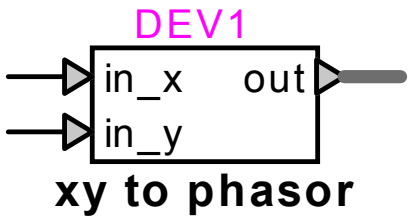
Phasor operation : (x,y) to phasor



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1 Description

This device converts an (x,y) representation of a phasor to its polar (magnitude, angle) equivalent combined in a 2-signal bundle.

1.1 Pins

This device has three pins:

pin	*type*	*description*	*units*
x	input pin	x-coordinate	any
y	input pin	y-coordinate	same as x
out	2-signal bundle	magnitude	same as x
		angle	rad

1.2 Parameters

No parameters are required for this device.

1.3 Input

The input pins may be connected to any control signals.

The (x,y) coordinates are the *x*-axis and *y*-axis projections of a vector or phasor on a reference frame.

1.4 Output

The output is a 2-signal bundle of the polar coordinates of the phasor. The polar coordinates are the magnitude and angle corresponding to the (x,y) coordinates used as input.

The conversion from (x,y) to polar is immediate, and is calculated as follows:

$$\begin{aligned} \text{magnitude} &= \sqrt{x^2 + y^2} \\ \text{angle} &= \tan^{-1}\left(\frac{y}{x}\right) \end{aligned} \qquad (1)$$

The phasor magnitude is the peak amplitude, not the RMS value. The phasor angle is expressed in radians.