

Appendix

Appendix A	Resetting the Calculator
Appendix B	Power Supply
Appendix C	Error Message Table
Appendix D	Input Ranges
Appendix E	2-byte Command Table
Appendix F	Specifications



Appendix A Resetting the Calculator



Warning!

The procedure described here clears all memory contents. Never perform this operation unless you want to totally clear the memory of the calculator. If you need the data currently stored in memory, be sure to write it down somewhere before performing the RESET operation.

•To reset the calculator

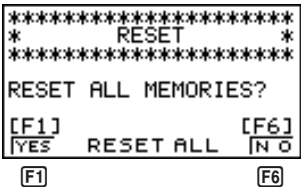
1. Press **[MENU]** to display the main menu.



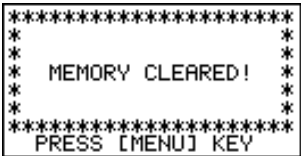
2. Highlight the **MEM** icon and press **[EXE]**, or press **\cos** .



3. Use **∇** to move the highlighting down to “Reset” and then press **[EXE]**.



4. Press **[F1]** (YES) to reset the calculator or **[F6]** (NO) to abort the operation without resetting anything.



5. Press **[MENU]**.

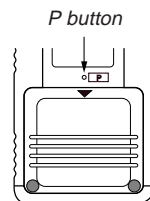
- If the display appears to dark or dim after you reset the calculator, adjust the contrast.

Resetting the calculator initializes it to the following settings.

Item	Initial Setting
Icon	RUN
Mode	Comp
Angle Unit	Rad
Exponent Display Range	Norm 1
Variable Memory	Clear
Function Memory	Clear
Answer Memory (Ans)	Clear
Graphic Display/Text Display	Clear
Matrix Contents	Clear
Equation Calculation Memory	Clear
View Window	Clear (initialized)
View Window Memory	Clear
Graph Function	Clear
Graph Memory	Clear
Enlargement/Reduction Factor	Clear (initialized)
Dynamic Graph Data	Clear
Table & Graph Data	Clear
Recursion Calculation Memory	Clear
List Data	Clear
Statistical Calculation/Graph Memory	Clear
Program	Clear
Input Buffer/AC Replay	Clear



- If the calculator stops operating correctly for some reason, use a thin, pointed object to press the P button on the back of the calculator. This should make the RESET screen appear on the display. Perform the procedure to complete the RESET operation.

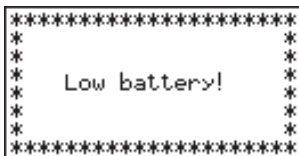


- Pressing the P button while an internal calculation is being performed (indicated by a blank display) will cause all data in memory to be deleted.

Appendix B Power Supply

This unit is powered by four AAA-size (LR03 (AM4) or R03 (UM-4)) batteries. In addition, it uses a single CR2032 lithium battery as a back up power supply for the memory.

If the following message appears on the display, immediately stop using the calculator and replace batteries.



If you try to continue using the calculator, it will automatically switch power off, in order to protect memory contents. You will not be able to switch power back on until you replace batteries.

Be sure to replace the main batteries at least once every two years, no matter how much you use the calculator during that time.



Warning!

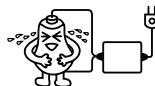
If you remove both the main power supply and the memory back up batteries at the same time, all memory contents will be erased. If you do remove both batteries, correctly reload them and then perform the reset operation.

Replacing Batteries

Precautions:

Incorrectly using batteries can cause them to burst or leak, possibly damaging the interior of the unit. Note the following precautions:

- Be sure that the positive (+) and negative (–) poles of each battery are facing in the proper directions.
- Never mix batteries of different types.
- Never mix old batteries and new ones.
- Never leave dead batteries in the battery compartment.
- Remove the batteries if you do not plan to use the unit for long periods.
- Never try to recharge the batteries supplied with the unit.
- Do not expose batteries to direct heat, let them become shorted, or try to take them apart.



(Should a battery leak, clean out the battery compartment of the unit immediately, taking care to avoid letting the battery fluid come into direct contact with your skin.)

Keep batteries out of the reach of small children. If swallowed, consult with a physician immediately.

● To replace the main power supply batteries



- * Never remove the main power supply and the memory back up batteries from the unit at the same time.
- * Never replace the main power supply battery compartment cover or switch the calculator on while the main power supply batteries are removed from the calculator or not loaded correctly. Doing so can cause memory data to be deleted and malfunction of the calculator. If mishandling of batteries causes such problems, correctly load batteries and then perform the RESET operation to resume normal operation.
- * Be sure to replace all four batteries with new ones.

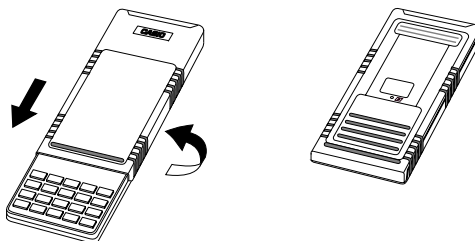
1. Press **[SHIFT] [OFF]** to turn the calculator off.



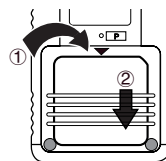
Warning!

- * Be sure to switch the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

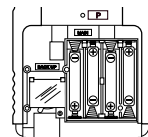
2. Making sure that you do not accidentally press the **[AC/ON]** key, slide the case onto the calculator and then turn the calculator over.



3. Remove the back cover from the calculator by pressing it in the direction indicated by arrow ①, and then sliding it in the direction indicated by arrow ②.



4. Remove the four old batteries.
5. Load a new set of four batteries, making sure that their positive (+) and negative (−) ends are facing in the proper directions.
6. Replace the back cover.
7. Turn the calculator front side up and slide off its case. Next, press **[AC/ON]** to turn on power.



- Power supplied by memory back up battery while the main power supply batteries are removed for replacement retains memory contents.
- Do not leave the unit without main power supply batteries loaded for long periods. Doing so can cause deletion of data stored in memory.
- If the figures on the display appear too light and hard to see after you turn on power, adjust the contrast.



● To replace the memory back up battery

- * Before replacing the memory back up battery, switch on the unit and check to see if the "Low battery!" message appears on the display. If it does, replace the main power supply batteries before replacing the back up power supply battery.
- * Never remove the main power supply and the memory back up batteries from the unit at the same time.
- * Be sure to replace the back up power supply battery at least once 2 years, regardless of how much you use the unit during that time. Failure to do so can cause data in memory to be deleted.

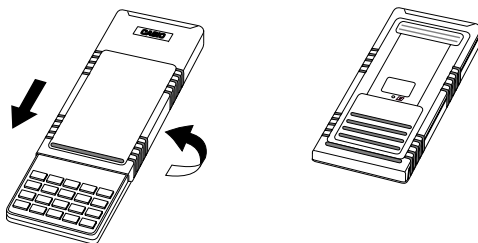
1. Press **[SHIFT]** **[OFF]** to turn the calculator off.



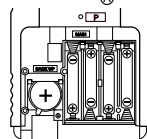
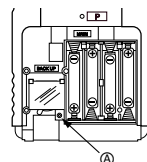
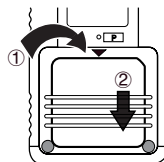
Warning!

- * Be sure to switch the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

2. Making sure that you do not accidentally press the **[AC/ON]** key, slide the case onto the calculator and then turn the calculator over.



3. Remove the back cover from the calculator by pressing it in the direction indicated by arrow ①, and then sliding it in the direction indicated by arrow ②.
4. Remove screw (A) on the back of the calculator, and remove the back up battery compartment cover.
5. Remove the old battery.
6. Wipe off the surfaces of a new battery with a soft, dry cloth. Load it into the calculator so that its positive (+) side is facing up.
7. Install the memory protection battery cover onto the calculator and secure it in place with the screw. Next, replace the back cover.
8. Turn the calculator front side up and slide off its case. Next, press **[AC/ON]** to turn on power.



■ About the Auto Power Off Function

The calculator switches power off automatically if you do not perform any key operation for about 6 minutes. To restore power, press **[AC/ON]**.

Appendix C Error Message Table

Message	Meaning	Countermeasure
Syn ERROR	<ol style="list-style-type: none"> ① Calculation formula contains an error. ② Formula in a program contains an error. 	<ol style="list-style-type: none"> ① Use ◀ or ▶ to display the point where the error was generated and correct it. ② Use ◀ or ▶ to display the point where the error was generated and then correct the program.
Ma ERROR	<ol style="list-style-type: none"> ① Calculation result exceeds calculation range. ② Calculation is outside the input range of a function. ③ Illogical operation (division by zero, etc.) ④ Poor precision in Σ calculation results. ⑤ Poor precision in differential calculation results. ⑥ Poor precision in integration calculation results. ⑦ Cannot find results of equation calculations. 	<ol style="list-style-type: none"> ①②③④ Check the input numeric value and correct it. When using memories, check that the numeric values stored in memories are correct. ⑤ Try using a smaller value for Δx (x increment/decrement). ⑥ Try using a larger value for n (number of partitions). ⑦ Check the coefficients of the equation.
Go ERROR	<ol style="list-style-type: none"> ① No corresponding Lbl n for Goto n. ② No program stored in program area Prog "file name". 	<ol style="list-style-type: none"> ① Correctly input a Lbl n to correspond to the Goto n, or delete the Goto n if not required. ② Store a program in program area Prog "file name", or delete the Prog "file name" if not required.
Ne ERROR	<ul style="list-style-type: none"> • Nesting of subroutines by Prog "file name" exceeds 10 levels. 	<ul style="list-style-type: none"> • Ensure that Prog "file name" is not used to return from subroutines to main routine. If used, delete any unnecessary Prog "file name". • Trace the subroutine jump destinations and ensure that no jumps are made back to the original program area. Ensure that returns are made correctly.

Appendix C Error Message Table

Message	Meaning	Countermeasure
Stk ERROR	<ul style="list-style-type: none"> Execution of calculations that exceed the capacity of the stack for numeric values or stack for commands. 	<ul style="list-style-type: none"> Simplify the formulas to keep stacks within 10 levels for the numeric values and 26 levels for the commands. Divide the formula into two or more parts.
Mem ERROR	<ul style="list-style-type: none"> Not enough memory to input a function into function memory. Not enough memory to create a matrix using the specified dimension. Not enough memory to hold matrix calculation result. Not enough memory to store data in list function. Not enough memory to input coefficient for equation. Not enough memory to hold equation calculation result. Not enough memory to hold function input in the Graph Mode for graph drawing. Not enough memory to hold function input in the DYNA Mode for graph drawing. Not enough memory to hold function or recursion input. 	<ul style="list-style-type: none"> Keep the number of variables you use for the operation within the number of variables currently available. Simplify the data you are trying to store to keep it within the available memory capacity. Delete no longer needed data to make room for the new data.
Arg ERROR	<ul style="list-style-type: none"> Incorrect argument specification for a command that requires an argument. 	<ul style="list-style-type: none"> Correct the argument. Lbl n , Goto n : n = integer from 0 through 9.
Dim ERROR	<ul style="list-style-type: none"> Illegal dimension used during matrix calculations. 	<ul style="list-style-type: none"> Check matrix or list dimension.
Com ERROR	<ul style="list-style-type: none"> Problem with cable connection or parameter setting during program data communications. 	<ul style="list-style-type: none"> Check cable connection.
TRANSMIT ERROR!	<ul style="list-style-type: none"> Problem with cable connection or parameter setting during data communications. 	<ul style="list-style-type: none"> Check cable connection.
RECEIVE ERROR!	<ul style="list-style-type: none"> Problem with cable connection or parameter setting during data communications. 	<ul style="list-style-type: none"> Check cable connection.
MEMORY FULL!	<ul style="list-style-type: none"> Memory of receiving unit became full during program data communications. 	<ul style="list-style-type: none"> Delete some data stored in the receiving unit and try again.

Appendix D Input Ranges

Function	Input ranges	Internal digits	Accuracy	Notes
$\sin x$ $\cos x$ $\tan x$	(DEG) $ x < 9 \times 10^{90}$ (RAD) $ x < 5 \times 10^7 \pi \text{rad}$ (GRA) $ x < 1 \times 10^{10} \text{grad}$	15 digits	As a rule, accuracy is ± 1 at the 10th digit.	However, for $\tan x$: $ x \neq 90(2n+1)$:DEG $ x \neq \pi/2(2n+1)$:RAD $ x \neq 100(2n+1)$:GRA
$\sin^{-1}x$ $\cos^{-1}x$	$ x \leq 1$	"	"	
$\tan^{-1}x$	$ x < 1 \times 10^{100}$			
$\sinh x$ $\cosh x$	$ x \leq 230.2585092$	"	"	For \sinh and \tanh , when $x = 0$, errors are cumulative and accuracy is affected at a certain point.
$\tanh x$	$ x < 1 \times 10^{100}$			
$\sinh^{-1}x$	$ x < 5 \times 10^{99}$	"	"	
$\cosh^{-1}x$	$1 \leq x < 5 \times 10^{99}$			
$\tanh^{-1}x$	$ x < 1$			
$\log x$ $\ln x$	$1 \times 10^{-99} \leq x < 1 \times 10^{100}$	"	"	
10^x	$-1 \times 10^{100} < x < 100$	"	"	
e^x	$-1 \times 10^{100} < x \leq 230.2585092$			
\sqrt{x}	$0 \leq x < 1 \times 10^{100}$	"	"	
x^2	$ x < 1 \times 10^{50}$			
$1/x$	$ x < 1 \times 10^{100}, x \neq 0$	"	"	
$\sqrt[3]{x}$	$ x < 1 \times 10^{100}$			
$x!$	$0 \leq x \leq 69$ (x is an integer)	"	"	
nPr nCr	Result $< 1 \times 10^{100}$ n, r (n and r are integers) $0 \leq r \leq n$, $n < 1 \times 10^{10}$	"	"	
Pol (x, y)	$\sqrt{x^2 + y^2} < 1 \times 10^{100}$	"	"	

Appendix D Input Ranges

Function	Input ranges	Internal digits	Accuracy	Notes
Rec (r, θ)	$0 \leq r < 1 \times 10^{100}$ (DEG) $ \theta < 9 \times 10^{90}$ (RAD) $ \theta < 5 \times 10^7 \pi$ rad (GRA) $ \theta < 1 \times 10^{10} \text{grad}$	15 digits	As a rule, accuracy is ± 1 at the 10th digit.	However, for $\tan \theta$: $ \theta \neq 90(2n+1)$:DEG $ \theta \neq \pi/2(2n+1)$:RAD $ \theta \neq 100(2n+1)$:GRA
\circ, \circ, \circ \leftarrow \circ, \circ, \circ	$ a , b, c < 1 \times 10^{100}$ $0 \leq b, c$ $ x < 1 \times 10^{100}$ Sexagesimal display: $ x \leq 1 \times 10^7$	"	"	
$^{\wedge}(x^y)$	$x > 0$: $-1 \times 10^{100} < y \log x < 100$ $x = 0 : y > 0$ $x < 0$: $y = n, \frac{1}{2n+1}$ (n is an integer) However; $-1 \times 10^{100} < \frac{1}{y} \log x < 100$	"	"	
$^x \sqrt{y}$	$y > 0 : x \neq 0$ $-1 \times 10^{100} < \frac{1}{x} \log y < 100$ $y = 0 : x > 0$ $y < 0 : x = 2n + 1, \frac{1}{n}$ ($n \neq 0, n$ is an integer) However; $-1 \times 10^{100} < \frac{1}{x} \log y < 100$	"	"	
$a^{b/c}$	• Results Total of integer, numerator and denominator must be within 10 digits (includes division marks). • Input Result displayed as a fraction for integer when integer, numerator and denominator are less than 1×10^{10} .	"	"	
STAT	$ x < 1 \times 10^{50}$ $ y < 1 \times 10^{50}$ $ n < 1 \times 10^{100}$ $x\sigma_n, y\sigma_n, \bar{x}, \bar{y}, a, b, c, d, e, r$: $n \neq 0$ $x\sigma_{n-1}, y\sigma_{n-1}$: $n \neq 0, 1$	"	"	

Function	Input ranges
Binary, octal, decimal, hexadecimal calculation	Values fall within following ranges after conversion: DEC: $-2147483648 \leq x \leq 2147483647$ BIN: $1000000000000000 \leq x$ ≤ 1111111111111111 (negative) $0 \leq x \leq 0111111111111111$ (0, positive) OCT: $20000000000 \leq x \leq 37777777777$ (negative) $0 \leq x \leq 17777777777$ (0, positive) HEX: $80000000 \leq x \leq FFFFFFFF$ (negative) $0 \leq x \leq 7FFFFFFF$ (0, positive)

* Errors may be cumulative with internal continuous calculations such as x^y , $\sqrt[x]{y}$, $x!$, $\sqrt[3]{x}$, some-
times affecting accuracy.

Appendix E 2-byte Command Table

Spaces in the following commands are indicated by “ \square ”.

Commands available with the **PRGM** key

If \square , Then \square , Else \square , IfEnd, For \square , \square To \square , \square Step \square , Next, While \square , WhileEnd, Do, LpWhile \square , Return, Break, Stop, Locate \square , Send(, Getkey, Receive(, ClrText, ClrGraph, ClrList, DrawGraph, DrawDyna, DrawStat, DrawFTG-Con, DrawFTG-Plt, DrawR-Con, DrawR-Plt, DrawR Σ -Con, DrawR Σ -Plt, DrawWeb \square , DispF-Tbl, DispR-Tbl

Commands available with the **MENU** key in the PRGM Mode

1-Variable \square , 2-Variable \square , LinearReg \square , Med-MedLine \square , QuadReg \square , CubicReg \square , QuartReg \square , LogReg \square , ExpReg \square , PowerReg \square , S-Gph1 \square , S-Gph2 \square , S-Gph3 \square , Square, Cross, Dot, Scatter, xyLine, Hist, MedBox, MeanBox, N-Dist, Broken, Linear, Med-Med, Quad, Cubic, Quart, Log, Exp, Power, Y=Type, r=Type, ParamType, X=cType, Y>Type, Y<Type, Y \geq Type, Y \leq Type, D \square Var \square , a_n Type, a_{n+1} Type, a_{n+2} Type, StoGMEM \square , RclGMEM \square , SortA(, SortD(, G \square SelOn \square , G \square SelOff \square , T \square SelOn \square , T \square SelOff \square , D \square SelOn \square , D \square SelOff \square , R \square SelOn \square , R \square SelOff \square , DrawOn, DrawOff, List1, List2, List3, List4, List5, List6

VARS menu commands

D \square Start, D \square End, D \square pitch, RightXmin, RightXmax, RightXscl, RightYmin, RightYmax, RightYscl, RightT θ min, RightT θ max, RightT θ ptch, Sim \square Result, Ply \square Result, Q1, Q3, x_1 , y_1 , x_2 , y_2 , x_3 , y_3 , X, c, d, e

Commands available with the **SETUP** key in the PRGM Mode

S-WindAuto, S-WindMan, G-Connect, G-Plot, DualGraph, DualGtoT, DualT+G, DualOff, BG-None, BG-Pict \square , GridOff, GridOn, VarRange, FuncOn, FuncOff, SimulOn, SimulOff, AxesOn, AxesOff, CoordOn, CoordOff, LabelOn, LabelOff, DerivOn, DerivOff, Σ dispOn, Σ dispOff, VarList1, VarList2, VarList3, VarList4, VarList5, VarList6, File1, File2, File3, File4, File5, File6

Commands available with the **SHIFT** key

Graph \square X=, StoV-Win \square , RclV-Win \square , Tangent \square , Normal \square , Inverse \square , Vertical \square , Horizontal \square , Text \square , Circle \square , F-Line \square , PlotOn \square , PlotOff \square , PlotChg \square , PxIOn \square , PxIOff \square , PxlChg \square , PxlTest \square

OPTN menu commands

StoPict \square , RclPict \square , Max(, Min(, Mean(, Median(, d^2/dx^2 (, Solve(, FMin(, FMax(, Seq(, Dim \square , Fill(, Identity \square , Augment(, List \rightarrow Mat(, Mat \rightarrow List(, Sum \square , Prod \square , Percent \square , Cuml \square , List \square , \square And \square , \square Or \square , Not \square

Commands available during recursion calculations

b_n , b_{n+1} , b_{n+2} , b_0 , b_1 , b_2 , a_n Start, b_n Start, a_{n+2} , a_0 , a_1 , a_2

Appendix F Specifications

Model: fx-9750G

Calculations

Basic calculation functions:

Negative numbers; exponents; parenthetical addition, subtraction, multiplication, division (with priority sequence judgement function - true algebraic logic)

Built-in scientific functions:

Trigonometric/inverse trigonometric functions (angle units: degrees, radians, grads); hyperbolic/inverse hyperbolic functions; logarithmic/exponential functions; reciprocals; factorials; square roots; cube roots; powers; roots; squares; negative signing; exponential notation input; π ; parenthetical calculations; internal rounding; random numbers; angle unit specification; fractions; decimal-sexagesimal conversion; coordinate transformation; engineering calculations; permutation; combination; logical operators (And, Or, Not); number of decimal place and significant digit specification; engineering notation symbols (11 types)

Built-in functions:

Exponential notation range; delete, insert, answer functions; replay; memory status display (bytes used/unused); multistatements; output command input

Solve Function: Extraction of function's root using Newton's Method

Maximum/minimum value calculation:

Extraction of function's maximum/minimum within a specific interval

Differentials:

Extraction of derivative using differential from center point

Quadratic differentials:

Extraction of quadratic differential using second order value differential formula

Integrations: Using Simpson's rule

Σ Calculations: Calculation of partial sum of sequence $\{a_n\}$

Complex number calculations:

Addition, subtraction, multiplication, division, reciprocal, square root, square, absolute number/argument calculations; conjugate complex number extraction; real number part/imaginary number part extraction

Binary, octal, decimal, hexadecimal calculations:

Addition, subtraction, multiplication, division; base specification; negative values (two's complement); logical operations

Matrix calculations:

Addition, subtraction, multiplication, division; scalar product; transposition; determinant; inversion; squaring; raising to a power; absolute value; integer/decimal part extraction; maximum integer; row operation; dimension specification/checking; identity matrix input; matrix fill, combination; assignment of column content to list file

Equation calculations:

Solution of linear equations with two to six unknowns, cubic and quadratic equations; recall of equation coefficients and solutions

List calculations:

Data sorting (ascending, descending); maximum value; minimum value; average, median; sum; sum of products; cumulative frequency; percent calculations; numeric sequence generation

Logical operations:

And, Or, Not

Variables: 28**Calculation range:**

$\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ and 0. Internal operations use 15-digit mantissa.

Exponential display range: Norm 1: $10^{-2} > |x|$, $|x| \geq 10^{10}$

Norm 2: $10^{-9} > |x|$, $|x| \geq 10^{10}$

Rounding:

Performed according to the number of specified significant digits and decimal places.

Graph Functions**Built-in function graphs** (rectangular and polar coordinates) :

(40 types) \sin , \cos , \tan , \sin^{-1} , \cos^{-1} , \tan^{-1} , \sinh , \cosh , \tanh , \sinh^{-1} , \cosh^{-1} , \tanh^{-1} , \log , \ln , 10^x , e^x , x^2 , $\sqrt{\quad}$, $\sqrt[3]{\quad}$, x^{-1}

Graph Types:

Rectangular coordinate: $y = f(x)$

Polar coordinate: $r = f(\theta)$

Parametric: $(x, y) = (f(T), g(T))$

Inequality: $(y > f(x), y < f(x), y \geq f(x), y \leq f(x))$

X = constant

Integral

Graph Function Memory:

Graph function storage, editing, selection, drawing, analysis (root, maximum and minimum, y-intercepts, intersects for two graphs, coordinate values at any point, derivative for any range)

Graph Functions:

View Window specification; trace; scroll; graph range specification; overwrite; zoom [box, factor (zoom in, zoom out), Auto V-Win, ORIG, SQR, RND, INTG, PRE]; View Window memory; graph memory; graph save; graph function display; graph background selection; simultaneous drawing of multiple graphs

Sketch Functions:

Plot; line; plot on/off; plot change; tangent line; normal line; inverse; circle; horizontal/vertical line; pen; pixel on/off; pixel change; pixel test; text; manual graph; clear screen

Dual Graph:

Range settings for left and right screens; drawing in main window; copy, swap

Graph-to-Table:

Split display for function (rectangular, polar, parametric) graph and table; storage of pointer coordinates in numeric table/list file

Dynamic Graph:

Storage, editing, drawing of Dynamic Graph functions (rectangular, polar, parametric); drawing speed control; Dynamic Graph memory; seven built in graph functions

Implicit Function Graph:

Drawing/analysis of 9 types (focus, vertex, latus rectum, center, radius, x/y -intercept, directrix, axis of symmetry, asymptote)

Table & Graph:

Input/editing of rectangular, polar, parametric function (up to 20 can be input); numeric table generation (from range or list file data); graph drawing; numeric table delete, insert, add

Recursion Calculations and Graph:

Storage/editing of two recursion types; numeric table generation; graphing; numeric table delete, insert, add; recursion formula convergence/divergence graph (WEB graph)

Statistics:

Standard deviation: number of data; mean; standard deviation (two types); sum; sum of squares; statistical calculations (mode, median, maximum, minimum, first quartile point, third quartile point); normal probability distribution; single-variable statistical graphs (histogram bar graph; box graph for mean and median; normal distribution curve; line graph)

Regression: number of data; mean of x ; mean of y ; standard deviation of x (two types); standard deviation of y (two types); sum of x ; sum of y ; sum of squares of x ; sum of squares of y ; sum of squares of x and y ; constant term; regression coefficient; correlation coefficient; Med-Med calculations; regression graphs (linear regression graph; Med-Med graph; quadratic/cubic/quartic regression graph; logarithmic regression graph; exponential regression graph; power regression graph)

Plotting of scatter diagrams; drawing of xy line graphs

Programming

Input, storage, recall, execution of programs in program area; editing and deletion of file names and program contents; recall by file name; secret feature

Program commands:

Loop (If, For, Do, While); Control (Prog [subroutine], Stop, nesting up to 10 levels); Unconditional jump (Goto, Lbl); Conditional jump (\Rightarrow); Count jump (Isz, Dsz); Relational operators ($=$, \neq , $>$, $<$, \geq , \leq); Clear (ClrText, ClrGraph, ClrList); Display (function graph, statistical graph, Dynamic Graph, Table & Graph, recursion calculation and graph); I/O (Locate, Getkey, Send, Receive); Input (?); Output (\blacktriangle); Delimiter (:)

General Commands:

Matrix (4); function graph (15); Dynamic Graph (3); function table (5); recursion table (13); list (2); statistical (42)

Check Function: program check, debugging, etc.

Program capacity: 26 kbytes (max.)

Data Communications

Functions:

Program contents and file names; function memory data; matrix memory data; list data; variable data; Table & Graph data; graph functions; equation calculation coefficients

Method: Start-stop (asynchronous), half-duplex

Transmission speed (BPS): 9600 bits/second

Parity: none

Bit length: 8 bits

Stop bit:

Send: 2 bits

Receive: 1 bit

General**Display system:**

21-character \times 8-line liquid crystal display; 10-digit mantissa and 2-digit exponent for calculations: displays binary, octal, decimal, hexadecimal, sexagesimal, fraction, complex number values

Text display:

Up to 128 characters for function commands, program commands, alpha characters

Error check function:

Check for illegal calculations (using values greater than 10^{100}), illegal jumps, etc. Indicates by error message display.

Power supply:

Main: Four AAA-size batteries (LR03 (AM4) or R03 (UM-4))

Back-up: One CR2032 lithium battery

Power consumption: 0.06W

Battery life**Main:**

LR03 (AM4): Approximately 300 hours (continuous display of main menu)

Approximately 2 years (power off)

R03 (UM-4): Approximately 200 hours (continuous display of main menu)

Approximately 2 years (power off)

Back-up: Approximately 2 years

Auto power off:

Power is automatically turned off approximately six minutes after last operation except when drawing dynamic graphs.

The calculator automatically turns off if it is left for about 60 minutes with a calculation stopped by an output command (\blacktriangleleft), which is indicated by the "-Disp-" message on the display.

Ambient temperature range: 0°C to 40°C

Dimensions: 19.7 mm (H) \times 83 mm (W) \times 175.5 mm (D)

$\frac{3}{4}$ " (H) \times 3 $\frac{1}{4}$ " (W) \times 6 $\frac{7}{8}$ " (D)

Weight: 190g (including batteries)