
ELEC MENU v 1.0

WHAT IS THIS?

It's a collection of frequently used functions in electronics engineering. It was made so that its usage is the simplest, fastest and most effective possible. Must be used on RPN mode.

SETUP?

Simply paste the attached file to your calculator's *HOME* folder by using the connectivity Kit or by the SD card. Once transferred, press *VAR* and go to the folder. Then just select either *ELEC* or *COMPLEX*. You'll be then able to call the function you want. If at any moment you feel lost, or just want to use a command of the original calculator's menu, just hit the *TOOL* key.

It's been tested on the HP50g calculator.

WHAT FUNCTIONS?

ELEC MENU

i: It Inserts the imaginary unit.

2Zpar: It calculates the equivalent impedance of two impedances connected in parallel.

Syntax

2: Z1
1: Z2
2ZPar
 $1: \frac{1}{\frac{1}{Z1} + \frac{1}{Z2}}$

Div: It calculates the result of a voltage divider, or alternately, of a current divider.

For a voltage divider, R1 is the resistor whose voltage drop is the output.
For a current divider, R2 is the resistor whose current is the output.

Syntax

3: R1
2: R2
1: x

Div

$$1: \frac{R1}{R1+R2} x$$

Xc: It returns the reactive value of a capacitor, given its capacitance in Farads and the frequency in Hz.

Syntax

2:f

1:C

Xc

$$1: \frac{1}{2\pi \cdot f \cdot C}$$

w→f: Converts an angular frequency number to frequency in Hz (cycles per second).

Syntax

1:w

w→f

$$1: \frac{\omega}{2\pi}$$

f→w: It does the opposite of the last function. It converts from cycles per second to angular frequency.

Syntax

1:f

f→w

$$1: 2\pi \cdot f$$

COMPL: it goes to the complex menu.

x20dB: Given a number 'x', which normally represents a ratio of voltage or current, it returns its correspondent value of the logarithmic scale of dB.

Syntax

1:x

X20dB

$$1: 20 \log x$$

20dBx: The opposite of the last function. Converts from dB to voltage or current ratios.

Syntax

1:x
20dBx
1: $10^{\frac{x}{20}}$

x10dB: Given a number 'x', which normally represents power ratio, returns its correspondent value of the logarithmic scale of dB.

Syntax

1:x
X10dB
1: $10 \log x$

10dBx: The opposite of the last function. Converts from dB to power ratio.

Syntax

1:x
10dBx
1: $10^{\frac{x}{10}}$

MENU COMPLEX

bi→po: It's used to convert a complex number, whether it's representing a phasor or impedance, from its binomial form (a+jb) to its polar form (r/ang). You must enter first the real part and the imaginary part in that order. It'll show the angle in both radians and degrees.

Syntax

2:R
1:X
Bi→po
3: $|x| = \sqrt{R^2 + X^2}$
2: $arg^{\circ} = \frac{180}{\pi} \tan^{-1} \left(\frac{X}{R} \right)$
1: $arg = \tan^{-1} \left(\frac{X}{R} \right)$

po°→bi: Converts a complex number from its polar form (with the angle in degrees) to its binomial form.

Syntax

2:|x|

1:a°

Po°→bi

2: $R = x \cdot \cos a$

1: $X = x \cdot \sin a$

por→bi: Converts a complex number from its polar form (with the angle in radians) to its binomial form.

Syntax

2:|x|

1:a

Por→bi

2: $R = x \cdot \cos a$

1: $X = x \cdot \sin a$

π:Enters π

i:Enters the imaginary unit

e: Enters the natural exponential.

The meaning of these three last items is to ease the typing of complex numbers in the exponential form, for instance: $2e^{\pi i}$.

r→°: Converts an angle from radians to degrees.

°→r: Converts an angle from degrees to radians.

|x|: Calculates the magnitude of a complex number typed in the binomial form (2: R; 1: X).

ELEC: Goes to the ELEC menu.

CREDITS?

Created by Jorge Pires. UNPSJB. Comodoro Rivadavia, Argentina. Año 2010. Hope you find this useful.