The Complex Stack

In C_LK mode the stack has eight real levels (XYZTABCD) giving a four-level complex stack, ZUVW.

The x<>y key exchanges the bottom two levels of the complex stack (z<>u). (See Complex Menu for Re<>Im, which does exchange x and y.)

Complex numbers are always stored as (a+bi). POLAR only affects number entry and display.

Entering 2 CPX 4 ENTER puts (2+4i) in Z and U, and disables stack lift.

Entering 2 CPX 4 CPX puts (2+4i) in Z only, but leaves stack lift enabled.

Special key sequences and functions

- **f SHOW** - shows Re(z) in full precision
- **f-hold-▲** - Last menu
- **f-hold-DISP** - Screenshot
- **g RCL** - View
- **g R↓** - **R↑**, roll up by one complex level
- **g ENTER** - Fill complex stack with z
- **1/x, √x, LOG** - primary functions only as no programming functions in C_LK mode
- **Σ+** - HYP (as on real calculator); also in Complex Menu.
- **CPXI, CPXJ** - in MODE catalogue; select ***i*** or ***j*** as imaginary unit (outside C_LK mode too).
- **ᶜ.x, ᶜ./** - in f-hold-▼menu; multiplies or divides corresponding real / imaginary parts of z and u. Not standard, but can be useful.

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WP34S on DM42

Using Complex Lock Mode

What it does

Complex Lock (C_LK) Mode makes it easier to enter and work with complex numbers.

- **CPXYES** in the MODE catalogue enables it.
- When enabled, → **CPX** enters C_LK mode.
- Display will show C_LK and the Complex Menu.

f COMPLEX **Complex menu**

→P	→R	+/-Re	HYP	f_π	fCNST
POLAR	RECT	+/-Im	Re⇆Im	--→	CPX

- **f COMPLEX** returns to this menu from any other.
- →**CPX** exits C_LK mode; **CPXNO** disables it.

Entering numbers

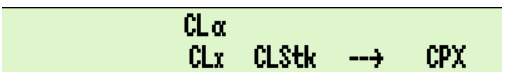
DEG FIX 3 RECT	Sets entry / display mode (RECT from Complex menu)
2 CPX 4 ENTER **7 CPX 3 +/- ×**	Enters (2+4i); multiplies by (7-3i). Note REAL and IMAG hints.
POLAR	Sets entry / display mode
30 CPX 70 -	Subtracts (30, ∠70°); note LENGTH and ANGLE hints.
RECT	Displays in (a+bi) form.
ENTER SIN x² **x<>y COS x² +**	Works out ($\sin^2 z + \cos^2 z$). Note that functions are complex by default.
STO 00	Stores answer in Reg 00+01; regs must be EVEN.

2 ENTER 4 + 11 / $\sqrt{x}$ SIN	Works out $sin\left(\sqrt{\frac{2+4}{11}}\right)$ You don't need to press CPX if working with reals.
4 x² π ×	Works out 16π. π enters (π + *i*0).
RAD POLAR 7 CPX 3 1/x ᶠπ	Enters (7, ∠(1/3)π). ᶠπ (complex menu) multiplies by π rather than entering it. ᶠCNST is similar.

Menus in Complex Lock mode

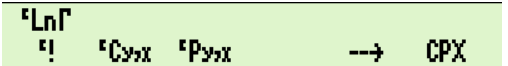
There are no programming, statistics, or base functions in C_LK mode. Some menus change:

f CLEAR **Clear menu**

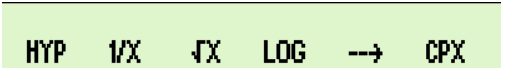


CLx in this menu clears the x-register only, allowing a new real part to be entered. To clear x and y registers, use ←.

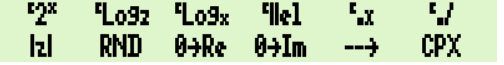
f PROB **Probability menu**



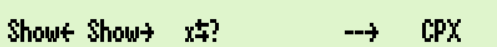
f ASSIGN **Toggle Default menu**



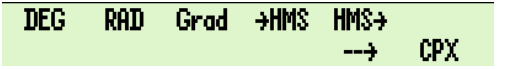
f-hold-▼ **Misc. menu**



g X<>Y **x<>y exchange menu**



→ **Conversion menu**



These menus are omitted: f BASE, F FLAGS, f STAT, f ∫*f(x)*, g SETUP, g PRGM.

These menus are unchanged: f ANGLES, f DISPLAY, f CUSTOM, f PRINT, f SETUP, g CUSTOM.

Catalogues on f-shifted keys

Catalogue	Location
CONV.	f CONVERT

Catalogues on g-shifted keys

Catalogue	Location
MODE	g +/-
CONST	g 5
X.FCN	g 3
SHOW	g EXIT

- CONV acts only on the real x-register.
- CONST enters constants as real numbers.
- X.FCN contains only complex functions.