

**TotalCalc**

**COLLABORATORS**

	<i>TITLE :</i> TotalCalc		
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## Chapter 1

# TotalCalc

### 1.1 TotalCalc documentation

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TotalCalc 1.21

by Luca Carminati  
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Introduction

System requirements

Installation

Usage

Guarantee

Copyright

Author

Acknowledgements

History

### 1.2 Introduction

Introduction

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TotalCalc is a powerful calculator having the following main features:

- Possibility to exchange among different numeration systems: floating point, decimal integer, hexadecimal and binary.
- Up to 13 normal digits plus 2 digits for the exponent of ten (scientific notation).
- Arithmetical operations.
- Powers, roots, logarithms, reciprocal, factorial, trigonometric functions and percent functions.
- Logical operations.
- Up to 20 nested parentheses.
- Up to 10 independent memories.
- Constant calculus.
- Clipboard supported.
- Possibility to use any font of your choice.

## 1.3 System requirements

System requirements

TotalCalc requires Kickstart 2.04+ and the following libraries in the LIBS: directory:

- diskfont.library
- mathieeedoubbas.library
- mathieeedoubtrans.library

## 1.4 Installation

Installation

To install TotalCalc, simply drag its icon in any drawer of your choice.

## 1.5 Usage

Usage

Starting the program

ToolTypes and CLI arguments

The menus

The display

---

The main window  
The Extras window  
The Memories window  
Calculus range  
Examples  
Constant calculus  
Notes

## 1.6 Starting the program

Starting the program

To start TotalCalc from Workbench, double-click on its icon after setting the

ToolTypes  
. If you want to start the program from a Shell window, type in  
its name followed by the required  
CLI arguments  
. Here is the CLI  
template:

```
FN=FONTNAME/K, FS=FONTSIZE/K/N, RFN=RESFONTNAME/K, RFS=RESFONTSIZE/K/N,  
SAK=SPACEAROUNDKEYS/K/N, X=XPOS/K/N, Y=YPOS/K/N, BM=BELOWMOUSE/S, MODE/K,  
EXT=EXTRAS/S, MEM=MEMORIES/S, COPY=AUTOCOPY/S, CANG=CONVANG/S,  
SN=SCINOTATION/S
```

The program can run on any public or custom screen, so you may use tools such as the FKey commodity to call it at any time.

## 1.7 ToolTypes and CLI arguments

ToolTypes and CLI arguments

TotalCalc recognizes the following ToolTypes and CLI arguments:

FONTNAME=<font>  
Specifies the name of the main font used by the program. If not specified or not found, the font of the frontmost screen will be used.

FONTSIZE=<n>  
Specifies the size of the main font used by the program.

RESFONTNAME=<font>

---

Specifies the name of the font used to print the result on the display. If not specified or not found, the font of the frontmost screen will be used.

RESFONTSIZE=<n>

Specifies the size of the font used to print the result on the display.

SPACEAROUNDKEYS=<n>

Specifies how many pixels of blank space to leave around the keys (1 to 12; default=2).

XPOS=<n>

Specifies the horizontal position of the  
main window

.

YPOS=<n>

Specifies the vertical position of the  
main window

.

BELOWMOUSE

Indicates you want the  
main window  
to be opened below the mouse  
pointer. If specified, 'XPOS' and 'YPOS' will be ignored.

MODE=FLT|DEC|HEX|BIN

Specifies the initial numeration system (FLT=Floating point, DEC=decimal integer, HEX=hexadecimal, BIN=binary; default=FLT).

EXTRAS

Indicates you want the  
Extras window  
to be opened when the program  
starts.

MEMORIES

Indicates you want the  
Memories window  
to be opened when the program  
starts.

AUTOCOPY

Indicates you want the result to be copied into the clipboard automatically.

CONVANG

Indicates you want the displayed number to be converted when changing the angular unit (see the 'DEG->RAD->GRA' key in the  
Extras window  
).

SCINOTATION

Indicates you want the numbers to be always displayed in scientific notation (FLT mode only).

---

## 1.8 The menus

The menus

TotalCalc provides the following menus:

Project/About...

Gives you some information about the program.

Project/Quit

Quits the program.

Edit/Cut

Removes the displayed number and places it in the clipboard.

Edit/Copy

Copies the displayed number into the clipboard.

Edit/Paste

Pastes the number stored in the clipboard on the display.

Edit/Erase

Removes the displayed number.

Windows/TotalCalc

Brings the

main window  
to front.

Windows/Extras

Opens the

Extras window  
or brings it to front if already opened.

Windows/Memories

Opens the

Memories window  
or brings it to front if already opened.

Memories/Use

Lets you choose which independent memory to use (0 to 9).

Memories/Recall

Recalls the content of the current memory.

Memories/Store

Stores the result in the current memory.

---



**Memories/Add**

Adds the result to the content of the current memory.

**Memories/Subtract**

Subtracts the result from the content of the current memory.

**Memories/Exchange**

Exchanges the displayed number with the content of the current memory.

**Memories/Clear**

Clears the content of the current memory.

**Memories/Clear all**

Clears the content of each memory.

**Options/Auto-copying**

Indicates you want the result to be copied into the clipboard automatically.

**Options/Convert angle**

Indicates you want the displayed number to be converted when changing the angular unit (see the 'DEG->RAD->GRA' key in the Extras window).

**Options/Scientific notation**

Indicates you want the numbers to be always displayed in scientific notation (FLT mode only).

## 1.9 The display

The display

The display looks like the following:

```

      A      B      C
      |      |      |
      |      |      |
      |      |      |
      |-----|
      | ME4    ()7    + |
      | -1.234567890123 E-99 |
      |-----|
           |           |
           |           |
           D           E
  
```

A - Independent memory currently used.

B - Number of parentheses opened.

C - Current operation.

D - Mantissa.

E - Exponent of ten (FLT mode only).

When in BIN mode, the '«' character may appear on the left of the number. This means that all the digits cannot be displayed (only the least significant word is showed). Click on the 'Low->High' key in the

Extras window

to see the

most significant word.

## 1.10 The main window

The main window

The following are brief descriptions of the keys you find in the main window (between square parentheses you will find the respective keyboard shortcuts):

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

Numerical keys [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F].

.

Decimal point [.] .

<

Back space [BACKSPACE] .

+

Addition [+] .

-

Subtraction [-] .

\*

Multiplication [\*] .

/

Division [/] .

+/-

Change the sign ['] .

=

Perform the operation [=|Enter] .

OR

Logical OR .

XOR

Logical XOR (exclusive OR) .

AND

Logical AND .

---

NOT

Logical NOT.

(

Open parenthesis [(|{|{]

)

Closed parenthesis [)|}|}].

CE

Clear the last entry [RCOMMAND D].

CA

Clear all (the whole calculator is reset except the content of the memories) [DEL].

MR

Recall the content of the current memory [RCOMMAND R].

Min

Store the result in the current memory [RCOMMAND S].

M+

Add the result to the content of the current memory [RCOMMAND +].

M-

Subtract the result from the content of the current memory [RCOMMAND -].

x=M

Exchange the displayed number with the content of the current memory [RCOMMAND G].

x=y

Exchange the displayed number with the content of the working register.

FLT -> DEC -> HEX -> BIN

Mode key. It lets you choose which numeration system to use (FLT=floating point, DEC=decimal integer, HEX=hexadecimal, BIN=binary) [TAB].

## 1.11 The Extras window

The Extras window

The following are brief descriptions of the keys you find in the Extras window (between square parentheses you will find the respective keyboard shortcuts):

DEG -> RAD -> GRA

Sets the angular unit (DEG=degrees, RAD=radians, GRA=gradients).

Low -> High

Displays the least significant word (Low) or the most significant word (High) when in BIN mode.

sin

---

Sine.

cos  
Cosine.

tan  
Tangent.

asin  
Arcsine.

acos  
Arccosine.

atan  
Arctangent.

hsin  
Hyperbolic sine.

hcos  
Hyperbolic cosine.

htan  
Hyperbolic tangent.

e<sup>x</sup>  
e (2.718281828459...) raised to number.

10<sup>x</sup>  
10 raised to number.

ln  
Natural logarithm (base e).

log  
Common logarithm (base 10).

n!  
Factorial.

1/x  
Reciprocal.

x<sup>2</sup>  
Number raised to 2.

x<sup>3</sup>  
Number raised to 3.

^  
Number raised to power [^].

SqRt  
Square root.

CbRt

---

Cubic root.

nRt  
nth root.

Pi  
Pi (3.14159265359...).

%  
Percent [%].

EXP  
Exponent of ten for scientific notation numbers [E].

LSL  
Logical shift towards left.

LSR  
Logical shift towards right.

ROL  
Rotation towards left.

ROR  
Rotation towards right.

## 1.12 The Memories window

The Memories window

The Memories window displays the content of each independent memory. You can choose which memory to use by clicking on an item of the list. Double-clicking on an item has two possible effects: if the item contains a zero, then the number on the display will be stored in the memory; if the item contains a value different than zero, then the content of the memory will be recalled on the display.

## 1.13 Calculus range

Calculus range

The calculus range depends on the numeration system currently used:

FLT mode:                   +/-9.999999999999999 E+/-99

DEC mode:                   +/-999999999999999

HEX and BIN modes: -2147483648/+2147483647

---

## 1.14 Examples

### Examples

The following are some examples on how to use the calculator:

Example	Operation	Reading
$23+4.5-53=-25.5$	$23 + 4.5 - 53 =$	-25.5
$56 \times (-12) / (-2.5) = 268.8$	$56 * 12 +/- / 2.5 +/- =$	268.8
$7 \times 8 - 4 \times 5 = 36$	$7 * 8 - (4 * 5) =$	36
$\frac{6}{4 \times 5} = 0.3$	$4 * 5 / 6 x=y =$	0.3
$2 \times [7 + 6 \times (5 + 4)] = 122$	$2 * (7 + (6 * (5 + 4))) =$	122
$\frac{2}{3} \times (1 \times 10^{20}) = 6.66666666666667 \times 10^{19}$	$2 / 3 * 1 \text{ EXP } 20 =$	6.66666666666667 E19
$53+6= 59$	$53 + 6 \text{ Min}$	59
$+ 23-8= 15$	$23 - 8 \text{ M+}$	15
$+ 56 \times 2 = 112$	$56 * 2 \text{ M+}$	112
$+ 99 / 4 = 24.75$	$99 / 4 \text{ M+}$	24.75
$= 210.75$	$\text{MR}$	210.75
$(3+6) \times (2+5)$		
$[2 \times (3+4)] + [6 \times (7+8)]$	$3 + 6 * (2 + 5) = \text{Min}$	63
$= 0.605769230769$	$2 * (3 + 4) + (6 * (7 + 8)) =$	104
	$x=M / \text{MR} =$	0.605769230769
$12\% \text{ of } 1500 = 180$	$1500 * 12 \%$	180
$3300 + (16\% \text{ of } 3300) = 3828$	$3300 * 16 \% +$	3828
$1200 - (22\% \text{ of } 1200) = 936$	$1200 * 22 \% -$	936
$\text{Percentage of } 660 \text{ against } 880 = 75\%$	$660 / 880 \%$	75

If you add 300cc to a solution of 500cc, what is the percentage of the new volume compared with the initial one?.....160%

$$300 + 500 \%$$

160

If last week you gained \$80 and \$100 this week, what is the percentage of increase?.....25%

$$100 - 80 \%$$

25

Pi  
 $\sin\left(\frac{\pi}{6}\right) = 0.5$

$$\text{'RAD'} \quad \frac{\pi}{6} = \sin$$

0.5

$\cos 63.7^\circ = 0.443071190824$   
 0.443071190824

$$\text{'DEG'} \quad 63.7 \cos$$

↔

$\tan(-35^\circ) = -0.61280078814$

$$\text{'GRA'} \quad 35 \text{ +/- } \tan$$

-0.61280078814

$\arcsin\left(\frac{1}{2}\right) = 30^\circ$

$$\text{'DEG'} \quad \frac{1}{2} = \text{asin} \quad \leftrightarrow$$

$\text{hypcos } 1.5 - \text{hypsin } 1.5 = 0.223130160148$

$$1.5 \text{ hcos} - 1.5 \text{ hsin} =$$

0.223130160148

$\log 1.23 = 0.089905111439$

$$1.23 \log$$

0.089905111439

$\ln 90 = 4.49980967033$

$$90 \ln$$

4.49980967033

$10^{1.23} = 16.98243652462$

$$1.23 \ 10^x$$

16.98243652462

$e^{4.5} = 90.01713130052$

$$4.5 \ e^x$$

90.01713130052

$5.6^{2.3} = 52.58143837201$

$$5.6 \ ^{2.3} =$$

52.58143837201

Cubic root of 125=5

$$125 \ \text{CbRt}$$

5

7th root of 123=1.988647795276

$$123 \ \text{nRt } 7 =$$

1.988647795276

$123 + 30^2 = 1023$

$$123 + 30 \ x^2 =$$

1023

```

      1
      =12
1      1
      -
3      4
      3 1/x - 4 1/x = 1/x
      12

8! (=1x2x3x4x5x6x7x8)=40320
      8 n!
      40320

$FF8A AND $CCCC=$CC88
      'HEX' FF8A AND CCCC =
      CC88

LSR %110011=%11001
      'BIN' 110011 LSR
      11001

ROL $F0438C3C=$E0871879
      'HEX' F0438C3C ROL
      E0871879

```

## 1.15 Constant calculus

Constant calculus

TotalCalc is able to repeat the last operation performed. Here are some examples:

Example	Operation	Reading
3+2.3=5.3	3 + 2.3 =	5.3
6+2.3=8.3	6 =	8.3
2.3x12=27.6	2.3 * 12 =	27.6
(-9)x12=-108	9 +/- =	-108
17+17+17+17=68	17 + = = =	68
3x6x4=72	4 * (3 * 6) =	72
3x6x(-5)=-90	5 +/- =	-90
56		
=2.8	56 / (4 * (2 + 3)) =	2.8
4x(2+3)		
23		
=1.15	23 =	1.15
4x(2+3)		
12% of 1200=144	12 * 1200 %	144



18% of 1200=216	18 %	216
23% of 1200=276	23 %	276
26% of 2200=572	2200 * 26 %	572
26% of 3300=858	3300 %	858
26% of 3800=988	3800 %	988
Percentage of 30 against 192=15.625%	30 / 192 %	15.625
Percentage of 156 against 192=81.25%	156 %	81.25
If you add 600cc to a solution of 1200cc, what is the percentage of the new volume compared with the initial one?.....150%	600 + 1200 %	150
If you add 510cc to a solution of 1200cc, what is the percentage of the new volume compared with the initial one?.....142.5%	510 %	142.5
What is the percentage of decrease of \$138 compared with \$150?....-8%	138 - 150 %	-8
What is the percentage of decrease of \$129 compared with \$150?...-14%	129 %	-14

## 1.16 Notes

### Notes

- TotalCalc does not care about the priority of the operators, but it performs the operations sequentially. So the calculus '2+3\*4' will be processed as '(2+3)\*4=20' and not as '2+(3\*4)=14'. Use the parentheses to obviate this.
- The Extras window can also be opened/closed by pressing the space bar.
- You can use the cursor up and down keys to choose which independent memory to use.
- The program can also be quitted by pressing the 'Esc' key.

## 1.17 Guarantee

### Guarantee

The program has been tested several times, but its reliability is not guaranteed at 100%. I (the author) do not consider myself responsible for loss or damage of data as consequence of the use of the program. Use TotalCalc at your own risk.

## 1.18 Copyright

### Copyright

TotalCalc is copyrighted by Luca Carminati.

The program is CARDWARE, therefore it is freely distributable on condition that it is always accompanied by all the files in this archive. The whole archive must not be modified in any way.

If you think TotalCalc is useful, let me know by sending me a postcard (preferred) or an e-mail message.

## 1.19 Author

Author

Here is my address:

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If you have some suggestions or if you find some bugs in the program, write me.

## 1.20 Acknowledgements

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---

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- John Larkin
- Rolf Rotvel
- Boris Donko
- Marco Antoniazzi
- Marco Carminati (my nephew)

as well as all the Amiga users and programmers for continuing to believe in this machine.

## 1.21 History

### History

- 1.0 - First release.
- 1.1 - The program did not work on 68000/68010 machines.
  - Fixed a bug which, in some cases, prevented you from entering the decimal point.
  - Negative numbers were not correctly rounded when in DEC, HEX and BIN modes.
  - Now the program handles scientific notation numbers (+/-9.999999999999999 E+/-99).
  - Now the display shows some more information.
  - Added the constant calculus feature.
  - Changed the key '\$\div\$' into '/' (see The main window), the key 'EXP' into 'e^x' and the key 'POW' into 'x^y' (see The Extras window).
  - Added the 'DEG->RAD->GRA', '10^x', 'n!', '1/x', 'x^2', 'x^3', 'CbRt', 'nRt', '%' and 'EXP' keys to the Extras window.
  - Added the 'EXTRAS' and 'SPACEAROUNDKEYS' ToolTypes and CLI arguments.

- Added the 'Memories' menu
    - .
  - Now up to 10 independent memories are available.
  - Some other minor changes.
- 1.2
- Now the 'EXP' key in the Extras window works in a different way.
  - Changed the key 'x' into '\*' (see The main window) and the key 'x^y' into '^' (see The Extras window).
  - Changed the key 'LSW->MSW' into 'Low->High' and moved from the main window to the Extras window
    - .
  - Added the 'Min', 'x=M' and 'x=y' keys to the main window
    - .
  - Removed the 'EXT' key from the main window
    - .
  - Added the 'LSL', 'LSR', 'ROL' and 'ROR' keys to the Extras window
    - .
  - Added the 'BELOWMOUSE', 'MEMORIES', 'AUTOCOPY', 'CONVANG' and 'SCINOTATION' ToolTypes and CLI arguments
    - .
  - Added the 'Store' and 'Exchange' items to the 'Memories' menu
    - .
  - Added the 'Edit', 'Windows' and 'Options' menus
    - .
  - Added the Memories window
    - .
  - Now you can paste numbers from the clipboard.
  - Some other minor changes.
- 1.21
- Opening the Memories window caused a software failure under release 2 of the operating system.
  - In some cases, scientific notation numbers were not correctly pasted from the clipboard.
  - Fixed a bug which allowed you to enter more than 2 digits for the
-

- exponent of ten.
  - In some cases, the trigonometric functions gave you imprecise results.
  - Now the  
    ToolTypes  
    are read even if you change the name of the  
program.
  - Now you can use the cursor up and down keys to choose which independent memory to use.
  - Added the 'RESFONTNAME' and 'RESFONTSIZE'  
    ToolTypes and CLI  
  
    arguments  
    .
  - Some other minor changes.
-