

SHARP

ENGLISH

SCIENTIFIC CALCULATOR

MODEL EL-501T

OPERATION MANUAL

INTRODUCTION

Thank you for purchasing the SHARP Scientific Calculator Model EL-501T. After reading this manual, store it in a convenient location for future reference.

Notice:

- On the sheet with calculation examples is used english notation (with a decimal point).
- This product uses a period as a decimal point.

Operational Notes

- Do not carry the calculator around in your back pocket, as it may break when you sit down. The display is made of glass and is particularly fragile.
- Keep the calculator away from extreme heat such as on a car dashboard or near a heater, and avoid exposing it to excessively humid or dusty environments.
- Since this product is not waterproof, do not use it or store it where fluids, for example water, can splash onto it. Raindrops, water spray, juice, coffee, steam, perspiration, etc. will also cause malfunction.
- Clean with a soft, dry cloth. Do not use solvents or a wet cloth.
- Do not drop it or apply excessive force.
- Never dispose of batteries in a fire.
- Keep batteries out of the reach of children.
- For the sake of your health, try not to use this product for long periods of time. If you need to use the product for an extended period, be sure to allow your eyes, hands, arms, and body adequate rest periods (about 10–15 minutes every hour).
- If you experience any pain or fatigue while using this product, discontinue use immediately. If the discomfort continues, please consult a doctor.
- This product, including accessories, may change due to upgrading without prior notice.

NOTICE

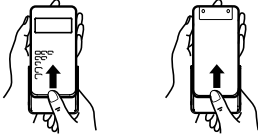
- SHARP strongly recommends that separate permanent written records be kept of all important data. Data may be lost or altered in virtually any electronic memory product under certain circumstances. Therefore, SHARP assumes no responsibility for data lost or otherwise rendered unusable whether as a result of improper use, repairs, defects, battery replacement, use after the specified battery life has expired, or any other cause.
- SHARP will not be liable nor responsible for any incidental or consequential economic or property damage caused by misuse and/or malfunctions of this product and its peripherals, unless such liability is acknowledged by law.

- Press the RESET switch (on the back), with the tip of a ball-point pen or similar object, only in the following cases:
 - When using for the first time
 - After replacing the battery
 - To clear all memory contents
 - When an abnormal condition occurs and all keys are inoperative.

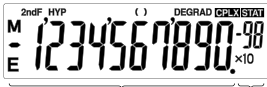
Do not use an object with a breakable or sharp tip. Note that pressing the RESET switch erases all data stored in memory.

If service should be required on this calculator, use only a SHARP servicing dealer, SHARP approved service facility, or SHARP repair service where available.

Hard Case



DISPLAY



- During actual use, not all symbols are displayed at the same time.
- If the value of mantissa does not fit within the range ± 0.000000001 – ± 9999999999 , the display changes to scientific notation. The display mode can be changed according to the purpose of the calculation.

2ndF : Appears when **2ndF** is pressed, indicating that the functions shown in same color are enabled.

HYP : Indicates that **hyp** has been pressed and the hyperbolic functions are enabled. If **2ndF** **REC** **HYP** are pressed, the symbols **"2ndF HYP"** appear, indicating that inverse hyperbolic functions are enabled.

() : Appears when a calculation with parentheses is performed by pressing **()**.

DEG / RAD / GRAD : Indicates angular units and changes each time **DRG** is pressed. The default setting is DEG.

CPLX : Indicates that **2ndF** **CPLX** has been pressed. Complex number mode is selected.

STAT : Indicates that **2ndF** **STAT** has been pressed. Statistics mode is selected.

b : Indicates that **2ndF** **BIN** has been pressed. Binary system mode is selected.

o : Indicates that **2ndF** **OCT** has been pressed. Octal system mode is selected.

H : Indicates that **2ndF** **HEX** has been pressed. Hexadecimal system mode is selected.

M : Indicates that a value is stored in the independent memory.

E : Appears when an error is detected.

BEFORE USING THE CALCULATOR

Key Notation Used in this Manual

A	π	To specify A (HEX)	:	A
Exp		To specify π	:	2ndF π
		To specify Exp	:	Exp

- Functions that are printed in orange above the key require **2ndF** to be pressed first before the key. Numbers for input value are not shown as keys, but as ordinary numbers.

Power On and Off

Press **ON/C** to turn the calculator on, and **2ndF** **OFF** to turn it off.

Clearing Numbers

- Press **ON/C** to clear the entries except for a numerical value in the independent memory and statistical data.
- Press **CE** to clear the number entered prior to use of function key.
- In case of one digit correction of the entered number, press **(\rightarrow)** (right shift key).
- The exchange key (**2ndF** **(\leftrightarrow)**) is used to exchange the number being displayed with the number stored in the working register.

Priority Levels in Calculation

Operations are performed according to the following priority:

- Functions such as \sin , x^2 and $\%$
 - y^x , $\sqrt[n]{y}$
 - nCr , nPr
 - \times , \div
 - $+$, $-$
 - \geq , $M+$ and other calculation ending instruction
- Calculations which are given the same priority level are executed in sequence.
 - If parentheses are used, parenthesized calculations have precedence over any other calculations.
 - Parentheses can be continuously used up to 15 times unless pending calculations exceed 4.

INITIAL SET UP

Mode Selection

Normal mode: **2ndF** **OFF** **ON/C**

Used to perform arithmetic operations and function calculations.

b, **o**, **H**, **CPLX** and **STAT** are not displayed.

Binary, Octal, Decimal, or Hexadecimal system mode:

2ndF **BIN**, **2ndF** **OCT**, **2ndF** **DEC** or **2ndF** **HEX**

Complex number mode: **2ndF** **CPLX**

Used to perform arithmetic operations with complex numbers.

To clear this mode, press **2ndF** **CPLX**.

Statistics mode: **2ndF** **STAT**

Used to perform statistical calculations. To clear this mode, press **2ndF** **STAT**.

When executing mode selection, statistical data will be cleared even when reselecting the same mode.

By pressing **2ndF** **OFF** or Automatic power off function, the mode is cleared and returned to the normal mode.

Selecting the Display Notation and Decimal Places

- When calculation result is displayed in the floating point system, pressing **F \leftrightarrow E** displays the result in the scientific notation system.

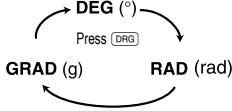
Pressing **F \leftrightarrow E** once more displays the result again in the floating point system.
- Pressing **2ndF** **TAB** and any value between 0 and 9 specifies the number of decimal places in the calculation result. To clear the setting of decimal places, press **2ndF** **TAB** **(\cdot)**.

100000+3=	ON/C 100000 (\div) 3 =	33'333.33333
[Floating point]	2ndF TAB 2	33'333.33
[TAB set to 2]	F\leftrightarrowE	3.33 $\times 10^{+4}$
\rightarrow [Scientific notation]	F\leftrightarrowE 2ndF TAB (\cdot)	33'333.33333
\rightarrow [Floating point]		

- If the value for floating point system does not fit in the following range, the calculator will display the result using scientific notation system:
 $0.000000001 \leq x \leq 999999999$

Determination of the Angular Unit

In this calculator, the following three angular units (degrees, radians, and grads) can be specified.



SCIENTIFIC CALCULATIONS

- Calculate in the normal mode.
- In each example, press **ON/C** to clear the display.

Arithmetic Operations

- The closing parenthesis **)** just before **=** or **M+** may be omitted.
- When entering only a decimal place, it is not necessary to press **0** before **(\cdot)**.

Constant Calculations

- In constant calculations, the addend becomes a constant. Subtraction and division are performed in the same manner. For multiplication, the multiplicand becomes a constant.

Functions

- Refer to the calculation examples of each function.
- For most calculations using functions, enter numerical values before pressing the function key.

Random Function

A pseudo-random number with three significant digits can be generated by pressing **2ndF** **RAN/PROB**. Random number generation is not possible when binary/octal/hexadecimal system mode is set.

Angular Unit Conversions

Each time **2ndF** **DRG** are pressed, the angular unit changes in sequence.

Memory Calculations

This calculator has one independent memory (M). It is available in the normal mode and binary, octal, hexadecimal system mode.

- The independent memory is indicated by the three keys: **(STO)**, **(RCL)** and **(M \pm)**. Before starting a calculation, clear the memory by pressing **ON/C** **(STO)**.
- A value can be added to or subtracted from an existing memory value. When subtracting a number from the memory, press **(\pm)** and **(M \pm)**.
- The contents of the memory are retained even when the calculator is turned off. A value stored in memory will thus remain until it is changed or until the batteries run out.

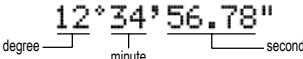
Chain Calculations

- This calculator allows the previous calculation result to be used in the following calculation.
- The previous calculation result will not be recalled after entering multiple instructions.

Time, Decimal and Sexagesimal Calculations

Conversion between decimal and sexagesimal numbers can be performed, and, while using sexagesimal numbers, conversion to seconds and minutes notation. The four basic arithmetic operations and memory calculations can be performed using the sexagesimal system.

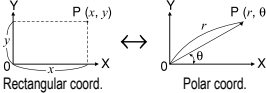
Notation for sexagesimal is as follows:



Note: When the calculation at conversion result is converted, a residual may occur.

Coordinate Conversions

- Before performing a calculation, select the angular unit.



Modify Function

In this calculator, calculation results are internally obtained in scientific notation with up to 12 digits for the mantissa. However, since calculation results are displayed in the form designated by the display notation and the number of decimal places indicated, the internal calculation result may differ from that shown in the display. By using the modify function, the internal value is converted to match that of the display, so that the displayed value can be used without change in subsequent operations.

BINARY, OCTAL, DECIMAL, AND HEXADECIMAL OPERATIONS (N-BASE)

Conversions can be performed the four basic arithmetic operations, calculations with parentheses and memory calculations using binary, octal, decimal, and hexadecimal numbers.

When performing calculations in each system, first set the calculator in the desired mode before entering numbers. It can also perform conversions between numbers expressed in binary, octal, decimal and hexadecimal systems.

Conversion to each system is performed by the following keys:

- 2ndF** **BIN**: Converts to the binary system. "b" appears.
- 2ndF** **OCT**: Converts to the octal system. "o" appears.
- 2ndF** **HEX**: Converts to the hexadecimal system. "H" appears.
- 2ndF** **DEC**: Converts to the decimal system. "d", "P", "o" and "H" disappear from the display.

Conversion is performed on the displayed value when these keys are pressed.

Note: The hexadecimal numbers A – F are entered by pressing **(E \leftrightarrow P)**, **(Y \leftrightarrow)**, **(\sqrt{x})**, **(DEG)**, **(ln)** and **(log)** and displayed as follows:

A \rightarrow f, B \rightarrow b, C \rightarrow c, D \rightarrow d, E \rightarrow e, F \rightarrow f

In the binary, octal, and hexadecimal systems, fractional parts cannot be entered. When a decimal number having a fractional part is converted into a binary, octal, or hexadecimal number, the fractional part will be truncated. Likewise, when the result of a binary, octal, or hexadecimal calculation includes a fractional part, the fractional part will be truncated. In the binary, octal, and hexadecimal systems, negative numbers are displayed as a complement.

COMPLEX NUMBER CALCULATIONS

To carry out addition, subtraction, multiplication, and division using complex numbers, press **2ndF** **CPLX** to select the complex number mode.

- A complex number is represented in the a + bi format. The "a" is the real part while the "bi" is the imaginary part. When inputting the real part, after inputting the number press **(a)**. When inputting the imaginary part, after inputting the number press **(b)**. To obtain the result press **=**.

- Immediately after completing calculation, you can recall the value of the real part with **(a)**, and the value of the imaginary part with **(b)**.

- If the complex numbers are represented as polar coordinates, press **2ndF** **(\leftrightarrow XY)** after they are input with **(a)** and **(b)**.

STATISTICAL CALCULATIONS

Press **2ndF** **STAT** to select the statistics mode.

The following statistics can be obtained:

\bar{x}	Mean of samples (x data)
s_x	Sample standard deviation (x data)
σ_x	Population standard deviation (x data)
n	Number of samples
Σx	Sum of samples (x data)
Σx^2	Sum of squares of samples (x data)

Data Entry and Correction

Entered data are kept in memory until **2ndF** **STAT** or **2ndF** **OFF** are pressed. Before entering new data, clear the memory contents.

Data Entry

Data **(DATA)**
Data **(\times)** frequency **(DATA)** (To enter multiples of the same data)

Data Correction

- Correction prior to pressing **(DATA)**:
 - Delete incorrect data with **ON/C**.
- Correction after pressing **(DATA)**:
 - Reenter the data to be corrected and press **2ndF** **(CD)**.
- The number displayed after pressing **(DATA)** or **2ndF** **(CD)** during data entry or correction is the number of samples (n).

Statistical Calculation Formulas

In the statistical calculation formulas, an error will occur when:

- The absolute value of the intermediate result or calculation result is equal to or greater than 1×10^{10} .
- The denominator is zero.
- An attempt is made to take the square root of a negative number.

ERROR AND CALCULATION RANGES

Errors

An error will occur if an operation exceeds the calculation ranges, or if a mathematically illegal operation is attempted. In the case of an error, the display will show "E". An error can be cleared by pressing **ON/C**.

Calculation Ranges

- Within the ranges specified, this calculator is accurate to ± 1 of the least significant digit of the mantissa. However, a calculation error increases in continuous calculations due to accumulation of each calculation error. (This is the same for y^x , $\sqrt[n]{y}$, $n!$, e^x , \ln etc., where continuous calculations are performed internally.)
- Additionally, a calculation error will accumulate and become larger in the vicinity of inflection points and singular points of functions.

- Calculation ranges:
 - $\pm 10^{-99} \sim \pm 9.999999999 \times 10^{99}$ and 0.
- If the absolute value of an entry or a final or intermediate result of a calculation is less than 10^{-99} , the value is considered to be 0 in calculations and in the display.

BATTERY REPLACEMENT

Notes on Battery Replacement

- Improper handling of batteries can cause electrolyte leakage or explosion. Be sure to observe the following handling rules:
- Make sure the new battery is the correct type.
 - When installing, orient the battery properly as indicated in the calculator.
 - The battery is factory-installed before shipment, and may be exhausted before it reaches the service life stated in the specifications.

Notes on erasure of memory contents

When the battery is replaced, the memory contents are erased. Erasure can also occur if the calculator is defective or when it is repaired. Make a note of all important memory contents in case accidental erasure occurs.

When to Replace the Batteries

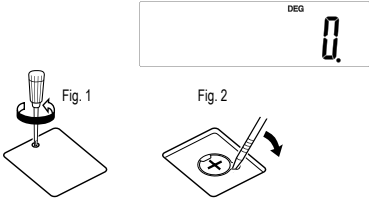
If the display has poor contrast, the batteries require replacement.

Cautions

- An exhausted battery left in the calculator may leak and damage the calculator.
- Fluid from a leaking battery accidentally entering an eye could result in serious injury. Should this occur, wash with clean water and immediately consult a doctor.
- Should fluid from a leaking battery come in contact with your skin or clothes, immediately wash with clean water.
- If the product is not to be used for some time, to avoid damage to the unit from leaking batteries, remove them and store in a safe place.
- Do not leave exhausted batteries inside the product.
- Keep batteries out of the reach of children.
- Explosion risk may be caused by incorrect handling.
- Do not throw batteries into a fire as they may explode.

Replacement Procedure

1. Turn the power off by pressing (2ndF) (OFF).
 2. Remove the screws and lift the battery cover to remove. (Fig. 1)
 3. Remove the used battery by prying it out with a ball-point pen or other similar pointed device. (Fig. 2)
 4. Install one new battery. Make sure the "+" side is facing up.
 5. Replace the cover and screws.
 6. Press the RESET switch with the tip of a ball-point pen or similar object.
- Make sure that the display appears as shown below. If the display does not appear as shown, remove the battery, reinstall it, and check the display once again.



Automatic Power Off Function

This calculator will turn itself off to save battery power if no key is pressed for approximately 7 minutes.

SPECIFICATIONS

- Calculations: Scientific calculations, binary/octal/hexadecimal number calculations, complex number calculations, statistical calculations, etc.
- Internal calculations: Mantissas of up to 12 digits
- Pending operations: 4 calculations
- Power source: 1.5V \times (DC): Alkaline batterie (LR44 or equivalent) \times 1
- Operating time: Approx. 5,000 hours when continuously displaying 5555 at 25°C (77°F) (varies according to use and other factors)
- Operating temperature: 0°C – 40°C (32°F – 104°F)
- Dimensions: 73 mm \times 127 mm \times 13 mm
- Weight: Approx. 68 g (with batteries)
- Accessories: Battery \times 1 (installed), operation manual and hard case

FOR MORE INFORMATION ABOUT SHARP CALCULATORS VISIT:

http://www.sharp-calculators.com

CALCULATION EXAMPLES

[1] (ON/C) (CE) (→) (↑)

$3 \times 4 \times 5 = 60$

$134 \div 23 = 5.826086956521739$

$3^4 \rightarrow 4^3 = 81$

[2] (+) (−) (×) (÷) (()) (+/−) (Exp)

$45 + 285 \div 3 = 140$

$18 + 6 \div 15 - 8 = 3.428571429$

$42 \times (-5) + 120 = -90$

$(5 \times 10^3) \div (4 \times 10^{-3}) = 1250000$

[3]

$34 + 57 = 91$
 $45 + 57 = 102$

$79 - 59 = 20$
 $56 - 59 = -3$

$56 \div 8 = 7$
 $92 \div 8 = 11.5$

$68 \times 25 = 1700$
 $68 \times 40 = 2720$

[4] (sin) (cos) (tan) (sin⁻¹) (cos⁻¹) (tan⁻¹) (π) (DRG) (hyp) (arc hyp) (ln) (log) (e^x) (10^x) (1/X) (X²) (X³) (√) (y^x) (√y) (3√y) (n!) (nPr) (nCr) (%)

$\sin 60^\circ = 0.866025403$

$\cos \frac{\pi}{4} = 0.707106781$

$\tan^{-1} 1 = 50^\circ$

$\cosh 1.5 + \sinh 1.5^2 = 20.0853692$

$\tanh^{-1} \frac{5}{7} = 0.895879734$

$\ln 20 = 2.995732274$

$\log 50 = 1.698970004$

$e^3 = 20.08553692$

$10^{1.7} = 50.11872336$

$\frac{1}{6} + \frac{1}{7} = 0.309523809$

$8^{-2} - 3^4 \times 5^2 = -2024.984375$

$(12^3)^{\frac{1}{4}} = 6.447419591$

$8^3 = 512$

$\sqrt[4]{49} - \sqrt[4]{81} = 4$

$\sqrt[3]{27} = 3$

$4! = 24$

$10^P 3 = 720$

${}_5C_2 = 10$

$500 \times 25\% = 125$

$120 \div 400 = 30\%$

$500 + (500 \times 25\%) = 625$

$400 - (400 \times 30\%) = 280$

The range of the results of inverse trigonometric functions

	$\theta = \sin^{-1} x, \theta = \tan^{-1} x$	$\theta = \cos^{-1} x$
DEG	$-90 \leq \theta \leq 90$	$0 \leq \theta \leq 180$
RAD	$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$	$0 \leq \theta \leq \pi$
GRAD	$-100 \leq \theta \leq 100$	$0 \leq \theta \leq 200$

[5] (DRG▶)

$90^\circ \rightarrow [\text{rad}] = 1.570796327$
 $\rightarrow [g] = 100$
 $\rightarrow [^\circ] = 90$

$\sin^{-1} 0.8 = [^\circ] = 53.13010235$
 $\rightarrow [\text{rad}] = 0.927295218$
 $\rightarrow [g] = 59.03344706$
 $\rightarrow [^\circ] = 53.13010235$

[6] (RCL) (STO) (M+)

$24 \div (8 \times 2) = 1.5$
 $(8 \times 2) \times 5 = 80$

$12 + 5 = 17$
 $-) 2 \div 5 = -7$
 $+ 12 \times 2 = 24$
 $M = 34$

$\$1 = ¥110$
 $¥26,510 = \$?$
 $\$2,750 = ¥?$

$r = 3\text{cm}$
 $\pi r^2 = ?$

[7]

$6 + 4 = \text{ANS}$
 $\text{ANS} + 5 = 15$

$44 + 37 = \text{ANS}$
 $\sqrt{\text{ANS}} = 9$

[8] (◀DEG) (▶DMS)

$12^\circ 39' 18'' 05 \rightarrow [10] = 12.65501389$

$123.678 \rightarrow [60] = 123.404080$

$\sin 62^\circ 12' 24'' = [10] = 0.884635235$

[9]

$\begin{pmatrix} x = 6 \\ y = 4 \end{pmatrix} \rightarrow \begin{pmatrix} r = \\ \theta = [^\circ] \end{pmatrix} = \begin{pmatrix} 7.211102551 \\ 33.69006753 \\ 7.211102551 \end{pmatrix}$

$\begin{pmatrix} r = 14 \\ \theta = 36 [^\circ] \end{pmatrix} \rightarrow \begin{pmatrix} x = \\ y = \end{pmatrix} = \begin{pmatrix} 11.32623792 \\ 8.228993532 \\ 11.32623792 \end{pmatrix}$

[10] (MDF) (TAB)

$5 + 9 = \text{ANS}$
 $\text{ANS} \times 9 = 50.6$
 $[\text{FIX}, \text{TAB} = 1] = 5.0$

$5 \div 9 = 0.6$
 $\times 9 = 5.4$

*1 5.5555555555555555 $\times 10^{-1} \times 9$

*2 0.6 $\times 9$

[11] [BIN] [OCT] [HEX] [DEC]

DEC(25)→BIN

ON/C2ndF[DEC]252ndF[BIN]

11001^b

HEX(1AC)

ON/C2ndF[HEX]1AC

→ BIN2ndF[BIN]110101100^b

→ OCT2ndF[OCT]654^o

→ DEC2ndF[DEC]428.

BIN(1010–100)

ON/C2ndF[BIN](1010)100

x11=X11=10010^b

HEX(1FF)+

ON/C2ndF[HEX]1FF2ndF[OCT](+)

OCT(512)=512=1511^o

HEX(?)2ndF[HEX]349^H

2FEC–

ON/CSTO2ndF[HEX]2FEC(–)

2C9E=(A)2C9E(M+)

+2000=2000(–)

1901=(B)1901(M+)

(C)RCLA4d^H

→ DEC2ndF[DEC]2'637.

[12] [CPLX] [a] [b] [→rθ] [↔x·y]

CPLX

0.

(12–6i) + (7+15i)

2ndF[CPLX]12(a)6(+/-)(b)(+)(7)(a)15(b)

– (11+4i) = (–)11(a)4(b)=8.

b5.

a8.

6×(7–9i) ×

6(a)(X)7(a)9(+/-)(b)(X)

(–5+8i) = 5(+/-)(a)8(b)=222.

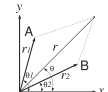
b606.

16×(sin30°+icos30°)

16(a)(X)30(sin)(a)30(cos)(b)

(sin60°+icos60°)÷60(sin)(a)60(cos)(b)=13.85640646

b8.



8(a)70(b)2ndF[↔x·y](+)(12)(a)25(b)2ndF[↔rθ][r]18.5408873

=2ndF[↔rθ][r]42.76427608

b[θ]

r1 = 8, θ1 = 70°
r2 = 12, θ2 = 25°
↓
r = ?, θ = ?°

(1 + i)

1(a)1(b)=1.

↓2ndF[↔rθ][r]1.414213562

r = ?, θ = ?°(b)[θ]45.

[13] [STAT] [DATA] [CD] [x̄] [Sx] [σx] [n] [Σx] [Σx²]

DATA

STAT

952ndF[STAT]0.

8095[DATA]1.

8080(X)2[DATA]3.

7575(X)3[DATA]6.

7550[DATA]7.

50

x̄=[x̄]75.71428571

σx=[σx]12.37179148

n=[n]7.

Σx=[Σx]530.

Σx²=[Σx²]41'200.

Sx=[Sx]13.3630621

Sx²=[X²]178.5714286

DATA

STAT

302ndF[STAT]0.

30[DATA]1.

40(X)2[DATA]3.

4050[DATA]4.

50

↓

502ndF[CD]3.

40(X)22ndF[CD]1.

DATA

45

45(X)3[DATA]4.

4560[DATA]5.

60


[14]

$$\bar{x} = \frac{\sum x}{n}$$
$$s_x = \sqrt{\frac{\sum x^2 - n\bar{x}^2}{n-1}}$$
$$\sigma_x = \sqrt{\frac{\sum x^2 - n\bar{x}^2}{n}}$$
$$\Sigma x = x_1 + x_2 + \cdots + x_n$$
$$\Sigma x^2 = x_1^2 + x_2^2 + \cdots + x_n^2$$

[15]

Function	Dynamic range
$\sin x$, $\cos x$, $\tan x$	DEG: $ x < 10^{10}$ ($\tan x : x \neq 90 \text{ (2n-1)}^\circ$)* RAD: $ x < \frac{\pi}{180} \times 10^{10}$ ($\tan x : x \neq \frac{\pi}{2} \text{ (2n-1)}^\circ$)* GRAD: $ x < \frac{10}{9} \times 10^{10}$ ($\tan x : x \neq 100 \text{ (2n-1)}^\circ$)*
$\sin^{-1}x$, $\cos^{-1}x$	$ x \leq 1$
$\tan^{-1}x$, $3\sqrt{x}$	$ x < 10^{100}$
$\ln x$, $\log x$	$10^{-99} \leq x < 10^{100}$
e^x	$-10^{100} < x \leq 230.2585092$
10^x	$-10^{100} < x < 100$
$\sinh x$, $\cosh x$, $\tanh x$	$ x \leq 230.2585092$
$\sinh^{-1}x$	$ x < 10^{50}$
$\cosh^{-1}x$	$1 \leq x < 10^{50}$
$\tanh^{-1}x$	$ x < 1$
x^2	$ x < 10^{90}$
x^3	$ x < 2.15443469 \times 10^{33}$
\sqrt{x}	$0 \leq x < 10^{100}$
$1/x$	$ x < 10^{100} \text{ (} x \neq 0 \text{)}$
$n!$	$0 \leq n \leq 69^*$
nPr	$0 \leq r \leq n \leq 9999999999^*$ $\frac{n!}{(n-r)!} < 10^{100}$
nCr	$0 \leq r \leq n \leq 9999999999^*$ $0 \leq r \leq 69$ $\frac{n!}{(n-r)!} < 10^{100}$
→D.MS →DEG	$ x < 1 \times 10^{100}$
x , $y \rightarrow r$, θ	$\sqrt{x^2 + y^2} < 10^{100}$
r , $\theta \rightarrow x$, y	$0 \leq r < 10^{100}$ DEG: $ \theta < 10^{10}$ RAD: $ \theta < \frac{1}{180} \times 10^{10}$ GRAD: $ \theta < \frac{10}{9} \times 10^{10}$
DRG ►	DEG→RAD, GRAD→DEG: $ x < 10^{100}$ RAD→GRAD: $ x < \frac{\pi}{2} \times 10^{98}$
y^x	• $y > 0$: $-10^{100} < x \log y < 100$ • $y = 0$: $0 < x < 10^{100}$ • $y < 0$: $x = n$ ($0 < x < 1 : \frac{1}{x} = 2n-1, x \neq 0$)*, $-10^{100} < x \log y < 100$
$x\sqrt{y}$	• $y > 0$: $-10^{100} < \frac{1}{x} \log y < 100 \text{ (} x \neq 0 \text{)}$ • $y = 0$: $0 < x < 10^{100}$ • $y < 0$: $x = 2n-1$ ($0 < x < 1 : \frac{1}{x} = n, x \neq 0$)*, $-10^{100} < \frac{1}{x} \log y < 100$
$(A+B i)+(C+D i)$ $(A+B i)-(C+D i)$	$ A \pm C < 10^{100}$ $ B \pm D < 10^{100}$
$(A+B i) \times (C+D i)$	$(AC - BD) < 10^{100}$ $(AD + BC) < 10^{100}$
$(A+B i) \div (C+D i)$	$\frac{AC + BD}{C^2 + D^2} < 10^{100}$ $\frac{BC - AD}{C^2 + D^2} < 10^{100}$ $C^2 + D^2 \neq 0$
→DEC →BIN →OCT →HEX	DEC : $ x \leq 9999999999$ BIN : $1000000000 \leq x \leq 1111111111$ $0 \leq x \leq 1111111111$ OCT : $4000000000 \leq x \leq 7777777777$ $0 \leq x \leq 3777777777$ HEX : $\text{FDABF41C01} \leq x \leq \text{FFFFFFFF}$ $0 \leq x \leq 2540\text{BE3FF}$

* n, m, r: integer

**ENGLISH**

Information on the Disposal of this Equipment and its Batteries
1. In the European Union
Attention: If you want to dispose of this equipment, please do not use the ordinary dust bin!
Used electrical and electronic equipment must be treated separately and in accordance with legislation that requires proper treatment, recovery and recycling of used electrical and electronic equipment.
Following the implementation by member states, private households within the EU states may return their used electrical and electronic equipment to designated collection facilities free of charge*. In some countries* your local retailer may also take back your old product free of charge if you purchase a similar new one.
*) Please contact your local authority for further details.
If you used electrical or electronic equipment has batteries or accumulators, please dispose of these separately beforehand according to local requirements.
By disposing of this product correctly you will help ensure that the waste undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health which could otherwise arise due to inappropriate waste handling.
2. In other Countries outside the EU
If you wish to discard this product, please contact your local authorities and ask for the correct method of disposal.

Manufactured by:
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