

## Re: newbie DC question

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Rob Snyder wrote:

- >
- > *Greetings.*
- >
- > *I've been studying electronics on my own for a little while now, and*
- > *there's one basic concept I can't seem to get my head around. I*
- > *apologize in advance for the really basic question, but I just can't*
- > *find the answer and it's keeping me up at night.*
- >
- > *I thought I understood DC, at least at a primitive level. In circuits*
- > *with a battery, things make sense – there is a positive and a negative,*
- > *current flows from the negative through the circuit to the positive...*
- > *makes sense.*
- >
- > *Where I get lost is when I'm looking at a circuit with an AC to DC*
- > *transformer. Typically, the output of this, after the rectifier, is a*
- > *positive DC source, a negative DC source, and ground.*
- >
- > *What \*is\* this ground thing?*

It is a convenient reference point with which to measure many voltages in the circuit. It may or may not also be connected to the Earth with a grounding wire.

- > *Does current flow from the negative output*
- > *to ground? From ground to the positive? Both? Neither?*

Once you pick a convention (electrons travel around the circuit one way, holes and 'conventional current' the other way) just be consistent in its application. If you want to think of current as a flow of electrons, then current will take all paths that connect a more negative voltage to a more positive one. Ground, by definition, is a zero volt reference point.

- > *What they heck am I missing?*
- >
- > *Most explanations I've read just say something to the effect of "ground*
- > *being a reference, with the current being more negative or more positive*

> *than ground". Needless to say, I can't turn that into something I*  
> *understand.*

You have to separate in your mind voltages from currents. Nodes can be have a more positive or negative voltage than ground. Pick any two nodes, and one may be the more positive and the other the more negative, or vice versa. This potential difference is what drives current through the things connected between those nodes. Currents do not have the same sort of positive and negative polarities that voltages do. Current polarities just refer to whether an actual current goes the assumed way (positive current) or the opposite way (negative current) so that you can add them up correctly for things like Kirchoff's law (the sum of all currents into a node is zero).

> *I appreciate any guidance anyone has to offer.*  
>  
> *Thanks!*  
>  
> *Rob Snyder*

Have I helped or added to your confusion?

--  
John Popelish