General Overview

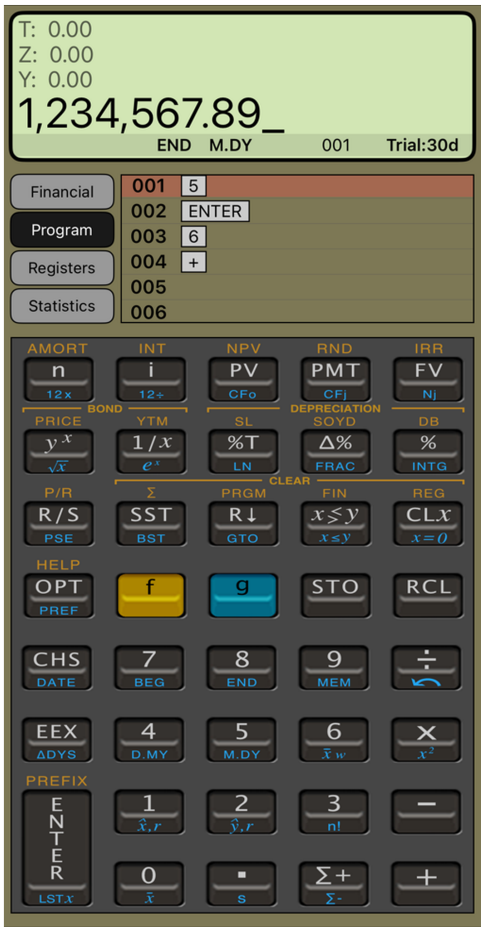
The RLM-12CX calculator application is an extensive set of tools and enhancements inspired in the real HP-12C calculator. It works in the same way, but expanded with 15 digits precision, 100 store registers, 1000 program steps and a complete set of menus to handle almost any financial and business problem (toggle tapping the **[OPT]** key). Also, the Display was expanded to show all the Stack registers and, with the “Show Registers” setting ON, the content of the financial registers, program memory, storage registers and statistics.

The first “HP-12C” calculator was designed and introduced by Hewlett Packard in 1981 as a pocket financial calculator with RPN logic. More than 40 years later it is still on the market, and it remains the standard for finance and business professionals around the world.

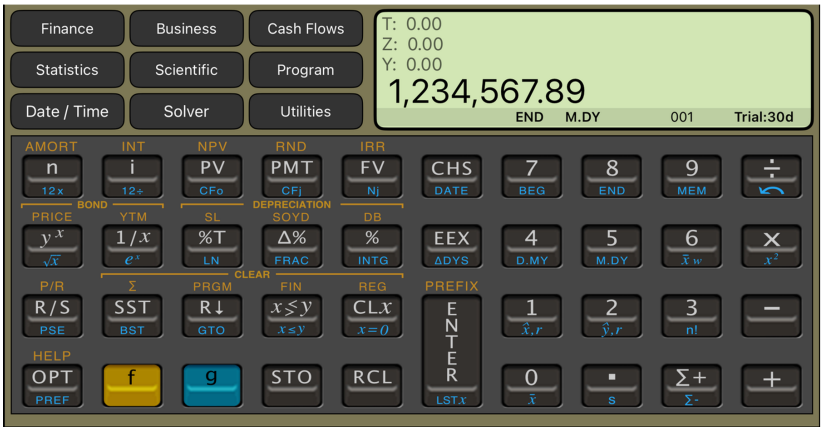
Landscape (Left Handed OFF)



Portrait

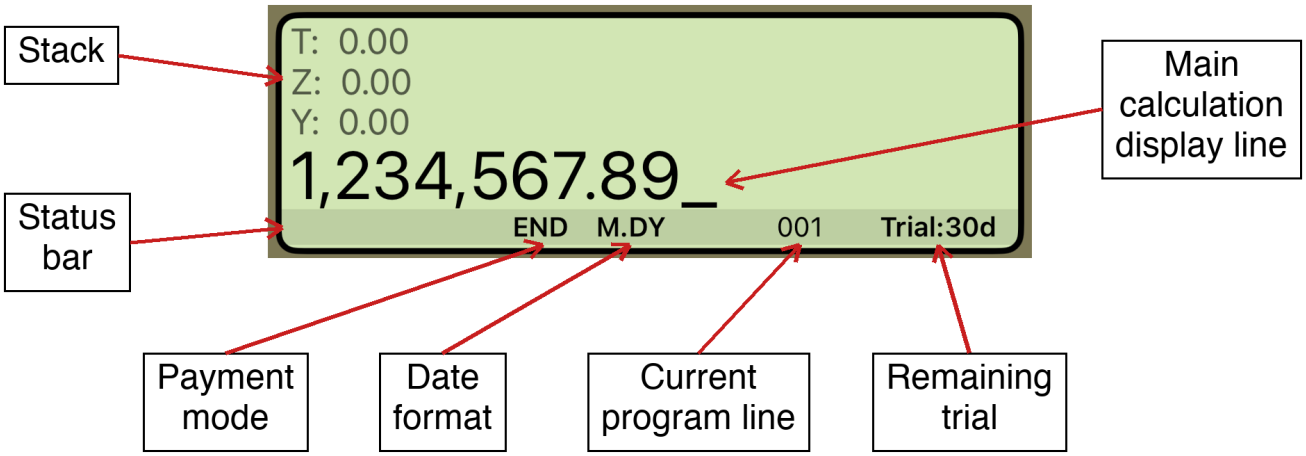


Landscape (Left Handed ON)



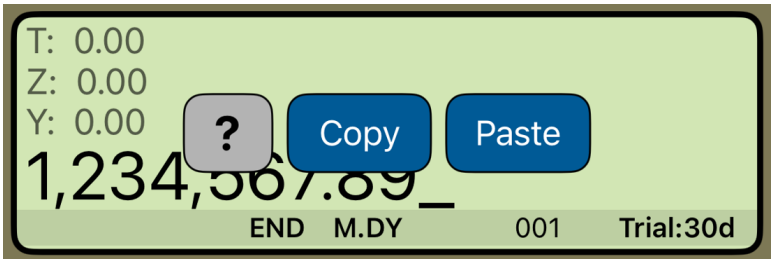
The normal ON key of the real calculator was changed by the **[OPT]** key, to show or hide the Main Menu described later.

Calculator Display

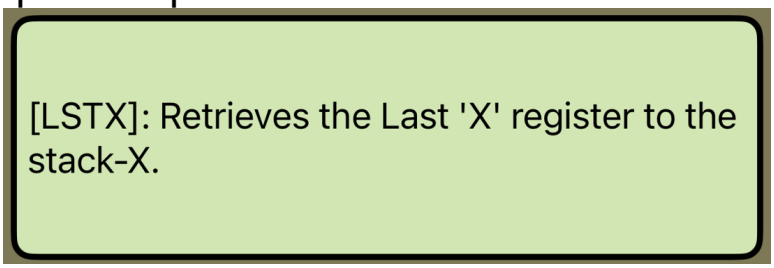


Part	What it shows
Big line (X)	The number you are working with. A label in front (PMT=, i%=, INTE=) says what it is. While typing, the cursor _ marks digit entry.
Y, Z, T lines	The three numbers above X in the stack. They take labels too (PRIN=, CFo=).
Top line	Doubles as a message line: "Periodic Payment", "Set 4 Decimals", "Program Pause".
↶	Something was just cleared and can be brought back with **[g]** ↶ (the ÷ key).
END / BEGIN	When payments fall: end or beginning of each period (**[g] BEG** or **[g] END**).
M.DY / D.MY	How dates are keyed and shown (**[g] D.MY** or **[g] M.DY**).
C	Compound interest is used for odd periods (**[STO] [EEX]** turns it on and off).
001	The current program line.
Trial: 30d	Days left in the trial, until the app is purchased.

Touching the display at any time brings the Help-Copy-Paste buttons to the front. There you can “Copy” the displayed number or “Paste” one copied before.



The “?” button opens the help view and turns on the quick help: after **Done**, touching any key shows a short description of it instead of running it. Touch the display to leave the quick help.



The Keyboard



Each key does up to three things. The white label is the key itself. The **yellow** label above it needs **[f]** first, the **blue** label on its lower face needs **[g]** first. Orange brackets group related functions: CLEAR (Σ, PRGM, FIN, REG), BOND (PRICE, YTM) and DEPRECIATION (SL, SOYD, DB).

Three keys belong to the app rather than the HP layout: **[OPT]** shows or hides the RLM menus, **[g] PREF** opens the settings and **[f] HELP** opens the help pages.

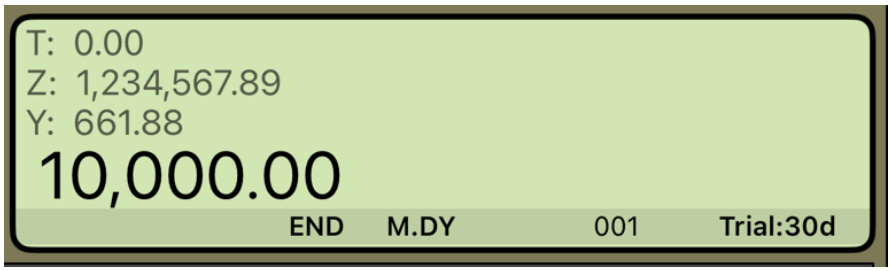
The idea to get first: RPN and the stack

In RPN you key the numbers first and the operation last. **ENTER** separates two numbers keyed one after the other; an operation key also ends the entry, so a running total never needs ENTER. The answer of each step waits in X for the next one.

For example: what is the result of a total of 12 payments of 888.49 minus 10,000.00?

Type 888.49 **[ENTER]** 12 **[x]** 10000 **[–]** —> the result is: **661.88**

Four more keys move the stack: **[x⇆y]** swaps X and Y, **[R↓]** rolls the stack down, **[CLx]** clears X, and **[g] LSTx** (on ENTER, as on the HP-12C) brings back the X used by the last operation. Right after the example above, **[g] LSTx** brings back 10,000.00:



Since the calculator is inspired in the real **HP-12C**, we strongly recommend that you obtain the real calculator **Owner's Manual** available on the internet and review all the help topics, selecting them from the top buttons in the **HELP** view (tap **[f] HELP**).

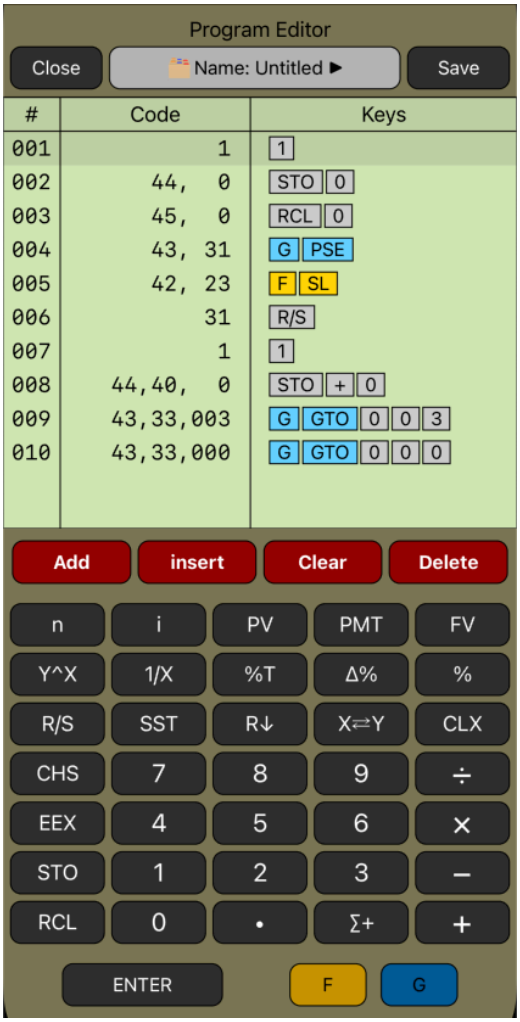
Program Mode Display

When the Program Mode is set (**[f] P/R**) the display changes to show the **Program Editor** view (see the Program item of the Utilities / Editors menu):

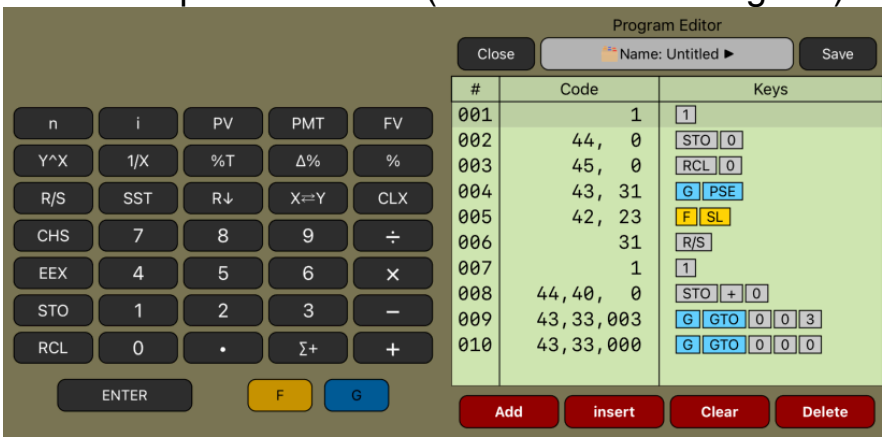
Landscape Orientation (Left Handed Setting OFF)



Portrait Orientation



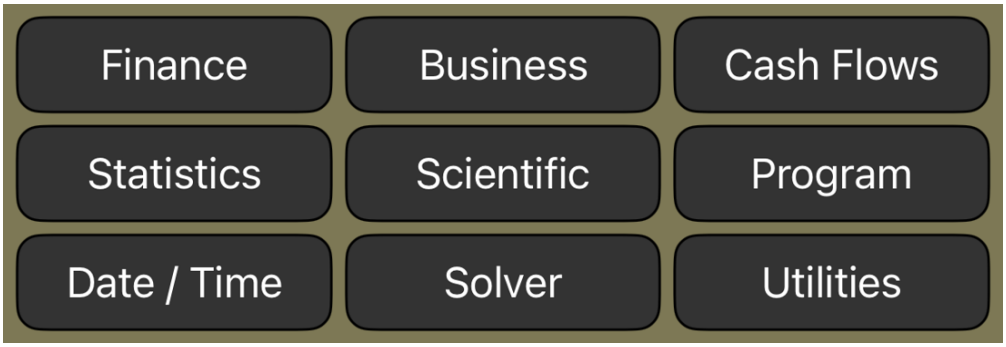
Landscape Orientation (Left Handed Setting ON)



You can swipe over the listing to scroll it to the desired location, and tap any line to select it and edit it as necessary. Line 000 is the top of memory and stays blank.

A program can have up to 1000 lines, so **[g] GTO** always takes three digits (000 to 999): the HP-12C's **GTO 07** is keyed **GTO 007** here. A program written for the HP-12C and pasted through **Memory Content** keeps working: a two-digit GTO line gets the 0 added in front when it is loaded.

The Main Menu (OPT key)



The **[OPT]** key shows the RLM's Main Menu. Choosing a menu opens it; **OPT** goes back one menu, and from the main menu it hides the panel.

Finance, Business, Cash Flows, Statistics, Scientific, Program and **Utilities** open a pop-up list of menus. **Date / Time** and **Solver** open their menu directly.

Finance :

Menu	What it does
Account Balance	Balance of a credit-line account at any date, from a dated list of cash movements and the rates that apply.
Loan Amortization	Complete amortization schedule: principal and interest paid by one payment or by a group of payments.
Bond Price & Yield	Price and yield of annual or semi-annual coupon bonds, on an actual or a 360-day calendar.
Black-Scholes Options	CALL and PUT option prices and the five Greeks, by the Black-Scholes model.
Depreciation	Depreciation schedules: SL, SOYD, DB, DBX and MACRS.
Interest Conversion	Converts Nominal and Effective annual rates, three cases side by side.
Time Value of Money	Loans, savings, leases and annuities: five linked variables, enter four and solve the fifth.

Business :

Menu	What it does
Bill-Tip-Split	Tip on a restaurant bill and the share of each person.
Break-Even	Price, unit cost, quantity, fixed costs and profit.
Currency Exchange	Converts an amount between two currencies; the rate is typed or fetched from the internet.
Inventory Turn Over	Relates opening stock, closing stock, cost of goods sold and the turnover.
Percents & Margins	Three independent worksheets, for everyday percentage problems.
Return on Investment	Revenue, profit margin and investment: enter three, get the fourth.

Cash Flows :

Menu	What it does
Equal Periods Cash Flows	Values a stream of one amount per period (NPV, IRR and related answers) from a named list.
Unequal Periods Cash Flows	The same for amounts that fall on dates of their own choosing.
Load CFLO >	Shows a submenu to chose a previously saved Cash Flow list.

Statistics :

Menu	What it does
Probability Distributions	Sixteen probability distributions. Calculate density, lower and upper tail, expected value and most probable value.
(X,N)-List Statistics	One or two Variable Statistics for a list of values and their frequencies and Curve Fitting through the lists.
(X,Y)-List Statistics	Statistics for a list of paired readings, and Curve Fitting with six curve shapes and estimates of X or Y.
Load ∑ List >	Shows a submenu to chose a previously saved (X,Y) list.

Scientific :

Menu	What it does
Angles & Polar	Changes the unit of an angle and converts between rectangular and polar coordinates.
Combinations & Permutations	Number of combinations and permutations and uniform [0….1] pseudo random number generator.
Logarithms	Natural, base 10, 2, 3 and free-base logarithms and their anti-logarithms.
Number Alteration	Sign, integer and fractional parts, rounding, truncation, factorial and division with remainder.
Quadratic Equation	Solves $A \cdot x^2 + B \cdot x + C = 0$: give any three of the five values and the other two follow.
> Triangle Solution **Plane Triangle** **Spherical Triangle**	Plane triangles, and spherical triangles with a given radius: any three measurements give the rest, the perimeter and the area.
Trigonometry & Hyperbolic	Sine, cosine, tangent, their inverses and the hyper-bolic set; angles in five units; π and its fractions.
Universal Constants	Table of 354 CODATA 2018 physical constants; a tap sends the value to the display.
Units Conversion	Physical units conversion in twelve categories that are completely customizable.

Program :

Menu	What it does
New…	Shows the Program Editor to start creating a program
Editor	Opens the editor view to edit the current program.
Load Program >	Shows a submenu to load a previously saved Program.

Date / Time and Solver :

Menu	What it does
Date / Time	Days between two dates, a date a number of days before or after another, elapsed time, Δ360 and Δ365 day counts, Today and Now, and →HMS / →HR.
Solver	Write an equation once, name it, give values to every letter but one and the calculator finds the last.

Utilities :

Menu	What it does
General Settings	Colors, calculation logic, number and date formats, angle unit, key feel and sound; fourteen settings with a Default button.
Storage Registers	The ten registers R_0 to R_9: store, recall and do arithmetic on them.
Memory Content	Shows a view to see all memory content with backup and restore all of it.
Help Documents	Shows the help view to learn by example about all the calculator's menus.
Editors >	Shows a submenu to quickly open any of the editors for the different data types required in menus.
(Date,Trx) List	Create or Edit an **Account Balance** list.
(Date, CF) List	Create or Edit an **Unequal Periods Cash Flow** list.
(X,N) List	Create or Edit an **Equal Periods Cash Flow** list.
(X,Y) List	Create or Edit a paired X,Y values list for **Statistics**.
Solver Equation	Create or edit arbitrary equations for the **Solver**.
Units Database	Edit the units database adding, removing or editing units.

Things that work differently from the HP

Situation	What the RLM-12CX does
An error	Shows a message box naming the operation and the reason; OK leaves the stack as it was. (The HP shows Error 0–9.)
A result too large (above 9.999999999E99)	Stops with an overflow message instead of showing 9.999999 99.
A result too small (below 1E–99)	Becomes 0 silently and the calculation goes on — exactly as on the HP.
Typing a number	Up to 15 digits; the cursor _ marks digit entry.
FIX 9 / SCI	FIX 9 shows nine decimals; SCI uses the current number of decimals.
DATE	Shows the date in words with the weekday (Feb 15,2024 Thu).
Program memory	Up to 1000 lines (000–999) with no shared-memory limit, so GTO takes three digits; the HP-12C has 99 lines and GTO nn.
g MEM	Opens the Memory Content view (the HP shows P-08 r-20).
Cash flows	NPV and IRR take more than 20 cash flows (the HP stops with Error 6).
STO + − × ÷	Work on every register, not only R0–R4.
Dates and bonds	Work beyond the HP's range (before 1582, after 4046, bonds over 500 years).
PSE	Pauses about two seconds.
The Clear key	PREF can turn CLx into ← (delete one digit while typing).
Undo	After a clear, g ↶ (the ÷ key) brings the value back.

For further information and support go to…

"**www.rlmtools.com**" or send an email to "**support@rlmtools.com**"

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