Re: New to electronics.

Source: http://sci.tech−archive.net/Archive/sci.electronics.basics/2005−05/msg00369.html

- *From*: "Dwayne" <fake@xxxxxxxxx>
- *Date*: Sat, 14 May 2005 16:24:05 GMT

"anon" <anon@xxxxxxxxxxxxx> wrote in message
news:Zkjhe.75899$Cq2.6782@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx
> Hi to all
>
> I'm just getting into electronics as a hobby because i've had to retire
> from
> work due to illness and thought i could do with something interesting to
> pass
> the time.
>
> I've decided to try my hand at some "breadboarding" to start me off.
>
> I saw a link for http://www.doctronics.co.uk/index.htm in one of these
> electronics newsgroups, so i had a look to find out if the website would
> be of
> any use to me.
>
> I noticed a project for a games timer which i thought i'd try my hand at.
> I sent
> off for the components, complete with instructions, and bought myself a
> couple
> of breadboards and some other bits and pieces to start me off.
>
> On ebay, i saw a new (and fairly cheap), bench top power supply which i
> thought
> would be better than having to keep buying batteries for the various
> projects
> that i would be undertaking.
> It is switchable between 3, 4.5, 6, 7.5, 9 and 12volts dc. The current
> rating is
> 1500ma max.
>
> I was just wondering, as i'm new to electronics. Would the current of
> 1500ma
> max, be flowing whatever the voltage might be (ie: 3, 4.5, 6, 7.5, 9 or
> 12volts
> dc) − or would the current flow be dependent on the components being used
> in the
> circuit, upto a maximum of 1500ma using the above power supply ?.

>
>
> Thanks in advance for any help with this question.
>
>
> hermit50
>
>
Others have answered your question. I will suggest four circuit concepts that should help get you started with DC circuits.

(1) Ohms law:

V=I*R

Voltage (measured in Volts) is the product of current (Amperes or Amps for short) and resistance (Ohms). The important thing to realise is that you need a change in voltage to get a current to flow. The equation should actually read:

V2−V1=I*R

Think of a garden hose, if there is no difference in pressure between the water in the pipe and the air in the atmosphere then you would be hard pressed to water your plants.

(2) Power

P=V*I

Power (in Watts) is the product of voltage and current. Ohms law can be inserted into the power equation to obtain equivalent statements namely;

P=V^2/R
P=I^2*R

Also power supplied to a circuit will be absorbed by a circuit. If you apply too much power to a component it will smoke and fail. A resistor for example will have a value of resistance say 100 Ohms and value for power say 0.25 Watts.

P= V^2/R
0.25=V^2/100
V^2=100*0.25
V^2=25
V=5 Volts

V=I*R
I=V/R
I=5/100

I=0.05 Amps
or
I=50 mA

So if you apply 5 Volts across (ie: V2−V1) a 100 Ohm resistor you will need to suppy 50 mA (milliamperes) of current.

(3) Kirchoff Voltage Rule

The sum of the voltages around any closed loop must equal zero. This is based on the assumption that your supply can produce enough current for your load/circuit. If not then your supply will only apply enough voltage to satisfy the maximum current.

(4) Kirchoff Current Rule

The [sum of the] current into a node (junction) must equal the [sum of the] current leaving the node.

I hope this helps,

Dwayne

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- ***References***:
  - ♦ ***New to electronics.***
    - ◊ *From:* anon

- Prev by Date: ***Re: Triangulate a signal***
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