

BCD calculator is a binary coded decimal calculator with 27 digit precision. A BCD calculator do not make any conversion error between binary and decimal system, because all of calculation is done in decimal system.

Program contains these files:

1. BCDcalc.exe - executable file
2. BCDCALCPRINT.TXT - contains record of calculations
3. BCDCALC.INI - contains state of calculator
4. BCDcalcMANUAL.PDF - this manual

If files 2 and 3 don't exist, they will be created after BCDcalc.exe is started.

The following picture contains keyboard equivalences for calculator buttons.

FIX F1 \$	SCI F2 (	ENG F3 )	AUTO F4 ?	be. PgUp {	dp F9 ^D	.af PgDn }
STO Z	1 / X ;	sqrt Q	Y rt X Y	mod \ %	^ ' ^	C ←BS C
MEM M	log L	7 7	8 8	9 9	/	X<>Y W
STO_ F5 !	abs A	4 4	5 5	6 6	*	PM 1 F11 ^A
ST+_ F6 @	int I	1 1	2 2	3 3	+	PM 2 F12 ^B
MEM_ F8 #	sign S	E E X	0 0	, ,	- -	= Enter =

## Buttons 0÷9

Keyboard equivalences: 0÷9

Decimal numbers from 0 to 9.

## . button

Keyboard equivalences: , and .

Decimal point (comma or period).

## **E button**

Keyboard equivalences: **E** and **X**

Exponent – power of 10.

Example: Press **1,25E-9** or **1.25X-9** for number  $1,25 \cdot 10^{-9}$  ( $1.25 \times 10^{-9}$ ).

## **+ button**

Keyboard equivalence: **+**

Addition.

## **- button**

Keyboard equivalence: **–**

This button is used for subtraction and for negative sign of numbers and exponents.

## **\* button**

Keyboard equivalence: **\***

Multiplication.

## **/ button**

Keyboard equivalence: **/**

Division.

## **^ button**

Keyboard equivalences: **^** and **‘**

Power.

## mod button

Keyboard equivalences: \ and %  
Remainder after division.

## YrtX button

Keyboard equivalence: Y  
Y-th root of X.

## = button

Keyboard equivalences: Enter and =

Give results for operations: +, −, \*, /, ^, mod and YrtX

If you press new operation button is it not necessary to press button =.

Press AUTO 07 for displaying numbers in Automatic format with 7 digits precision.

Example 1:  $1+2+3=?$

Press:  $1 + 2 + 3 =$

Display will show: 6

$1 + 2 + 3 = 6$

Example 2:  $2 - (-0,25) = ?$

Press:  $2 - -0,25 =$

The first − is for subtraction, the second is sign of number.

Display will show: 2,25

$2 - (-0,25) = 2,25$

Example 3:  $23 \bmod 7 = ?$

Press:  $23 \backslash 3 =$

Display will show: 2

Remainder is 2.

Example 4:  $\sqrt[3]{-8} = ?$

Press:  $3 Y -8 =$

Display will show: -2

Cube root of -8 is -2.

## C button

Keyboard equivalences: Backspace and C

Clear the last digit entered or result of calculation.

## **X<>Y button**

Keyboard equivalence: **W**

Exchange value of first (Y) and second operand (X).

## **sqrt button**

Keyboard equivalence: **Q**

Square root function.

Example:  $\sqrt{121}=?$

Press: **121 Q** or press buttons: **121 sqrt**

Display will show: **11**

Square root of 121 is 11.

## **1/X button**

Keyboard equivalence: **;**

1/X function.

## **log button**

Keyboard equivalence: **L**

Logarithm function for base 10.

Example:  $\log 1024=?$

Display will show: **3,010 3**

Press: **1024 L**

Logarithm of 1024 is 3,0103.

## **abs button**

Keyboard equivalence: **A**

Absolute function. Give the absolute value of a number.

## **int button**

Keyboard equivalence: **I**

Integer function. Give the integer part of a number.

## **sign button**

Keyboard equivalence: **S**

Sign function. Give  $-1$  for negative,  $0$  for  $0$ , and  $1$  for positive numbers.

For FIX, SCI, ENG and AUTO examples press **20000\* F8 ,=**  
for displaying number  $20000 \cdot \pi$ .

## **FIX button**

Keyboard equivalences: **F1** and **\$**

Displays numbers in format with fixed number of digits after decimal point.

You can choose between  $0$  and  $30$  digits after decimal point. For numbers less than  $10$  press a leading zero.

Example: Press **F1 15** or press buttons **FIX 1 5**

Display will show: **62 831,853 071 795 864 769**  
( $20000 \cdot \pi$  with 15 digits after decimal point)

Press **F1 02**

Display will show: **62 831,85**  
( $20000 \cdot \pi$  with 2 digits after decimal point)

## **SCI button**

Keyboard equivalences: **F2** and **(**

Displays numbers in scientific format: one number, decimal point, numbers after decimal point followed with exponent (power of  $10$ ). You can choose between  $1$  and  $27$  digits precision. For numbers less than  $10$  press a leading zero. Number  $00$  is equivalent for  $27$  (maximal precision).

Example: Press **F2 00**

Display will show: **6,283 185 307 179 586 476 925 286 76 E 4**  
( $20000 \cdot \pi$  with 27 digits precision)

Press **F2 11**

Display will show: **6,283 185 307 2 E 4**  
( $20000 \cdot \pi$  with 11 digits precision)

## **ENG button**

Keyboard equivalences: **F3** and **)**

Displays numbers in engineering format: one, two or three number, decimal point, numbers after decimal point followed with exponent. Exponent is a number which is multiple of 3. You can choose between 1 and 27 digits precision. For numbers less than 10 press a leading zero. Number 00 is equivalent for 27 (maximal precision).

Example: Press **F3 02**

Display will show: **63 E 3**

(20000· $\pi$  with 2 digits precision)

Press **F3 07**

Display will show: **62,831 85 E 3**

(20000· $\pi$  with digits precision)

## **AUTO button**

Keyboard equivalences: **F4** and **?**

Displays numbers in automatic format. For the absolutely biggest exponent display numbers in SCI format, ENG format for medium and FIX format for the smallest exponent. In this format only ending numbers 0 after decimal points is not displayed. You can choose between 1 and 27 digits precision.

Example: Press **F4 13**

Display will show: **62,831 853 071 8 E 3**

(13 digits precision, currently in ENG format  
the last zero is not displayed)

## **dp button**

Keyboard equivalences: **F9** and **^D** (Ctrl-D)

Choose how the decimal point will be displayed:

1. a comma (,)
2. a period (.)

## **be. button**

Keyboard equivalences: **PgUp** and **{**

Choose 0 (no grouping), 3 or 6 number of digits in a group before decimal point and character between groups:

1. a space ( )
2. a period (.) if decimal point is displayed as a comma or  
a comma(,) if decimal point is displayed as a period

## **.af button**

Keyboard equivalences: **PgDn** and **}**

Choose 0, 2, 3 or 5 number of digits in a group after decimal point and character between groups:

1. a space ( )
2. a colon (:)

## **STO button**

Keyboard equivalence: **Z**

Store a number in memory.

## **MEM button**

Keyboard equivalence: **M**

Recall a number from memory.

## **STO\_ button**

Keyboard equivalences: **F5** and **!**

Store a number in memory 0 to 9. Memory 0 is used in STO and MEM command .

**F5 F11** / **F5 F12** will store program 1 / 2 (key sequence) to memory. At the end of key sequence press buttons F11 (PM1) / F12 (PM2) for programs 1 / 2. It is possible to use copy from clipboard (Ctrl-V) for entering programs.

## **MEM\_ button**

Keyboard equivalences: **F8** and **#**

Recall a number from memory 0 to 9.

**F8 E** recalls constant  $e$ , **F8 ,** recalls constant  $\pi$ .

**F8 F11** and **F8 F12** will display programs (key sequence) 1 and 2. If there is more program to display you will see tree dots(...). Button C will stop displaying. Any other button pressed will continue displaying.

## **ST+ \_ button**

Keyboard equivalences: **F6** and **@**

Add a number to the number stored in memory 0 to 9.

## **PM1 button**

Keyboard equivalences: **F11** and **^A** (Ctrl-A)

Execute program 1 (key sequence).

## **PM2 button**

Keyboard equivalences: **F12** and **^B** (Ctrl-B)

Execute program 2 (key sequence).

Example: Press: **F5 F12 L / F8 E L = F12** or press buttons:

**STO\_PM2 log / MEM\_E log = PM2**

to store function  $\ln x = \log x / \log e$  (logarithm for base  $e$ ) in PM2.

After that you can use key **F12** or **PM2** button to calculate  $\ln x$ .

Press **2 F12** and display will show  $\ln 2 = 0,693\ 147\ 2$

If you delete BCDCALC.INI file calculator will restore default state.

Default program 1 (key sequence) changes sign of a number. Default program 2 calculate sine of an angle in degrees with error less than  $10^{-7}$ . This calculation uses memories 7, 8, and 9.

If you want to use results of calculations you can copy (Ctrl-C) display to clipboard or use file BCDCALCPRINT.TXT. You can also use paste (Ctrl-V) to take data from clipboard (numbers or program) and save it in PM 1 or PM 2.

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