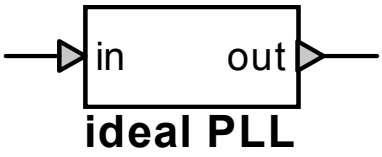
Control function: PLL, ideal



1 Description

This device is an implementation of an ideal PLL (phase-locked loop) oscillator. The phase detector is a mathematical function matching the phase of the fundamental harmonic of the input signal.

1.1 Pins

This device has two pins:

pin	*type*	*description*
in	input	input signal
out	output	oscillator output, in phase with input

1.2 Parameters

The following parameters must be defined:

parameter	*description*	*units*
freq	fundamental frequency	Hz
deg_ini	initial phase angle	deg

1.3 Input

The input pin may be connected to any control signal.

1.4 Output

The output oscillates at the fundamental frequency of the input signal, has a peak amplitude of 1, and is in phase with the input signal.

1.5 Representation

The implementation of the model can be inspected by opening the device's subcircuit.

The model represents an ideal PLL. It calculates the phase angle of the first harmonic of the input signal. The output signal oscillates at the fundamental frequency of the input, and takes into account the calculated phase angle of the input signal to maintain phase synchronism with the input. During the first period of the simulation, the phase angle is held at its given initial value.