

# Unisonic<sup>®</sup> 796

8 DIGIT ELECTRONIC SLIDE RULE CALCULATOR

WITH  $\frac{1}{x}$   $x^2$   $\sqrt{\quad}$   $e^x$  LN  $Y^x$  LOG STO  $\pm/\mp$  RCL  
INV  $\overset{\text{SIN}^{-1}}{\text{SIN}}$   $\overset{\text{COS}^{-1}}{\text{COS}}$   $\overset{\text{TAN}^{-1}}{\text{TAN}}$   $\pi$  (( )) EE

796-B

INSTRUCTION MANUAL

## FEATURES AND SPECIFICATION

### 1. DISPLAY

- 5-digit mantissa with sign, and 2-digit exponent with sign : or 8-digit floating point with sign.
- Zero suppression.
- Minus sign.
- Overflow condition indicator.

### 2. FUNCTIONS

Addition, subtraction, multiplication, division, reciprocal, square root, square, power, credit balance, repeating addition and subtraction, automatic constant calculation for Multi and Div, one independent memory, bracket calculation,  $\text{Pi}(\pi)$  calculation, exponent calculation, sine, cosine, cosine, tangent, arcsine, arccosine, arctangent, natural logarithm, natural antilogarithm, common logarithm, common antilogarithm,

### 3. DECIMAL POINT SYSTEM

Full floating decimal point.

**4. CAPACITY** [REDACTED]

$10^{-9}$  through  $9.9999999 \times 10^9$

**5. OTHER FUNCTION** [REDACTED]

Negative : Credit balance with minus sign.  
Auto clear : Automatic clear at power on time.

**6. POWER SOURCE** [REDACTED]

Dry cells (UM-3 or AM-3) or by AC Adaptor.

**7. DIMENSIONS** [REDACTED]

1-2/5 inches(H) x 3-1/2 inches(W) x 6-1/10 inches(L)

**8. WEIGHT** [REDACTED]

9-3/5 oz. (with dry cells)

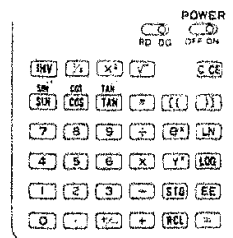
**9. POWER CONSUMPTION** [REDACTED]

350 mW (DC 6V)













**10. ELEMENT** [REDACTED]

Mos LSI complete 1 chip

## KEYBOARD ORGANIZATION AND KEY DESCRIPTION




<div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 5px;">0</div> <div style="font-size: 1.2em; margin: 0 5px;">-</div> <div style="border: 1px solid black; padding: 2px 5px; margin-left: 5px;">9</div> </div> <div style="margin-bottom: 5px;">.</div> <div style="margin-bottom: 5px;">+</div> <div style="margin-bottom: 5px;">-</div> <div style="margin-bottom: 5px;">×</div> <div style="margin-bottom: 5px;">÷</div> <div style="margin-bottom: 5px;">C/CE</div> <div style="margin-bottom: 5px;">=</div> <div style="margin-bottom: 5px;">1/x</div> <div style="margin-bottom: 5px;">√</div> <div style="margin-bottom: 5px;">STO</div> <div style="margin-bottom: 5px;">RCL</div> <div style="margin-bottom: 5px;">((</div> <div style="margin-bottom: 5px;">))</div> <div style="margin-bottom: 5px;">EE</div>	<p><b>Numerical entry keys.</b></p> <p><b>Decimal point key.</b></p> <p><b>Addition key</b>      Used for addition.</p> <p><b>Minus key</b>          Used for subtraction.</p> <p><b>Multiply key</b>        Used for multiplication.</p> <p><b>Division key</b>        Used for division.</p> <p><b>Clear and Clear entry key</b>      Used for all clear and clear entry.            Depress once : Clear entry.            Depress twice : All clear.</p> <p><b>Equal key</b>            Express results of an straight arithmetic processes.</p> <p><b>Reciprocal key</b>        Used for reciprocal calculation.</p> <p><b>Square root key</b>      Used for square root calculation.</p> <p><b>Store key</b>             Used for memory input with clearing of the old value.</p> <p><b>Recall memory key</b>    Used for recall memory</p> <p><b>Open brackets key</b>    } Used for bracket calculation.</p> <p><b>Close brackets key</b>    }</p> <p><b>Entry of exponent value key.</b></p>
---	--

-  **Pi key** Used for recall of constant  $\pi$ .
  -  **Sign change key.** Used for the sign of the number.
  -  **Square key** Used for square calculation.
  -  **Power function key** Used for power calculation.
  -  **Natural antilogarithm function key.**
  -  **Natural logarithm function key.**
  -  **Common logarithm function key.**
  -  **Inverses function key**
- NOTE:** Do not depress  key twice.
-    **Trigonometric function key**
  - Secondary function key**

$$\text{SIN}^{-1} \cdot \text{COS}^{-1} \cdot \text{TAN}^{-1}$$

Inverses trigonometric function key.

 RD DG Radians, Degrees Radians, Degrees switch

Used for degrees, radians select.

## CALCULATION EXAMPLES

### 1. MIXED ADDITION, SUBTRACTION

$$1.23 + 4.56 - 7.89 = -2.1$$

$$1.23 \text{ (+) } 4.56 \text{ (-) } 7.89 \text{ (=)} \longrightarrow -2.1$$

### 2. MIXED MULTIPLICATION, DIVISION

$$123 \times 456 \div 789 = 71.087452$$

$$123 \text{ (x) } 456 \text{ (÷) } 789 \text{ (=)} \longrightarrow 71.087452$$

### 3. POWER

$$2^4 = 16$$

$$2 \text{ (y<sup>x</sup>) } 4 \text{ (=)} \longrightarrow 16$$

### 4. REPEATED CALCULATION

$$21 + 3 + 3 + 3 - 3 - 3 - 3 = 21$$

$$21 \text{ (+) } 3 \text{ (=) (=) (=) (-) } 3 \text{ (=) (=) (=)} \longrightarrow 21$$

5. CONSTANT MUL/DIV

(1) MULTIPLICATION

$2 \times 123 = 246$
$5 \times 123 = 615$
$8 \times 123 = 984$

2	×	123	=	→	246
5			=	→	615
8			=	→	984

(2) DIVISION

$123 \div 3 = 41$
$333 \div 3 = 111$
$999 \div 3 = 333$

123	÷	3	=	→	41
333			=	→	111
999			=	→	333

6. CHAIN OPERATION

$\frac{(3+4)6-2}{5} = 8$
--------------------------

3 + 4 × 6 - 2 ÷ 5 = 8

7. **[[ ]·[ ]]** KEY OPERATION

$$5 + [5(16 + 2)] = 95$$

5 [ + ] [ ( ] 5 [ × ] [ ( ] 16 [ + ] 2 [ ) ] [ ) ] [ = ] → 95

8. ENTRY CORRECTION

$$123 \times 123 = 15129$$

123 [ × ] 122 [ C/CE ] 123 [ = ] → 15129

↑  
mis-entry

9. SQUARE ROOT

$$\sqrt{81} = 3$$

81 [ √ ] [ √ ] → 3

10. RECIPROCAL

$$\frac{1}{4} = 0.25$$

4 [ 1/x ] → 2.5 -01 (2.5 × 10<sup>-1</sup> = 0.25)



11.  $\boxed{\text{LN}}$  ·  $\boxed{e^x}$  KEY OPERATION

$$\boxed{\text{Ln } 100 = 4.60517}$$

$$100 \boxed{\text{LN}} \longrightarrow 4.60517$$

$$\boxed{e^{4.60517} = 100}$$

$$4.60517 \boxed{e^x} \longrightarrow 100$$

12.  $\boxed{\text{LOG}}$  KEY OPERATION

$$\boxed{\log_{10} 5 = 0.69897}$$

$$5 \boxed{\text{LOG}} \longrightarrow 6.9897 - 01$$

$$(6.9897 \times 10^{-1} = 0.69897)$$

13.  $\boxed{\pi}$  KEY OPERATION

$$\boxed{2\pi = 6.2831852}$$

$$2 \boxed{\times} \boxed{\pi} \boxed{=} \longrightarrow 6.2831852$$

14. SQUARE

$(2^2)^2 = 16$		
2	[x <sup>2</sup> ]	[x <sup>2</sup> ]
		→ 16

15. [EE] KEY OPERATION

$(111 \times 10^{-4}) \times (111 \times 10^{10}) = 1.2321 \times 10^{10}$
--

ENTRY	DISPLAY	COMMENTS
111	111.	
[EE]	111. 00	
[+/-]	111. -00	
4	111. -04	111 x 10 <sup>-4</sup>
[x]	1.11 -02	
111	111.	
[EE]	111. 00	
10	111. 10	111 x 10 <sup>10</sup>
[=]	1.2321 10	1.2321 x 10 <sup>10</sup>

16.  $\boxed{\text{SIN}} \cdot \boxed{\text{SIN}^{-1}}$  KEY OPERATION

(1)  $\boxed{\text{SIN } 30^\circ = 0.5}$

RD  DG 30  $\boxed{\text{SIN}}$   $\longrightarrow$  5. -01 (5x10<sup>-1</sup> = 0.5)

(2)  $\boxed{\text{SIN } \frac{\pi}{6} = 0.5}$

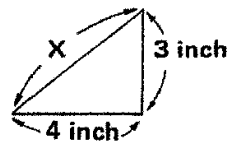
RD  DG  $\boxed{\pi} \boxed{\div} 6 \boxed{=} \boxed{\text{SIN}}$   $\longrightarrow$  5. -01 (5x10<sup>-1</sup> = 0.5)

(3)  $\boxed{\text{SIN}^{-1} 0.5 = 30^\circ}$

RD  DG 0.5  $\boxed{\text{INV}} \boxed{\text{SIN}^{-1}}$   $\longrightarrow$  30

## ADVANCED PROBLEM SOLVING

(1)



Find the hypotenuse when two sides of a right triangle are known.

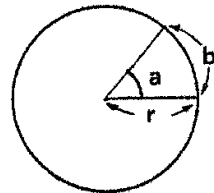
$$X^2 = 3^2 + 4^2$$

$$X = \sqrt{3^2 + 4^2}$$

3  $\boxed{\times^2}$   $\boxed{\text{STO}}$  4  $\boxed{\times^2}$   $\boxed{+}$   $\boxed{\text{RCL}}$   $\boxed{=}$   $\boxed{\sqrt{\phantom{x}}}$   $\longrightarrow$  5

Answer  $x = 5$  inch

(2)



$$a = 30^\circ$$

$$r = 2.5 \text{ inch}$$

$$b = ?$$

$$b = 2 \cdot \pi \cdot r \cdot \frac{30}{360}$$

2  $\boxed{\times}$   $\boxed{\pi}$   $\boxed{\times}$  2.5  $\boxed{\times}$  30  $\boxed{\div}$  360  $\boxed{=}$   $\longrightarrow$  1.3089969

Answer  $b = 1.3089969$  inch

(3)

$$\sum_{i=0}^5 (2.5)^i = ? = 1 + 2.5 + (2.5^2) + (2.5^3) + (2.5^4) + (2.5^5)$$

$$1 + 2.5 + (2.5^2) + (2.5^3) + (2.5^4) + (2.5^5) = 162.0937$$

Answer 162.0937

(4)

Find the root of  $X^2 - 4X + 2 = 0$

The general formula of a quadratic is:

$$A X^2 + B X + C = 0$$

$$X = \frac{-B \pm \sqrt{B^2 - 4A \cdot C}}{2 \cdot A}$$

Solution

$$X = \frac{-(-4) \pm \sqrt{(-4)^2 - 4 \times 1 \times 2}}{2 \times 1} = \frac{4 \pm \sqrt{(-4)^2 - (4 \times 2)}}{2}$$

ENTRY	DISPLAY	MEMORY	COMMENT
4 $\frac{+/-}{\square}$ $\frac{x^2}{\square}$ $\frac{STO}{\square}$	16.	16	$(-4)^2$
4 $\frac{x}{\square}$ 2 $\frac{=}{\square}$ $\frac{+/-}{\square}$	-8.	16	$(-4 \times 2)$
$\frac{+}{\square}$ $\frac{RCL}{\square}$ $\frac{=}{\square}$ $\frac{\sqrt{\square}}{\square}$ $\frac{STO}{\square}$	2.8284271	2.8284271	$\sqrt{(-4)^2 - (4 \times 2)}$
4 $\frac{+}{\square}$ $\frac{RCL}{\square}$ $\frac{\div}{\square}$	6.8284271	2.8284271	$4 + \sqrt{(-4)^2 - (4 \times 2)}$
2 $\frac{=}{\square}$	3.4142135	2.8284271	$\frac{4 + \sqrt{(-4)^2 - (4 \times 2)}}{2}$
4 $\frac{-}{\square}$ $\frac{RCL}{\square}$ $\frac{\div}{\square}$	1.1715729	2.8284271	$4 - \sqrt{(-4)^2 - (4 \times 2)}$
2 $\frac{=}{\square}$	5.8578-01	2.8284271	$\frac{4 - \sqrt{(-4)^2 - (4 \times 2)}}{2}$
	(5.8578 $\times 10^{-1}$ = 0.58578)		

Answer X = 3.4142135  
and X = 0.58578

Note: This  $\frac{STO}{\square}$  key transfers the displayed into the memory and at the same time clear the previous memory value.

(5) **COSH 1.5 = 2.35241**

$$\text{COSH } x = \frac{e^x + e^{-x}}{2}$$

1.5  $\frac{e^x}{\square}$   $\frac{STO}{\square}$  1.5  $\frac{+/-}{\square}$   $\frac{e^x}{\square}$   $\frac{+}{\square}$   $\frac{RCL}{\square}$   $\frac{\div}{\square}$  2  $\frac{=}{\square}$   $\longrightarrow$  2.35241

(6) **SIN 30° + COS 60° = 1**

$\frac{RD}{\square}$   $\frac{DG}{\square}$  30  $\frac{SIN}{\square}$   $\frac{+}{\square}$  60  $\frac{COS}{\square}$   $\frac{=}{\square}$   $\longrightarrow$  1

## ERROR AND UNDERFLOW CONDITION

### ERROR CONDITION

- a) Division by zero
- b)  $\sqrt{\quad}$ , where  $X < 0$
- c)  $X^2$ , where  $|X| \geq 10^{50}$
- d) Sin, cos or tan, where  $X > (180^\circ$  or  $3.1415927$  radians)
- e) Tan, where  $|X| = (90^\circ$  or  $1.5707963$  radians)
- f)  $\text{Sin}^{-1}$  or  $\text{cos}^{-1}$ , where  $|X| > 1$
- g)  $\text{Tan}^{-1}$ , where  $|X| \geq 5 \times 10^{99}$
- h) Log or Ln, where  $X \leq 0$
- i)  $e^X$ , where  $X \geq 230.25851$
- j)  $Y^X$ , where  $Y \leq 0$  or  $X \text{Ln} a \geq 230.25851$
- k)  $\frac{1}{X}$ , where  $X = 0$
- l) Result of operation  $> 9.9999999 \times 10^{99}$

#### UNDERFLOW CONDITION

- a)  $X^2$ , where  $|X| \leq 10^{-50}$
- b) Sin or tan, where  $|X| \leq 5.7295779 \times 10^{-9}$  degrees
- c)  $e^X$ , where  $X < -227.95592$
- d)  $Y^X$ , where  $X \ln Y < -227.95592$
- e)  $\frac{1}{X}$ , where  $X > 10^{99}$
- f) Result of operation  $< 10^{-99}$



### **HOW TO CHANGE BATTERIES**

Be sure the power switch is in the "off" position when changing batteries. The battery compartment is located in the rear of the machine. To expose contents, slide battery access cover toward the bottom of the calculator. Remove dysfunctioning batteries by pulling them out of their individual slots. Insert new batteries by positioning the (+) pole of each battery against the spring of its respective slot. Press the battery in place. Replace battery access cover by inserting it in the bottom-most position of compartment groove and sliding it upwards until it locks into place.

**TO AVOID DAMAGE TO THE CALCULATOR, SET THE BATTERIES IN CORRECT POSITION.**

### **OPERATING FOR AC ADAPTOR**

You can operate the calculator with AC adaptor by plugging the AC adaptor plug into the AC jack located on the top of the calculator. Plug UL-Type Socket prongs into wall receptor. The calculator is now ready for use.

## **SERVICE CERTIFICATE**

*Your electronic calculator is a highly precise electronic instrument which will serve you for many years with normal care.*

UNISONIC PRODUCTS are guaranteed against defects in materials or workmanship for a period of ninety (90) days from date of purchase. This guarantee applies only to the original owner registered on the card below. This card must be completed and mailed, postage paid, within ten (10) days from date of purchase. Any merchandise that has been repaired by an unauthorized party, tampered with, or abused is not covered by this guarantee.

If, within (90) days from date of purchase, you send in your calculator to us, please send us also \$5.00 to cover postage which includes cost of registered mail with return receipt requested.

If you return your calculator after (90) days from date of purchase, then kindly send us a check for \$9.90 which covers registered mail with return receipt plus handling charges.

Please be sure to include check or money order with package.

All merchandise must be returned, prepaid and fully insured, in the original packaging container or in a similarly-constructed container, via U.P.S. where possible. Enclose a letter explaining the problems, with place and date of purchase.

**All defective units should be returned to**

**UNISONIC**

Service Department

16 West 25th Street

New York, N.Y. 10010

MODEL NO. \_\_\_\_\_

DATE OF PURCHASE \_\_\_\_\_

DEALER'S NAME \_\_\_\_\_

SERIAL NO. \_\_\_\_\_



Printed in Japan