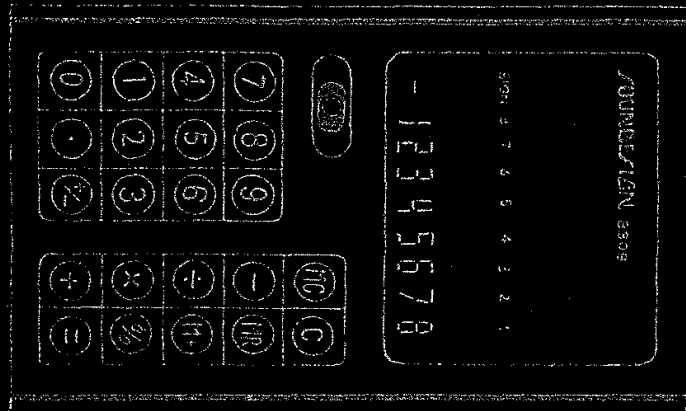




SOUNDESIGN®

8309-232

INSTRUCTIONS



**DELUXE PORTABLE
CALCULATOR**

The Soundesign calculator, you have just purchased, contains many of the most advanced engineering concepts presently found in small portable calculators.

Using a Large Scale Integrated (LSI) circuit, the calculator performs addition, subtraction, multiplication, and division operations, as well as chain, constant, percentage, reciprocal, power and memory calculations instantly and with the utmost accuracy and reliability.

Please take a few minutes now to read this Instruction Book. It will make operation of your calculator easy and accurate.

SPECIAL FEATURES

- **Long Battery Life** Uses long lasting, inexpensive "C" cell batteries. Unneeded zeroes are not displayed to conserve power.
- **Clear & Clear Entry Key** Permits correction of entry mistakes without having to repeat entire operation.
- **Double Entry Proof** If two keys are pressed accidentally, only the first number will be entered and displayed.
- **AC Adaptor Jack** Unit is equipped with an AC adaptor jack for use on AC to save batteries. Use optional AC adaptor model 232.

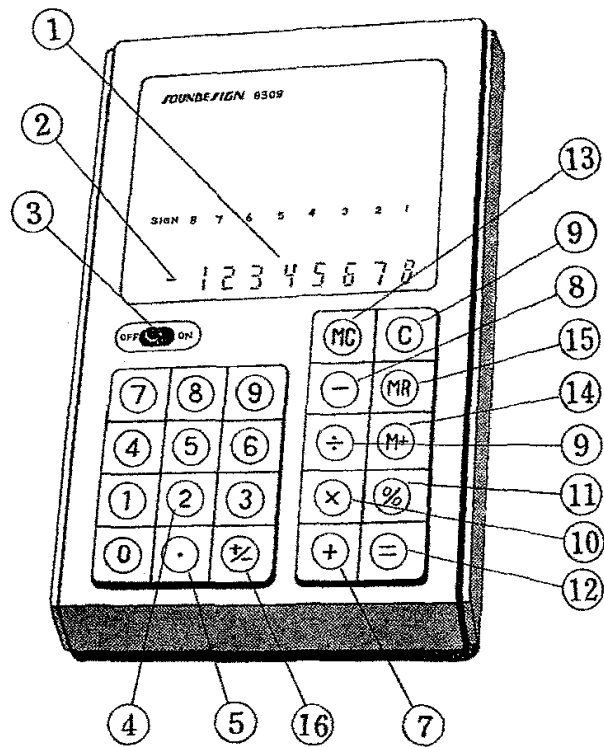


Figure 1.

1. Display
2. Special Information Display
3. Power On/Off Switch
4. Number Entry Keys
5. Decimal Point Key
6. Clear and Clear Entry Key
7. Plus Key (Addition)
8. Minus Key (Subtraction)
9. Division Key
10. Multiplication Key
11. Percentage Key
12. Equals Key
13. Clear memory Key
14. Memory Input Key
15. Memory Recall Key
16. Sign (+/-) change Key

OPERATING INSTRUCTIONS

BATTERY INSTALLATION

1. Slide battery compartment cover out in the direction shown by the arrow.
2. Place four 1.5V "C" size batteries in the compartment as shown on the diagram in the compartment. Make certain batteries are properly orientated with correct positive-negative arrangement.

CAUTION: Improper arrangement of the battery terminals will result in damage to your calculator.

AC OPERATION

If your unit is equipped with AC Adaptor Model 232, you may operate the calculator on AC current. Insert the AC Adaptor plug into the receptacle marked EXT POWER on the side of the unit. To operate the calculator on battery (DC) power, simply disconnect the AC Adaptor plug from the calculator.

CAUTION: Only AC Adaptor Model NO. 232 should be used with this calculator. Use of other adaptors will cause serious damage to the unit.

CONTROLS

Power ON-OFF Switch (Fig. 1, 3); Turn your calculator on by sliding the Power Switch to the ON position. To turn the calculator off, slide the switch to the OFF position. Make certain to turn off the calculator when you are not using it. This will provide maximum battery life.

Number Entry Keys (Fig. 1, 4)

These keys are used to enter numbers. Your calculator is double entry proof. If you press two numbers at the same time, only one will be entered and displayed. If you enter the wrong number, press the C (Clear & Clear Entry) key and re-enter the correct number.

- \cdot This key is used in normal sequence of figure entry. If it is not depressed, the point is assumed to be after the last digit entered.
- $+$ Stores an addition command and performs any possible preceding operation.
- $-$ Stores a subtraction command performs any possible preceding operation.
- \times Stores a multiplication command and performs any possible preceding operation.
- \div Stores a division command and performs any possible preceding operation.
- \pm Changes the sign of the Display Register.
- $=$ Performs preceding operation and leaves results in the Display Register.
- $\%$ Performs preceding operation, divides the result by 100 and leaves results in the Display Register.
- $M+$ The number in the Display Register is added to the Memory Register. The contents of the Display Register remain uncharged.

MR Moves the contents of the Memory Register into the Display Register and clears the Memory Register.

MC Clears the Memory Register.

C Clears a complete operation when this key is depressed twice.
Clears only the last entry when this key is depressed once.
Simply re-enter the correct number and proceed with the operation.

Display

The minus sign is displayed immediately preceding the number.

If a negative number contains eight digits, the minus sign will be displayed in the special information display position.

Overflow indication are always displayed in the most-significant display of answer.

Constant Operation

The calculator provides for automatic constant operation for add, subtract, multiply and divide. No constant mode switch is necessary. For addition, subtraction and division the number entered following the $\boxed{+}$, $\boxed{-}$, or $\boxed{\div}$ key is the constant factor. For multiplication, the number preceding the $\boxed{\times}$ key is the constant. In the case of constant operations with only one number, as with raising to a power or reciprocal, the entered number becomes the constant.

Memory

The **MC** key clears the contents of the Memory Register, leaving the contents of the Display Register unchanged. The **M+** key cause the contents of the Display Register to be added to the contents of the memory, leaving the Display Register unchanged and any pending commands unaffected.

Overflow

The Model 8309 has the capability of providing a meaningful displayed result when overflow occurs during computation. Overflow occurs when the result exceeds eight digits which causes the 8 most-significant digits of the result to be displayed divided by 10^8 (decimal point moved 8 digit positions to the left). This occurrence provides an overflow, or 10^8 indication (**□**) to be displayed in the special information display position. The overflow indication inhibits further calculation. The overflow is cleared by depression of the **□** once. This operation removes the overflow indication only and retains the result in the Display Register. Continued calculations can be performed using this result, noting that the results should be multiplied by 10^8 factor.

HOW TO PERFORM CALCULATIONS

PROBLEM	KEY OPERATION	DISPLAY
ADDITION AND SUBTRACTION $-2+8-4=2$	$\boxed{C}\boxed{C}\boxed{-}\boxed{2}\boxed{+}\boxed{8}\boxed{-}\boxed{4}\boxed{=}$	2
MULTIPLICATION AND DIVISION $-49.6 \times 0.42 = -20.832$	$\boxed{C}\boxed{C}\boxed{-}\boxed{4}\boxed{9}\boxed{.}\boxed{6}\boxed{\times}\boxed{0}\boxed{.}\boxed{4}\boxed{2}\boxed{=}$	-20.832
MIXED $\frac{(4+8) \times 4}{9} = 5.3333333$	$\boxed{C}\boxed{C}\boxed{4}\boxed{+}\boxed{8}\boxed{\times}\boxed{4}\boxed{\div}\boxed{9}\boxed{=}$	5.3333333
RECIPROCAL $1/16^2 = 0.0039062$	$\boxed{C}\boxed{C}\boxed{1}\boxed{6}\boxed{\div}\boxed{=}\boxed{=}\boxed{=}$	0.0039062
RECIPROCAL (ALTERNATE METHOD) $1/16^2 = 0.0039062$	$\boxed{C}\boxed{C}\boxed{1}\boxed{\div}\boxed{1}\boxed{6}\boxed{=}\boxed{=}$	0.0039062
POWERS $2^4 = 16$	$\boxed{C}\boxed{C}\boxed{2}\boxed{\times}\boxed{=}\boxed{=}\boxed{=}$	16

PROBLEM

KEY OPERATION

DISPLAY

CONSTANT ADDITION/SUBTRACTION

(Subtraction)

$7.5 - 3.7 = 3.8$

CC7.5-3.7=

3.8

$2.5 - 3.7 = -1.2$

2.5=

-1.2

$3.9 - 3.7 = 0.2$

3.9=

0.2

(addition)

$7.5 + 3.7 = 11.2$

CC7.5+3.7=

11.2

$2.5 + 3.7 = 6.2$

2.5=

6.2

$3.9 + 3.7 = 7.6$

3.9=

7.6

MIXED CONSTANT ADDITION/SUBTRACTION

$9 + 7 + 5 + 5 + 5 - 7 - 7 = 17$

CC9+7+5++-7-=

17

CONSTANT MULTIPLICATION

$3 \times 2 = 6$

CC3x2=

6

$3 \times 3 = 9$

3=

9

$3 \times 4 = 12$

4=

12

PROBLEM

KEY OPERATION

DISPLAY

CONSTANT DIVISION

$4 \div 2 = 2$

CC4 ÷ 2 =

2

$6 \div 2 = 3$

6 =

3

$8 \div 2 = 4$

8 =

4

PERCENTAGE CALCULATION

$9\% \text{ of } 75 = 6.75$

CC75 × 9%

6.75

$\text{yield: } \frac{7}{64\%} = 10.9375$

CC7 ÷ 64%

10.9375

$\text{Mark-up: } 30 + \frac{30 \times 2}{100} = 30.6$

CC30 + 2% =

30.6

$\text{Discount: } 30 - \frac{30 \times 2}{100} = 29.4$

CC30 - 2% =

29.4

MEMORY

$-5 + (2 \times 3) + (8 \div 2) = 5$

MC C5 % M+ 2 × 3 = M+ 8 ÷ 2 = M+ MR

5

SPECIAL INFORMATION SYMBOLS

Special Information Symbols appear on the Special Information Display. (Fig. 1 2).

- Minus Sign: Indicates negative number if a negative answer contains eight digits.
- Positive overflow answer
- ⊖ Negative overflow answer

127 = X
19043

WARRANTY

Soundesign Corporation warrants its products to be free from defects in workmanship and material under normal use and conditions for a period of 90 days from the date of original purchase.

Should service be required during the warranty period, Soundesign Corporation will repair any unit covered by this warranty found to be defective, free of charge (except for a \$1.50 fee covering costs for handling, packing, return postage and insurance) subject to verification of the defect upon delivery of the unit the nearest Factory Service Center listed below.

Before returning a unit for service, replace the batteries (where applicable) with fresh ones, as exhausted or defective batteries are the most common cause of problems encountered.

If service is still required...

1. Remove the batteries, and pack the unit with all its accessories in a well padded, heavy corrugated box.
2. Enclose your sales receipt to validate the date of purchase.
3. Mail the unit, prepaid, to the Factory Service Center nearest you. Its address is listed below.

If service is required after expiration of the warranty period, please enclose a check or money order for \$10.00 the cost of repair.

This warranty does not cover Soundesign products which have been damaged by negligence, misuse, accident, or have been modified or repaired by unauthorized persons, nor does it cover cracked or broken cabinets, or units damaged by excessive heat.

This warranty is in lieu of all other warranties, representations and conditions of any kind, either expressed or implied, and is valid only in the U.S.A.

MAIL UNIT TO:

EASTERN U.S.A.: Soundesign East
34 Exchange Place
Jersey City, New Jersey 07302

WESTERN U.S.A.: Soundesign West
13111 Temple Avenue
City of Industry
California 91746

SOUNDESIGN CORPORATION
Jersey City, New Jersey 07302