

## Re: Summing integrator circuit?

**Source:** <http://sci.tech-archive.net/Archive/sci.electronics.design/2005-03/2075.html>

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**Date:** 03/12/05

Date: Fri, 11 Mar 2005 16:18:17 -0800

"Len Thomas" <lenthomas102@aol.com> wrote in message  
news:b5a43119qqec0dfchdplhrrct8r9djqt1@4ax.com...

> *I know what a summing amp and integrator are as separate circuits, but  
> can someone please explain the design criteria for a "summing  
> integrator". IOW one op amp doing both tasks.*

The summing could be of input currents into a virtual ground, with a feedback capacitor balancing the summed current and converting it into a voltage output that would be  $-1/C$  times the integral of the input currents. If you want a non-inverting integrator, it gets a little trickier (or a lot if it has to be accurate).

> *The integrators I have used in the past have a feedback resistor in  
> the MegOhms and cap in parallel.*

With a resistor across the integrating capacitor, it cannot be considered an integrator except as a crude approximation. Integrators do not need that resistor. (I have had somebody tell me they put one in to limit the gain for stability reasons. It took me 15 minutes to educate that out of him.)

> *If used with 10K series for each of  
> the several summed inputs, this would affect the gain and seemingly  
> limit options in this regard.*

Unless you are running out of loop gain, the inputs act independently and the integrator gain is  $-1/(s*(R*C))$  for each input R.

> *The frequencies involved are 10-40Hz, subaudio and I am looking for  
> unity gain. Input is 6V.*

The phrase "unity gain" in reference to an integrator is confusing to me. What response do you want?

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> *Any suggestions please?*

Use the above gain formula, picking a common C value (since there is but one feedback C) and weight your R values according to the relative gains need for each input.

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--Larry Brasfield  
email: donotspam\_larry\_brasfield@hotmail.com  
Above views may belong only to me.