



Complex Calculator “OrionCalc” Help Documentation





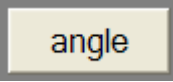
This calculator has been developed to serve as a valuable tool for the relay engineer. Many of the companies that manufacture calculators that used to support complex numbers have ceased to produce these types of calculators. Many scientific calculators produced today state that they support complex numbers, but in reviewing the manner in which they are handled, the user finds out that they are entered and represented in a confusing manner.

This calculator was developed to allow for easy entry and display of complex numbers in either polar or rectangular format. The numbers can be entered in either format and can be added, subtracted, etc without putting the numbers in a common format first. The calculator utilizes a four (4) position memory stack which allows complex calculations to be broken down into pieces and solved with one series of calculation. The operation of the calculator is identical to other calculators utilizing the RPN™ mode of operation. This mode of operation utilizes the following operating sequence:

1. Enter first number into the calculator
2. Depress the Enter key
3. Enter the second number into the calculator
4. Depress the desired math function key



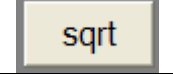
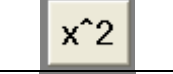
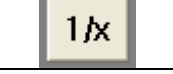

Once a number or result has been pushed into the memory stack, a number can be combined with it using any math function by entering the number and pressing the desired math function key.

A description of the function keys utilized in the calculator is provided below:

Function Key	Function
	This key is used to enter the number which has been typed into the calculator into the memory stack.
	This key is used to backspace over an entry error.
	This key is used to clear the number from the lowest stack position which corresponds to the value displayed in the lower line of the calculator display. Each time that this key is depressed the stack is moved down one position.
	This key is used to enter the imaginary part of a number in rectangular format. If the imaginary part of the number is negative, depress this key and then use the +/- key to change the sign of the imaginary part.
	This key is used to enter the angle of a complex number in polar format. For negative angles, depress this key and then the +/- key to change the sign of the angle to negative.



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	This key is used to convert the result displayed in the lower line of the display from a rectangular format to a polar format.
	This key is used to convert the result displayed in the lower line of the display from a polar format to a rectangular format.
	Depressing this key will take the square root of the number displayed in the lowest line of the display (stack position 0).
	Depressing this key will square the number displayed in the lowest line of the display (stack position 0).
	This key is used to take the reciprocal of the number displayed in the lowest line of the display.
	This key is used to change the sign of a number. This key will change the real part of the number until either the +j or angle keys have been depressed at which time it will change the sign of the imaginary part of the number. Once a result from a calculation is displayed on the calculator this key will only change the sign of the imaginary part of the number if it exists. If no imaginary part exists, the sign of the real part of the number will be changed.

Complex numbers are displayed in the calculator using the following formats:

Polar Format: Magnitude@Angle
Rectangular Format: Real+jImaginary

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