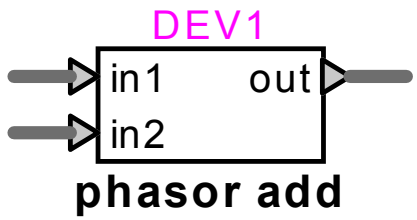
Phasor operation : phasor add



Phasor operation : phasor add 1
1 Description 1
1.1 Pins 1
1.2 Parameters 1
1.3 Input 1
1.4 Output 1

1 Description

This device adds two vectors or phasors represented by 2-signal bundles of their polar coordinates.

1.1 Pins

This device has three pins:

pin	*type*	*description*	*units*
in1	2-signal bundle	input-1 magnitude	any
		input-1 angle	rad
in2	2-signal bundle	input-2 magnitude	same as in1_mag
		input-2 angle	rad
out	2-signal bundle	output magnitude	same as in1_mag
		output 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.

1.4 Output

The outputs are the polar coordinates of the sum of the two input vectors.
The operation is immediate, and is calculated as follows:

$$
\begin{aligned}
&in1_x = in1_mag \cdot \cos(in1_rad) \\
&in1_y = in1_mag \cdot \sin(in1_rad) \\
&in2_x = in2_mag \cdot \cos(in2_rad) \\
&in2_y = in2_mag \cdot \sin(in2_rad) \\
&out_x = in1_x + in2_x \\
&out_y = in1_y + in2 + y \\
&out_mag = \sqrt{out_x^2 + out_y^2} \\
&out_rad = \tan^{-1}(out_y / out_x)
\end{aligned}
\qquad (1)
$$