

Re: How can I subtract one frequency from another ???

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- *From:* NoSpam@xxxxxxxxxxxxx (Bob Masta)
 - *Date:* Fri, 20 Jan 2006 12:52:45 GMT
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On Thu, 19 Jan 2006 19:27:45 GMT, "Technician" <technician@xxxxxxx> wrote:

>Hi all,
>Sorry to still be going on about this seemingly simple problem, but there
>have been so many suggestions with so many approaches, it has left me more
>confused than ever, especially since a couple of them did not work.
>
>What I'm going to settle on it using an AD633 mixer IC, as it seems very
>simple to use as far as peripheral components are concerned anyway.
>Being inexperienced with this type of electronics (audio) I've never
>configured a mixer before, so forgive me if my questions sound borderline
>rediculous for one who supposedly knows something about electronics.
>
>That said, I would like to know how to input a 600Hz sine wave to one input,
>and a 610Hz sine wave to another input, to get an output of 10Hz on one of
>the pins, this being the difference of the 2 input frequencies.
>I would like the output frequency to always be the difference of whatever 2
>input frequencies are inputted, inputs will never exceed 1KHz.
>
>It was previously mentioned that this mixer IC would give me the sum and the
>difference of the 2 input frequencies. What I am not clear on is if the
>difference and sum frequencies will appear on 2 different output pins, or in
>the same output wave on one pin which needs to be filtered with a low pass
>filter such as a butterworth filter.
>
>I have a couple AD633, and the data sheet, but I just cannot seem to grasp
>it's mathematics in order to get a firm idea of how to configure this.
>Any help would be appreciated.
>
The AD633 is a multiplier, which can form the product of two input signals. The product of two sinusoids is another pair of sinusoids at frequencies that are the sum and difference of the originals. If your inputs are 600 and 610 Hz, the product will contain components at 1210 and 10 Hz. If you only want the 10 Hz component, you will need to apply a filter to the output.

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But note that if the inputs are complex signals, like speech or music, the output will contain components at all the individual sum and difference frequencies. This can lead to a hopeless mess that filtering will not resolve.

What are you really trying to accomplish here?
If you will explain your overall goals, perhaps we can come up with a workable approach.

Best regards,

Bob Masta
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D A Q A R T A
Data AcQuisition And Real-Time Analysis
www.daqarta.com
Home of DaqGen, the FREEWARE signal generator
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• **References:**

- ◆ ***How can I subtract one frequency from another ???***
 - ◇ From: Frank
 - ◆ ***Re: How can I subtract one frequency from another ???***
 - ◇ From: Jamie
 - ◆ ***Re: How can I subtract one frequency from another ???***
 - ◇ From: jgreimer
 - ◆ ***Re: How can I subtract one frequency from another ???***
 - ◇ From: Technician
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