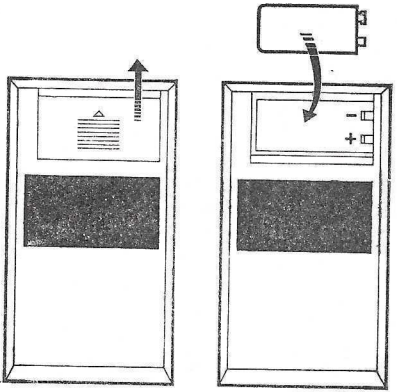
# INSTRUCTION

## model 1000

## FITTING NEW DRY BATTERY




## BATTERY REMOVAL

To insert fresh battery, see diagram above

FOR DRY BATTERY the life expectancy of a battery will depend on the type of battery used and the state of charge when purchased. We suggest MALLORY MN-1604 or equivalent, 9 Volt (PP3)

## INTRODUCTION:

Congratulations! You have now acquired a very powerful scientific electronic calculator 'Model 1000', another superb product by us.

Although our products are very low in price, the quality and reliability is first class and well known. The low price makes our products extra good value. You will find your 'Model 1000' easy to operate, accurate and compact. It will become your indispensable trustworthy companion! Your 'Model 1000' is an full scientific calculator including: Logarithmic, Exponentials, Powers, Roots, Trigonometric functions and Inverse-Trigonometric functions. In addition, your 'Model 1000' offers an accumulating memory, exchange registers and conversion of degrees and radians. Its many capabilities are illustrated in detail in the following pages.

## HOW TO ENTER PROBLEMS

As will most scientific calculators entry of problems is in the reverse or polish manner to reduce the number of key depression needed. The section on examples of problems explains.



## YOUR MACHINE FEATURES:

* 8 digit Led display, calculations up to +/– 100,000,000 minus 1
* Automatic power on clear (all registers clear when first switched on)
* Full floating decimal point (fully automatic)
* Basic four functions (+ – x ÷) & exchange (EX)—exchanges the X and Y registers for convenient reversed calculation.
* Accumulating memory with M+ M– MS & MR Store & Recall.
* Reciprocal 1/X
* Square root $\sqrt{x}$
* Chain Calculations (continuous without using an = key)
* Trailing zero suppression (no unnecessary zeros)

## ALL NORMAL SCIENTIFIC FUNCTIONS:

Trigonometric functions – Sin Cos Tan

Inverse-Trigonometric functions – $Sin^{-1}$ $Cos^{-1}$ $Tan^{-1}$

Base e logarithm (ln)

Anti-logarithm $e^x$

Base 10 logarithm

Raising Powers ($Y^X$) to raise first entry to the power of the second number entered.

Degree → radian and radian → degree conversion keys

$\pi$ Key (Pi)

Automatic display cutoff (power saver feature). If you make no entry for 30 seconds, the display goes to all decimal points to save power.

## GENERAL INFORMATION ON POWER SUPPLY

Your calculator uses one standard 9V ordinary/alkaline battery or by an AC adaptor with 9V DC output. A low cost A. C. adaptor is available at the store where you purchased this calculator. Any our brand adaptor is suitable, but using another brand could void warranty if it causes damage.

## AUTOMATIC DISPLAY CUT OFF

If you do not enter anything into your calculator for approximately 10 to 45 seconds, your machine display will automatically cut off and display nine decimal



points to save your battery. Recall the display number by pressing the ENT key and continue calculations.

## THE KEYS AND WHAT THEY DO

To fully explain what each key does we have provided the following table. Because the Model 1000 does so many different calculations, we have had to reduce the number of keys required by giving every key two different functions. Each key will always perform the function on that key unless the second function (F) key is pressed first, then the next key you press will perform the function written above it. The calculator then returns automatically to normal state and all keys perform their primary function unless the second function (F) key is pressed again. Register X means the Register being displayed.

## KEY FUNCTIONS

| Key | Primary Function | Second Function (Depression of Key after the F key) |
|---|---|---|
| 1/log | Enter number 1 to the display | To compute logarithm of the displayed number X |
| 2/$Y^X$ | Enter number 2 to the display | To raise the displayed number Y to a power of X |
| 3/$e^X$ | Enter number 3 to the display | To compute natural anti-log of the displayed number X |
| 4/Cos | Enter number 4 to the display | To compute Cosine of the displayed angle X |
| 5/Sin | Enter number 5 to the display | To compute Sine of the displayed angle X |
| 6/Tan | Enter number 6 to the display | To compute Tangent of the displayed angle X |
| 7/$Cos^{-1}$ | Enter number 7 to the display | To compute Arc Cosine of the displayed value X |
| 8/$Sin^{-1}$ | Enter number 8 to the display | To compute Arc Sine of the displayed value X |
| 9/$Tan^{-1}$ | Enter number 9 to the display | To compute Arc Tangent of the displayed value X |
| O/1n | Enter zero to the display | To compute natural logarithm of the displayed number X |
| / $\sqrt{x}$ | Enter decimal point to its proper position | To compute square root of the displayed number X |
| +/M+ | Perform and function | To add the displayed number to the memory |

| | |
|---|---|
| −/M− | Subtraction |
| X/R→D | Multiplication |
| ÷/D→R | Division |
| ENT/EX | Enter the displayed number ready for any calculations |
| RM/MS | Recall the contents in the memory to the display |
| +/−/1/X | To change sign of the displayed number X from + to − or reverse |
| F/ π | To perform secondary functions |
| C/CLF | Press once clear the last entry only. Three depressions after a number entry will clear all except the memory. |



| | |
|---|---|
| | To subtract the displayed number from the memory |
| | To convert a displayed angle X in radian to an angle in degrees ($\pi$ Radian = 180°) |
| | To convert a displayed angle X in degrees to an angle in radian ($\pi$ Radian = 180°) |
| | To exchange the contents of the working registers X to Y (register X is the number displayed, register Y is the entry which was last displayed) |
| | To store the displayed number X to the memory The original content of which is cleared. |
| | To compute reciprocal of the displayed number X |
| | Places the value of $\pi$ (Pi) 3.1415926 on the display if pressed twice. |
| | Clear the F (secondary) functions and return the calculator ready for any primary functions. This is normally automatic but is provided in case F is pressed by accident |

## SCIENTIFIC OR POLISH NOTATION ENTRY

In keeping with common practice the Model 1000 provides Polish (scientific) Notation (not algebraic as in simple units). This is more convenient for complex equations as you will find. Basically it means you put the first number of a calculation into the machine and press enter (ENT) to begin. From then you enter all other numbers before the function + — x ÷ and then the function, this then performs its function and displays the answer without the need for an = equals key.

For example, 10 x 15 + 5 =, you would press 10 then ENT then 15 then X then 5 then ± and the answer is displayed. This is the way almost all scientific calculators operate. The advantage is that, less key presses are required to compute complex or long equations. The system is easily learned and soon becomes second nature. Try the following sample problems to gain skill in operating your "1000".



## ADDITION & SUBTRACTION

| | Press these keys | the display will Show |
|---|---|---|
| 54.5+25.75−12=68.25 | 54.5 | 54.5 |
| | ENT | 54.5 |
| | 25.75 | 25.75 |
| | + | 80.25 |
| | 12 | 12 |
| | − | 68.25 |

## MULTIPLICATION & DIVISION

| | | |
|---|---|---|
| 155x26.2=4061 | 155 | 155 |
| | ENT | 155. |
| | 26.2 | 26.2 |
| | x | 4061 |
| 147÷6=24.5 | 147 | 147 |
| | ENT | 147. |
| | 6 | 6. |
| | ÷ | 24.5 |
| $\frac{155x26.2}{2.5}$ =1624.4 | 155 | 155 |
| | ENT | 155. |
| | 26.2 | 26.2 |
| | x | 4061 |
| | 2.5 | 2.5 |
| | ÷ | 1624.4 |

## CHAIN CALCULATION

$\frac{-147\times2.5}{5}+369=295.5$

| | | |
|---|---|---|
| | 147 | 147 |
| | +/− | −147 |
| | ENT | −147. |
| | 2.5 | 2.5 |
| | x | −367.5 |
| | 5 | 5 |
| | ÷ | −73.5 |
| | 369 | 369. |
| | ÷ | 295.5 |

$\frac{18}{(7\times6)+(3\times8)}=0.27272727$

| | | |
|---|---|---|
| | 7 | 7 |
| | ENT | 7. |
| | 6 | 6 |
| 7x6=42 | x | 42. |
| | 3 | 3 |
| | ENT | 3. |
| | 8 | 8 |
| 3x8=24 | x | 24. |
| 42+24=66 | + | 66. |
| | 18 | 18 |
| Exchange the contents in X & Y registers | F EX | 66. |
| | ÷ | 0.27272727 |



## BRACKET CALCULATION

(This calculation requires memory, first press 0 then MS this clears the memory ready for use)

$2\pi[(3\times6)+(9\div2)-(4+7)+(6-4)]=84.823$

| | | |
|---|---|---|
| | 3 | 3 |
| | ENT | 3. |
| | 6 | 6 |
| 3x6=18 | x | 18. |
| | 9 | 9 |
| | ENT | 9. |
| | 2 | 2 |
| 9÷2=4.5 | ÷ | 4.5 |
| 18÷4.5=22.5 | + | 22.5 |
| | 4 | 4 |
| | ENT | 4. |
| | 7 | 7 |
| 4÷7=11 | + | 11. |
| 22.5−11=11.5 | − | 11.5 |
| | 6 | 6 |
| | ENT | 6. |
| | 4 | 4 |
| 6−4=2 | − | 2. |
| 11.5+2=13.5 | + | 13.5 |
| | 2 | 2 |
| 2x13.5=27 | x | 27. |
| | F | 27. |
| | π | 3.1415926 |
| 2πx13.5= | x | 84.823 |

## THE MEMORY

Any number displayed will be added to the memory by pressing (M+) key or subtracted from the memory by pressing (M–) key. The contents of the memory may be re-called for inspection or use at any time by pressing recall memory (RM) key. The contents of the memory may be replaced with the displayed number by pressing memory store (MS). This is also the method of returning the memory register to zero. Place zero on the display and press (MS), the memory is now cleared.

### Bracket Calculation

$$\frac{2}{(153-3)} = .01333333$$

| Press these keys | the display will Show |
|---|---|
| 153 | 153 |
| F | 153. |
| M+ | 153. |
| 3 | 3 |
| F | 3. |
| M– | 3 |
| 2 | 2 |
| ENT | 2. |
| RM | 150. |
| ÷ | .01333333 |
| 0 | 0 |
| F | 0 |



Clear memory by enter
0 to the memory .... MS 0.
RM 0.

### Trigonometric Functions

Sin $45^{o}$=0.7071068
Cos $45^{o}$=0.7071068
Tan $45^{o}$=0.5773502

| Press these keys | the display will Show |
|---|---|
| 45 | 45 |
| F | 45. |
| Sin | .7071068 |
| 45 | 45 |
| F | 45 |
| Cos | .7071068 |
| 30 | 30 |
| F | 30 |
| Tan | .5773502 |

## Inverse-Trigonometric Functions

$Sin^{-1}$ 0.5=30°
$Cos^{-1}$ 0.5=60°
$Tan^{-1}$ 0.5=26.56505°

| | |
|---|---|
| 0.5 | .5 |
| F | .5 |
| $Sin^{-1}$ | 30. |
| 0.5 | .5 |
| F | .5 |
| $Cos^{-1}$ | 60. |
| 0.5 | .5 |
| F | .5 |
| $Tan^{-1}$ | 26.56505 |

## Conversion between Radians and Degree

(a) $2\pi$Rad. = 360°

| | |
|---|---|
| 2 | 2 |
| ENT | 2. |
| F | 2. |
| $\pi$ | 3.1415926 |
| x | 6.2831852 |
| F | 6.2831852 |
| R → D | 359.99999 |

(b) 360° = 6.2831852

| | |
|---|---|
| 360 | 360 |
| F | 360. |
| D → R | 6.2831852 |

## Raising Power

$2^{3.15}$=8.876545

| | |
|---|---|
| 2 | 2 |
| ENT | 2. |
| 3.15 | 3.15 |
| F | 3.15 |
| $Y^x$ | 8.876545 |



| Press these keys | the display will Show |
|---|---|

## Logarithmic and Anti-Logarithmic Functions

a) Natural logarithmic (base e)
In 122 = 4.804021

| | |
|---|---|
| 122 | 122 |
| F | 122. |
| 1n | 4.804021 |
| F | 4.804021 |
| $e^x$ | 121.9999 |

b) Common logarithmic (base 10)
Log 122 = 2.08636

| | |
|---|---|
| 122 | 122 |
| F | 122. |
| log | 2.08636 |

To find anti-log by using $Y^x$ function $10^{2.08636}$=121.9999

| | |
|---|---|
| 10 | 10 |
| ENT | 10. |
| 2.08636 | 2.08636 |
| F | 2.08636 |
| $Y^x$ | 121.9999 |

## Square Root ($\sqrt{x}$)

$\sqrt{144}$ = 12

| | |
|---|---|
| 144 | 144 |
| F | 144. |
| $\sqrt{x}$ | 12. |

## Reciprocal (1/X)

| | | |
|---|---|---|
| 1/0.5 = 2 | 0.5 | .5 |
| | F | .5 |
| | 1/x | 2. |

## Hyperbolic Function

Function equation

$$\text{Sinh } (x) = \frac{e^x - e^{-x}}{2}$$

To find Sinh (0.25) = 0.252612

$(e^{-x}=1/e^x)$

$\text{Cosh } (x) = e^x+e^{-x}/2$

Cosh (0.25) = 1.031413

$(e^{-x}=1/e^x)$

| | | |
|---|---|---|
| | 0.25 | .25 |
| | F | .25 |
| | $e^x$ | 1.284025 |
| | ENT | 1.284025 |
| | F | 1.284025 |
| | 1/x | .77880103 |
| | − | .505224 |
| | 2 | 2 |
| | ÷ | .252612 |
| | 0.25 | .25 |
| | F | .25 |
| | $e^x$ | 1.284025 |
| | ENT | 1.284025 |
| | F | 1.284025 |
| | 1/x | .77880103 |
| | + | 2.062826 |
| | 2 | 2 |
| | ÷ | 1.031413 |



## Mixed Calculation

Evaluate: $\dfrac{\log [(14+26)/(6-\sqrt{4})]}{\text{Sin } (25+5)}$

| | | |
|---|---|---|
| | 14 | 14 |
| | ENT | 14. |
| | 26 | 26 |
| 14+26=40 | + | 40. |
| | 6 | 6 |
| | ENT | 6. |
| | 4 | 4 |
| | F | 4. |
| $\sqrt{4}=2$ | $\sqrt{x}$ | 2. |
| $6-\sqrt{4}=4$ | − | 4. |
| $(14+26)/(6-\sqrt{4})=10$ | ÷ | 10. |
| | F | 10. |

Log $[(14+26)/(6-\sqrt{4})]$ = 1

| | | |
|---|---|---|
| | log | 1. |
| | 25 | 25 |
| | ENT | 25. |
| | 5 | 5 |
| | + | 30. |
| | F | 30. |
| Sin (25+5) = 0.5 | Sin | .5 |
| Answer | ÷ | 2. |
| | C | 0. |

Your Model 1000 has limitless possibilities for other more complex calculations by combining any or all of its functions. It is interesting and exciting to experiment in your spare time—try it—good luck—.