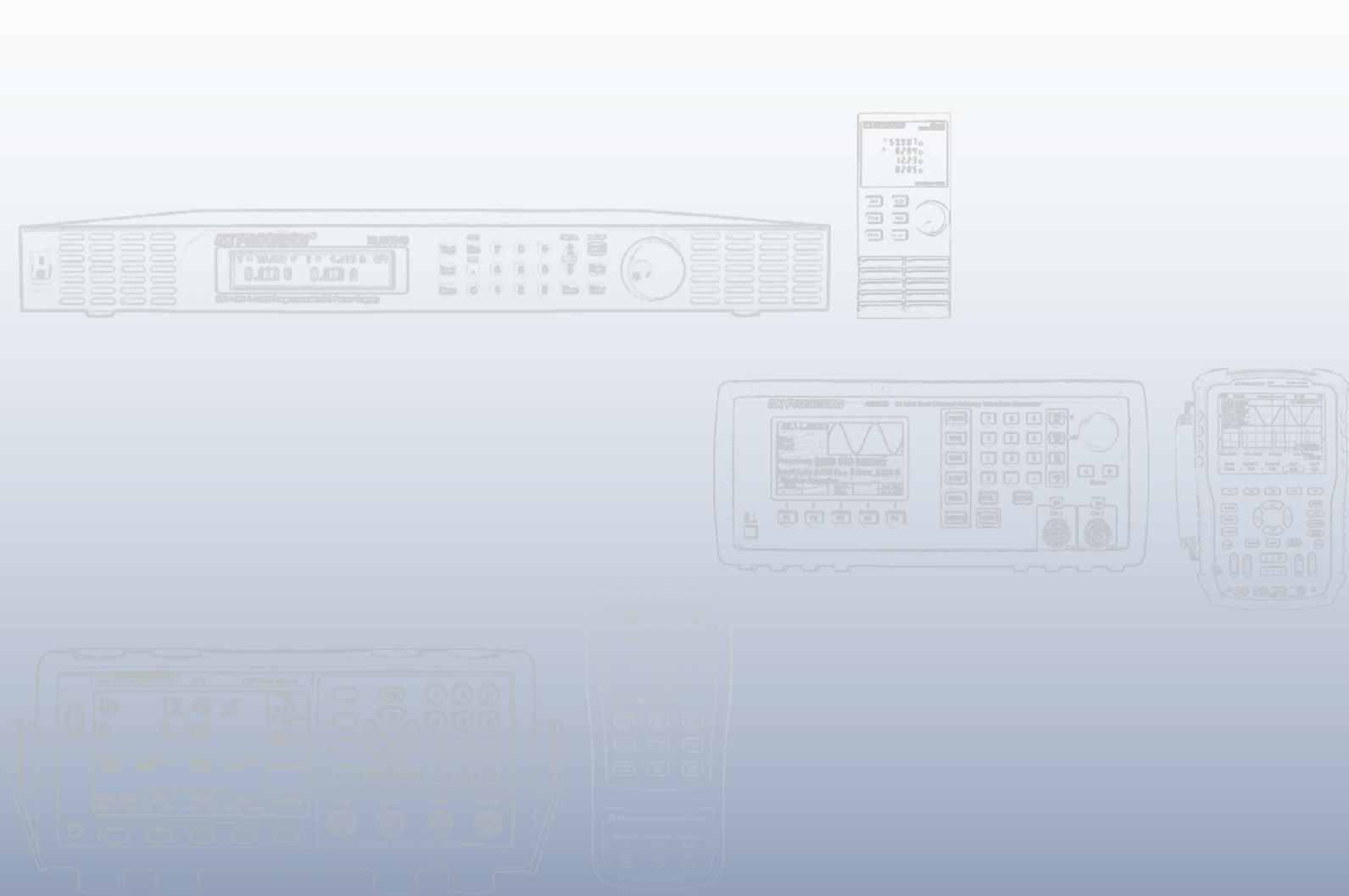


# Application Brief

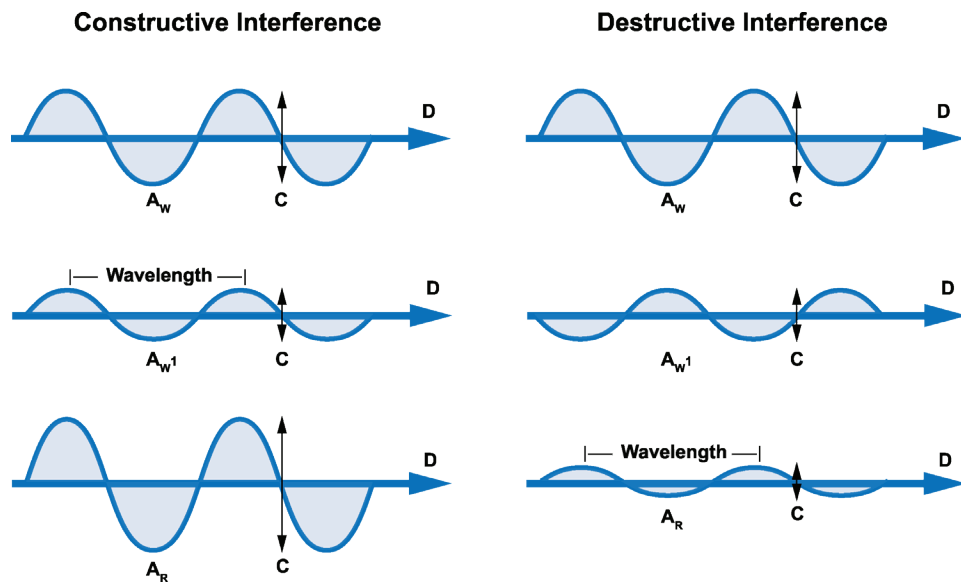
## 4050 Series - Wave Combine Function



# Wave Interference

## Background

*In Physics, wave interference refers to the interaction of two waveforms and whether that is constructive or destructive interference. In Electronics, something similar is studied when two waveforms are combined.*



The 4050B Series has the Wave Combine Function that replicates the addition of 2 waveforms and see the result in one of the channels. Having two independent channels and being able to add their output allows the customer to recreate waveforms that can be found in many applications (lighting, sound, etc).

The level of complexity of the each waveform is high because the 4050B series is an arbitrary waveform generator, meaning that two arbitrary waveforms can be added at the output. Add a specific type of waveform arbitrary or not to ride on top of a main waveform without the limitations of modulation processes. For example, if the user needs to create a sine and add noise at different voltage levels to evaluate the response of filters, the Wave Combine Function makes this process very simple.

## Application

Create a sine wave and add noise to it

## Solution

1. Create a sine wave using Channel 1. (i.e. 1 KHz, Sine Wave)
2. Create a noise wave using Channel 2.
  - a. Select channel 2 by toggling Ch1/Ch2 button.

- b. Press the Waveforms button.
  - c. Select the Noise Waveform by pressing the softkey.
  - d. Select either Standard Deviation or Mean and set their values
3. Press the Utility button on the generator
4. Press the Output Setup button (Highlighted in Blue)
5. Press the Wave Combine (Highlighted in Blue)
6. Select in what channel will have the wave combined at its output and toggle the soft key to select the option.
7. Turn output on.

