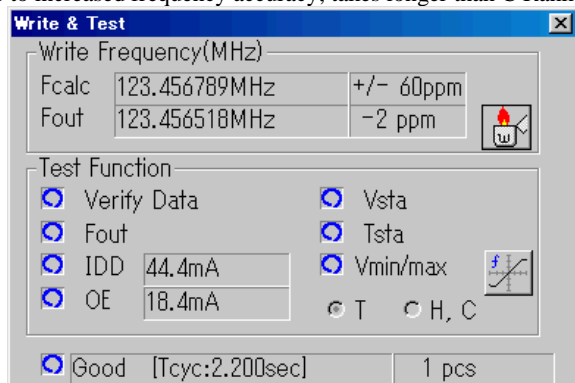
2) Unwritable Frequencies

"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).



7. Write and Test

When this button  is clicked, the Write and Test dialog appears, and Write & Test  and Monitor  become possible. (B Rank, due to increased frequency accuracy, takes longer than C Rank.)



1) (Write & Test)

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


- **Fcalc** Displays written frequency (MHz) and acceptable deviance (ppm).
- **Fout** Displays actual measured 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 after writing. (Write and Data Verification cannot be performed.) Test results are displayed as O xto the left of the function.

- **Verify Data** Function for comparing written data and data read by SG8002
- **Fout** Function for comparing output frequency and acceptable deviation
- **IDD** Function for measuring power consumption
- **OE** Function for measuring power consumption when OE=LOW
- **Vsta** Function for determining oscillation start voltage
- **Tsta** Function for determining oscillation start voltage (Measured at same time as Fout)
- **Vmin/max** Function for determining smallest/largest voltage
- **T/H,C** Displays either TTL(T) or CMOS(H,C), whichever is written.

8. Monitor Button

Click this button , and it is possible to measure frequency and power consumption from the Monitor dialog. This can be used for example if you do not know the frequency written to SG8002. (Values displayed here should not be used to determine acceptability.)

1) (monitor)

This button is for measuring the frequency and power consumption of SG8002.


- **Fout** Output frequency (Measures with voltage selected by [HTC Radio Button]. Acceptability not determined.)
- **IDD** Power consumption (Acceptability not determined.)

Items other than those listed above will not be measured and their acceptability will not be determined.

9. Help Button

Click this button , and help will be displayed.

10. Configuration Button

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

1) General Configuration



The dialog box has two tabs: 'General Configuration' and 'Function Check'. The 'General Configuration' tab is active. It contains the following fields:

- Users Level:** Three radio buttons: 'Customer' (selected), 'Distributor', and 'Field Engineer'.
- CLK:** A text box containing '19200000'.
- Engineer Name:** A section with 'ID' (text box with 'SEIKO EPSON') and 'Name' (list box with 'NAME1' and 'NAME2').
- Version:** A section with 'H/W' (1.01) and 'S/W' (5.01).

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

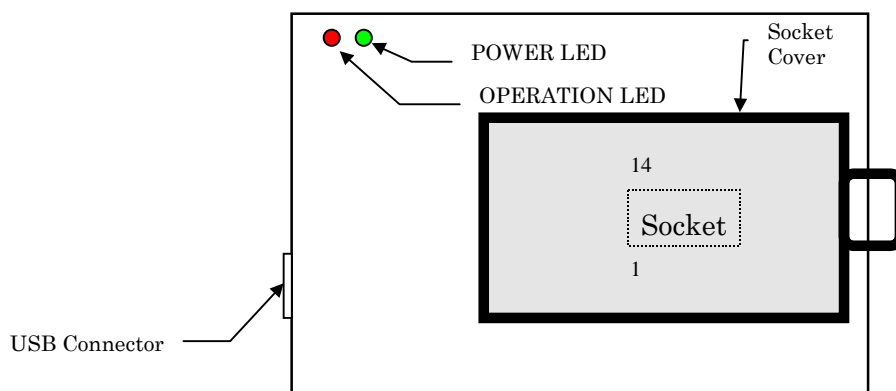
Current hardware and software versions are displayed.

- 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.)

11. Hardware Specifications



1) USB Connector

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

2) LED

- OPERATION LED
 - RED unlit VDD is OFF
 - RED lit Electricity is being output from the VDD (operating)
- POWER LED
 - GREEN unlit Power is OFF
 - GREEN flashing Power is ON (software initialization is necessary)
 - GREEN lit Power is on

3) Socket

This is a socket for installing the SG8002 Products other than the SG8002 should not be installed. This could cause a malfunction.

- 1) Lever is up Lever raises when the SG8002 is ejected.
 - 2) Lever is in parallel position Lever should be parallel when the SG8002 is writing, or being calibrated
- * For SMD devices, please use the adapter socket

4) Socket Cover

Use cover when the SG8002 is writing or being calibrated.

5) 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		5		V	USB bus power
IDD		0.5	2.5	W	
VDD	0		6	V	
OE	0		13	V	
Environmental Temperature	20	25	30	°C	*1

*1 Do not write to the product (SG8002) above the environmental temperature.

8) Calibration Range

	Min.	Typ.	Max.	Unit
Frequency measurement range	1		125	MHz
Ability to analyze measurement (C Rank , M Rank)			5	$\times 10^{-6}$
Ability to analyze measurement (B Rank)			2	$\times 10^{-6}$
Power consumption calibration range	0		60	mA

12.Error Message

Table of Error Messages

Message	Content	Cause
Confirm connection	SG-WRITER is not connected	USB cable is not connected
Check USB cable	SG-WRITER is not connected	USB cable is not connected
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	Power is improperly flowing to device. ("Check Direction!" is displayed in message box.)	<ul style="list-style-type: none"> • Direction of devices is backward • Device is defective • PROM WRITER is defective
Pin Error	Pins are not making contact	<ul style="list-style-type: none"> • Device is defective • Defective device connection • Device is not SG8002
Blank Error	Device already written	<ul style="list-style-type: none"> • Device is defective • Defective device connection • Device is not SG8002
Reference Error	Quartz frequency is out of appropriate range	<ul style="list-style-type: none"> • Packages are different • Device is defective • Defective device connection • Device is not SG8002
Device Error	Device has other errors	Same as above
Verify Error	Inconsistent Write Data and Read Data	<ul style="list-style-type: none"> • Device is defective • Defective device connection
Fout Error	Output frequency is outside of designated Rank	<ul style="list-style-type: none"> • Trimming defect when writing • Defective device connection
IDD Error	Exceeds standard value for power consumption	<ul style="list-style-type: none"> • Device is defective • Calibration of current measuring section necessary
OE Error	OE function is defective	<ul style="list-style-type: none"> • Device is defective • Defective device connection • Calibration of current measuring section necessary
Vrange Error	VDD(min) / VDD(max) error	<ul style="list-style-type: none"> • Device is defective

13. 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 SG8002.
Using it in range of the specification of SG8002 (load / temperature condition).
- (3) Differences in temperature can contribute to characteristic changes in the frequency of quartz oscillators.
For this reason, please write to this product (SG8002) at an environmental temperature of within 5 degrees of 25 degrees Celsius. This can have a serious impact on the product's (especially B Rank) frequency accuracy.
- (4) Do not disassemble SG-WRITER. This can have a serious impact on the SG-WRITER and the product (SG8002). If it has been disassembled, the company cannot take any responsibility for damage that occurs to the SG-WRITER or product (SG8002).
- (5) This company's approval is necessary to mass produce the product.
- (6) Reprinting or other copying of all or part of this material without permission and use for purposes other than those intended are strictly prohibited.
- (7) 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.
- (8) The size of numeric values on the characteristics chart are displayed according to their graphed sizes.
- (9) 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.

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