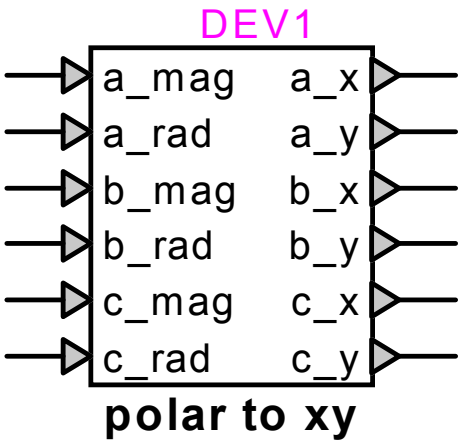
Phasor operation : 3-phase polar to (x,y)



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1 Description

This device converts a polar (magnitude,angle) representation of 3 vectors or phasors to their (x,y) equivalent.

1.1 Pins

This device has twelve pins:

pin	*type*	*description*	*units*
a_mag	input pin	phase-a magnitude	any
a_rad	input pin	phase-a angle	rad
b_mag	input pin	phase-b magnitude	any
b_rad	input pin	phase-b angle	rad
c_mag	input pin	phase-c magnitude	any
c_rad	input pin	phase-c angle	rad
a_x	output pin	phase-a x-coordinate	same as a_mag
a_y	output pin	phase-a y-coordinate	same as a_mag
b_x	output pin	phase-b x-coordinate	same as b_mag
b_y	output pin	phase-b y-coordinate	same as b_mag
c_x	output pin	phase-c x-coordinate	same as c_mag
c_y	output pin	phase-c y-coordinate	same as c_mag

1.2 Parameters

No parameters are required for this device.

1.3 Input

The input pins may be connected to any control signals.

The polar coordinates are the magnitude and angle of a vector or phasor in a reference frame.

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

1.4 Output

The outputs are the *x*-axis and *y*-axis projections corresponding to the polar coordinates used as input. The conversion from polar to (x,y) is immediate, and is calculated as follows:

$$\begin{aligned} x &= \text{magnitude} \cdot \cos(\text{angle}) \\ y &= \text{magnitude} \cdot \sin(\text{angle}) \end{aligned} \qquad (1)$$