

CalcOne 2.0 Manual

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Fantron Design
242 Sugar Road
Bolton, MA 01740

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Introduction

CalcOne is a universal calculator that embodies many useful features and functions. It was designed with two things in mind: We want to offer a calculator with broad appeal and to insure the program uses very little program memory. Currently version 2.0 has scientific functions, financial calculations, does unit conversions, base conversions. The calculator will operate normally whether it is registered or not. However, until the calculator is registered, a reminder will be displayed and the user will have an opportunity to enter a registration number. A registration number can be obtained from

Fantron Design Ltd.
242 Sugar Road
Bolton, MA 01740

by sending \$12.50 and your name and address. With your registration, you will receive the next upgrades for free. We are planning to add stand alone applications that make it easy to edit and merge data files, customize menus.

CalcOne is a universal shareware calculator program that can be operated in an algebraic (Standard) or Reverse Polish Notation (RPN) entry modes. If you don't have your own registration number, registration information can be found under the **About CalcOne...** menu item under the **Help** menu

Quick Start Guide

When starting CalcOne for the first time, a dialog box will appear that notifies you the program isn't registered. If you have a registration number, click on YES, and enter your registration number in next dialog box. There are times when you will need to register again. This may occur when you reset the program, switch computers, or system software. If you loose your registration number, write us at the address above. Give us your name and address, and we will send your registration number again.

To start the calculator, double click on the CalcOne icon. After registering, a picture of a calculator will appear on the computer screen. The calculator buttons are actuated by positioning the mouse's arrow over a calculator key and click once with the mouse button. As with other applications, most functions have a key board equivalent, some of which are shown to the right of the menu item.

When the calculator appears, notice the menu items in the menu bar at the top of the window. Click on the **Mode** menu, and you can chose between **Standard** and **RPN** entry modes as well as other features relating to the calculator operation. For those who like the Hewlett Packard calculators, chose the **RPN** menu item. For the more common algebraic entry system, chose the **Standard** menu item.

Also notice the **Calculator** menu. There are five calculators under this menu item which can be chosen. The **Scientific** calculator performs many logarithmic and trigonometric calculations. The **Complex** calculator performs these same functions with complex (real and imaginary) numbers. A **Financial** calculator will perform statistic and interest rate calculations. The **Conversions** calculator will convert from one unit measure to another, like meters to yards. And a **Numerical** calculator which does base conversions and logical operations has been added to version 2.0. Each of these calculators are discussed in detail in the following sections.

General Instructions

Some operations will be common to all five calculators and this section describes these general operating procedures. This section can be skipped by those who are familiar with other calculator products.

Preferences:

Under the **Calculator** item in the menu bar, there is a **Preferences...** menu item that allows you to set the color of the calculator and the type of decimal point you want to use. When you select preferences, a dialog box will appear with check boxes for the type of decimal point, a period "." or a comma ",". There will also be three scroll bars for setting the calculator color. The color is set by sliding the red, green and blue control, until the small square in the bottom-right is the desired color.

Standard Entry Mode:

In the **Standard** mode, numbers and the six operations

$+$, $-$, \times , $/$, $=$, and $[]$

are entered like an algebraic equation:

1 . 2 X [()] 2 + . 8 [()] = 3.36

The key board can be used as long as you substitute the star * for the multiplication and the forward slash, /, for the division buttons. The calculator should automatically know whether the [()] is an open, "[", or close, "]", and there can be up to 6 levels of [()].

The button **Clr** cancels any pending operation and sets the display to zero.

RPN Entry:

In the **RPN** entry mode, the mathematical operation is entered last. The first number is stored by clicking on the **E** (ENTER) key, followed by the second number and so on. Then, the math operations are entered from last to first, and no equal sign is needed.

1 . 2 E 2 E . 8 + X 3.36

The key board can be used as long as you use the star * for the multiplication and the forward slash, /, for the division buttons. The numbers you enter are stored in four registers that can be "rolled" by using the down arrow key. Try entering;

1 E 2 E 3 E 4

and then click on the down arrow key several times. These four numbers will reappear in reverse sequence.

The **Clr** key only clears the display, x value, in memory. it has no effect on the other registers.

Display and Operation Instructions:

The left arrow is used to correct the number being entered. One-by-one, the last key stroke will be removed from the number in the display.

1 . 2 8 7 <- <- <- = 1.2

The +/- key changes the sign of the number in the display.

The **FIX** key is used to control the format of the display and the number of digits displayed. Four display modes can be selected with this key and the current setting is displayed as a small code in the top of the display window the first time **FIX** is selected;

Scientific	S: displays the number as power of 10
Literal	L: displays the number with a fixed number of decimals
Engineering	E: displays the number in powers of 1000
Fixed	F: displays the number in a fixed number of decimals but will switch to scientific when the number gets too big or too small.

Along with the little letter, a number will appear that shows the current setting for the number of digits after the decimal. This number will range from 0 to 9. There may be a letter F instead of a number. When **FIX** is selected, the current decimal point mode and number of digits are displayed. If this setting is OK, select any key except a number, decimal point, or **FIX**. Selecting **FIX** again or again will change the decimal point mode from **S** to **L** to **E** to **F** and back to **S** until you have selected the desired display mode. The very next number you select will determine the number of digits after the decimal point. If the decimal point key is selected, the number of digits after the decimal point will "float". This means the last digits after the decimal are checked to see if they are zeros, and if they are, these zeros are not displayed.

The **EE** is used to enter a power of ten.

The **x-y** swaps the value displayed and the last value entered.

The **Sqr** key finds the square root of the display if it is positive.

The **1/X** key finds the inverse of the display.

The **X2** key squares the display.

The **STO** key is used to store numbers in any of the 10 memory locations. When you want to store a number, click on the **STO** key and a number between 0 and 9. When the **STO** key is selected, a small **sto** is displayed at the top of the display window. Along with the little **sto** will be a number. This is the default memory location. If any key is selected other than a number, the default memory location will be used for

storage. The function can also be invoked from the keyboard with the "s" key

The **RCL** key works the same as the **STO** key, but recalls the value at the memory number selected, or the default. Recall can also be chosen by pressing "r" on the keyboard.

The **INV** key turns the invert indicator on and off in the upper left hand corner of the display. When the **INV** is active, some of the function keys will operate in the inverse mode. For example, sin becomes arcsine.

Displayed values can be cut and pasted into other applications by using the menu items under the **Edit** menu item. To get the number from the display, select the **Copy** menu item under the **Edit** menu. Then, go to your other document or application and paste that number in. Numbers can be pasted into the calculator from other documents by selecting the **Paste** menu item. Cut or Copy the number from your other document, activate CalcOne, and select **Paste**. The number will appear in the display as if you entered it with the mouse or from the keyboard.

The **Reset** menu item will reset the calculator's screen position, memory registers, operating modes and display options to a state similar to when you first started this program.

The calculator takes up a lot of room on the desktop. You can miniaturize the calculator by clicking on the bar below the display window. Another click on the bar will return the calculator to its normal size.

To get rid of the calculator, you can choose **Exit** from the **File** menu or click in the tiny box in the upper left hand corner of the calculator window. Your calculator position on the screen, and other settings will be saved before the program quits. Next time you start the program, you can continue calculating where you left off. However, if you want to use the calculator for several different jobs, such as your monthly budget and your business finances, you can write data into files as explained in the next section.

Data Storage and Retrieval:

Data can be written into a file or read from a file that has already been created. This can be valuable for saving different data files for each sales account, for your home finances. Running balances can be kept in the memory location or in the display, and recalled at any time. The following is a list of calculator items saved in the data file (version 2.0):

- Display and all stack items (RPN Mode).
- All 10 memories and default numbers for STO, RCL and SUM.
- RPN/Standard setting, calculator, and decimal point type.
- Decimal point and Complex number Mode, angle type (e.g.. radians)
- Calculator color and location on screen.

To save a file, select the **Save** or **Save As...** menu Item under the **File** menu in the menu bar. Selecting **Save** will write over the last file you wrote, or if this is the first save since you started the calculator, the data will be saved in a file named ClacOne.dat in the current directory. Chose **Save As...** if you want the data saved in another file. Then, use the standard save as... dialog box to navigate and save the data.

If you want to load data from a CalcOne file, select **Open** from the **File** menu in the menu bar. Then navigate with the standard file dialog box until you find the file you want.

Paper Tape:

CalcOne 1.0 has a paper tape display where up to 64 numbers and operations can be printed. The paper tape is started by selecting the **Paper Tape** menu item under the **Mode** menu. The paper tape is just a window where a history of calculator operations and results are written. Only eight lines are shown, but there are 64 stored in the records and can be viewed by using the sliding control at the far right of the calculator.

New lines are always copied from the display to the bottom of the stack of numbers. So, the oldest calculations are on the top and the newest are on the bottom.

The paper tape can be printed by selecting the **Print** menu item under the **File** menu in the menu bar. To control the way numbers are printed, chose the **Page Setup...** menu item.

Scientific and Complex Calculators

This section describes the functions that apply to the scientific and complex calculators.

When the **Pi** key is selected, the key will dissolve into a pop-up menu with several constants besides π .

The **Log** key calculates the logarithm, in base 10, of the number in the display. The **INV** selector will case the key to calculate the inverse log, or 10 raised to the power of the value in the display.

The **In** key calculates the natural logarithm, in base e, of the number in the display. The **INV** selector will case the key to calculate the inverse logarithm, or e raised to the power of the value in the display.

The **D-R** key is used to select the units of the angle that will be used for the trigonometric functions.

Degrees	D: 360 degrees in a circle
Radians	R: 2π radians in a circle
Grads	G: 400 grads in a circle
Unit Circle	C: 1 unit circle in a circle

The **hyp** key will turn the hyperbolic trig function on and off, as indicated by the **HYP** in the upper left-hand portion of the display.

The **sin** key calculates the sine of the displayed number. The **INV** and **HYP** selector will case the key to calculator the inverse sine, hyperbolic sine and the inverse hyperbolic sine.

The **cos** key calculates the cosine of the displayed number. The **INV** and **HYP** selector will case the key to calculator the inverse cosine, hyperbolic cosine and the inverse hyperbolic cosine.

The **tan** key calculates the tangent of the displayed number. The **INV** and **HYP** selector will case the key to calculator the inverse tangent, hyperbolic tangent and the inverse hyperbolic tangent.

Complex Calculator Only

Complex numbers are entered by inputting the real part (or magnitude) first the same way you would normally enter numbers, then begin entering the imaginary part (or angle) by selecting the **i** key first. The choice of entering the complex number in a real and imaginary or magnitude and angle format is determined by selecting the **P-R** key.

The following example shows how to enter the complex number 1.2+4i:

$$1 \ . \ 2 \ i \ 4 \ = \qquad \qquad \qquad 1.2 + i4$$

The * key will convert the display to it's complex conjugate.

The P-R key changes the way complex numbers are entered, displayed, and transferred to other calculators with four settings;

Real	RE
Imaginary	IM
Magnitude	MAG
Angle	ANG

Since the other calculators can only handle one real number, the number transferred between calculators is determined by these four settings. Furthermore, the **RE** and **IM** setting will allow the entry and display of the complex number in terms of real and imaginary parts. When the **MAG** and **ANG** modes are selected, the entry and display of the complex number is done with the magnitude and angle of the number. The angle is displayed in degrees, radians, grads or unit circle according to the **D-R** setting.

Financial Calculator

The basic financial calculator functions are described above. The following explains the functions specific to the financial calculator.

The financial calculator has its own pop up menu behind the % key. When the % is chosen from the pop-up menu, it converts the display into a percentage (divides the display by 100). The other choices in the pop-up menu will multiply the display by the indicated percentage (some are the current income tax rates).

The **SUM** key adds the display to a value in memory. The memory location is chosen the same way as with the **STO** and **RCL** key as explained above.

The **X!** key calculates the factorial of the displayed number if it is an integer greater than zero.

There are four statistical function keys to perform simple statistics. These keys find the mean and standard deviation of a group of numbers entered with the **E** key. To use the statistical functions, enter the data one number at a time and press the **E** key when each number is entered. Then when all the data has been entered, the mean is displayed by selecting the **Mn** key. The **Sg** key finds the population standard deviation of the data and the **Sgn** finds the sample standard deviation.

5	5	E	5	4	E	5	1	E		
5	5	E	5	3	E	5	4	E		
		Mn						53.66667		
		Sg						1.37437		
		Sgn						1.50555		

Select the key **Clr** twice to clear the registers before starting a new statistical calculation with new data.

Investment calculations are supported by five keys. These keys are used to enter a value for a later calculation, or to initiate a calculation. The **i** key is for entering or finding the periodic interest rate. The **N** and **PMT** keys are used for entering or calculating the number of payments or the payment value respectively. The **PV** and **FV** keys are for entering the present or future value of an investment. You would start with four of these values, and then calculate the remaining one. These known values are entered by selecting the **STO** key, then selecting one of the five investment keys:

1	0	0	0	0	0	STO	FV
---	---	---	---	---	---	------------	-----------

The example above puts the value 100,000 in the future value register. Then the other three values are entered to prepare for a calculation. The remainder of this example calculates the interest rate needed to have \$100,000 after 10 years when you start with

\$10,000 and deposit \$200 a month into the account:

1	0	0	0	0		STO	PV
1	0	X	1	2	=		STO N
2	0	0				STO	PMT

i							0.01256
x	1	2					0.15071

You would need an interest rate of 1.256% per month or 15.071% per year to achieve the goal of 100,000.

Clicking twice on the **Clr** key will clear all the financial registers.

Conversion Calculator

The conversions calculator will convert between many common units of measure like meters to feet and Centigrade to Fahrenheit. This calculator includes some of the more common functions for the scientific and financial calculators. The conversions calculator has two extra windows next to the display that shows what units are where selected with the **Frm** key on the top and the units selected with the **To** key.

There are two pop-up menus that control what units are used in the conversion process. You need to select two units, the units to convert from and the units to convert to. The pop-up menus under the **Frm** and **To** keys allow you to choose these two units. The menu under the **To** key is rebuilt when a new **Frm** selection is made. The example below shows how many meters are equal to 100 yards:

1	0	0		Frm	yards
			To	meters	91.43551

Numerical Calculator

The **Numeric** calculator has 16 number keys and a pop up menu where you can select the base of the numbers entered and the displayed. You will also notice additional keys for logical operations such as AND, OR and Exclusive OR. Numbers can be displayed in base 2, 4, 8, 10, 12 or 16 by selecting the base from the pop up menu under the ^ key. The current base is displayed at the top of the display in a small number or letter that ranges from 2 to G.

Numbers in bases other than 10 can be manipulated like normal numbers in this calculator plus there are a few additional operations one can perform. Logical operations can be performed on long integers (between $+2^{31}$ and -2^{31}), but not floating point numbers. Before any of the logical operations, **AND**, **OR**, **XOR**, and **NOT**, the number is converted to a long integer. If the number is larger or smaller than a long integer, the results will be unpredictable.

The **ASCII** key prints the ASCII character (in the current font) if the number in the display is between 0 and 256.

The **INT** key converts the displayed number to the largest integer less than the number in the display and sets the calculator in mode to do integer calculations.

The **Flt** key returns the calculator to a floating point calculation mode.

The logical operations have a lower priority than the mathematical functions which only applies to the standard entry mode. The hierarchy of operations are multiplication and division first, addition and subtraction second, and the logical operations last.

The Future for CalcOne

The future for CalcOne is entirely up to you. You can exchange data files with other CalcOne users. As this manual goes to press, we are planning to add tools to the CalcOne system to make it easier to program and customize. As a registered user, you will get these tools as soon as they become available. Here is a list of some things we are working on:

1. Data file editor. There are a lot of things in a data file. What if you want to load some of the data? This data file will also have the calculator's color. If you change the color of the calculator it would revert to the old color when the data file containing the new menus is recalled. The data file editor will tell you what is in the data file and allow you to change items, or copy parts from other files.
2. Menu Builder. The next version of CalcOne will allow you to customize the pop-up menus with your own constants, percentages, or conversion units. The menu builder will make creating menus from scratch easy and fast by putting all the menu building controls at your fingertips.
3. Programability. The Macintosh CalcOne is programmable, and this feature will be added to the Windows version. This will allow you to automate calculations and solve equations.

We hope that CalcOne is a small and powerful tool for your everyday use.

